United States Department of the Interior
Bureau of Land Management

RANGELAND HEALTH ASSESSMENT AND EVALUATION REPORT

DEVIL CREEK BALANCED ROCK ALLOTMENT #01133

March 4 2016

U.S. Department of the Interior
Bureau of Land Management
Jarbidge Field Office
2878 Addison Avenue East
Twin Falls, Idaho 83301
Phone: 208-736-2350
FAX: 208-735-2076

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ALLOTMENT INFORMATION

Field Office: Jarbidge Field Office (JFO)
Name of Permittees: Lakeside Industries, Inc., Guerry, Inc.
Allotment Name/Number: Devil Creek Balanced Rock (01133)
Dates of Field Assessment: April 28; June 3, 4, 10, 2014
Stream Miles on Public Land (miles): 0 miles of perennial stream

Table 1: Devil Creek Balanced Rock Allotment Acres

BLM	State	Private	Total Acres
38,765	641	325	39,731

Table 2: Assessment Participants

Name	Position
Gilbert Jackson	Rangeland Management Specialist - Background & Range
Carmela Romerio	Rangeland Management Specialist - Background & Range and Standard 4, 5 and 6
Susan Filkins	Botanist –Standard 8 (SSP)
Regina Rone	Soil Scientist – Standard 1, ESR
Bonnie Claridge	Fish Biologist – Standards 2, 3, 7
Kate Crane	Twin Falls District Fisheries Biologist – Standard 7
Ammon Wilhelm	Wildlife Biologist – Standard 8
Michael Haney	Wildlife Biologist – Standard 8
Jay Murguitio	GIS, ESR, Maps

CURRENT PERMITTED LIVESTOCK GRAZING USE

Total Active Use: 3,658 Animal Unit Months (AUMs)
Livestock Type: Cattle and Sheep

Livestock Numbers:	**Season of Use:**
599 Cattle	03/01 to 05/15
600 Cattle	11/15-02/28
350 Sheep	06/01-06/30

Current Land Use Plan: 2015 Jarbidge Resource Management Plan (RMP)
Current Stocking Level: 10.5 Acres/AUM

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ALLOTMENT PROFILE

The Devil Creek Balanced Rock Allotment is located in both Twin Falls and Owyhee Counties, Idaho, southwest of the community of Castleford. It consists of 38,765 acres of BLM, 327 acres of private, and 641 acres of State land for a total of 39,731 acres that is divided into eleven pastures and one exclosure (Table 3; Appendix F, Map 1). The allotment is eighteen miles in length from north to south, and extends eight miles from west to east. For a detailed overview of the allotment and all applicable site locations discussed in this Rangeland Health Assessment and Evaluation Report (RHA), please refer to the map section at the end of this document.

Table 3: Acreage by Pasture and Ownership in the Devil Creek Balanced Rock Allotment

Pasture Name	Acres			
	BLM	Private	State	Total
Balanced Rock	2,520	0	0	2,520
North End Field*	4,285	5	0	4,290
North Kerbs	2,226	0	0	2,226
School Bus	1,983	0	0	1,983
Bull Horn	1,982	0	0	1,982
South Kerbs	2,415	0	0	2,415
North Winter	1,605	0	0	1,605
South Winter	2,681	317	0	2,998
Corral Field	2,114	0	0	2,114
Big Field	7,686	3	641	8,330
Big Bend	8,232	0	0	8,232
Exclosure**	1,036	0	0	1,036
Total	38,765	325	641	39,731

*BLM acres include a total of 482 acres within two designated wildlife tracks north of Balanced Rock Road that are not grazed by livestock;
**An exclosure of 1,036 acres of BLM managed lands occurs within the allotment adjacent to Big Field Pasture and Devil Creek and is not accessible to livestock.

Topography across the allotment is varied. The northern three pastures range in elevation from 3,700 feet in the east to 4,300 feet in the west. The pastures in the central portion of the allotment range in elevation from 4,400 feet to 4,250 feet and tend to flatten toward the west. The southernmost pastures range in elevation from 5,100 feet in the southwest to 4,300 feet in the northwest. Throughout the allotment, ephemeral drainages generally flow toward the north and northeast.

Two primary drainages are located adjacent to or pass through a portion of the allotment. Salmon Falls Creek Canyon extends along the northeast perimeter of the Balanced Rock Pasture. In that area, the canyon is 350 feet deep and 1,300 feet wide from rim to rim. The canyon walls are marked by steep escarpments that effectively block livestock movement down on to the canyon floor. For livestock management purposes, the pasture boundary extends only to the west rim of the canyon.

The Cedar Mesa Canal Company and Salmon Falls Land and Livestock divert all the water from Devil Creek about nine miles upstream to the south of the allotment. As a result, the reach of Devil Creek that crosses the allotment flows only during snow melt events and even these flows are minimal to absent. Riparian vegetation is therefore not present in that portion of Devil Creek Canyon contained in the allotment.

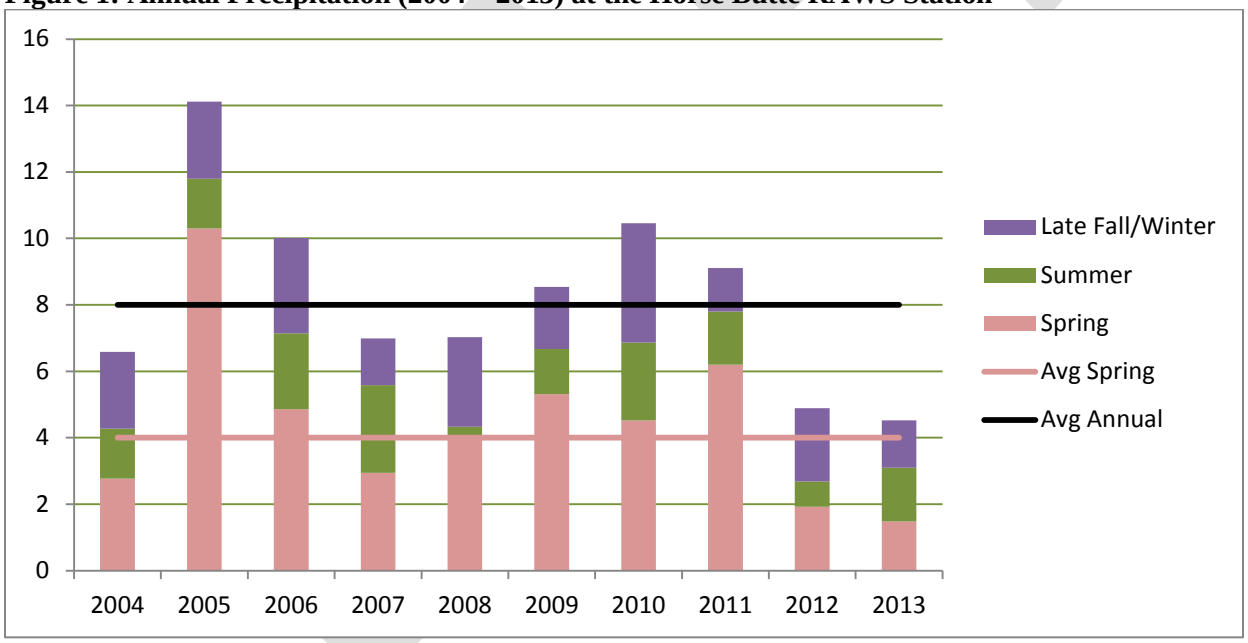
Climate

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

Weather data collected at the Horse Butte RAWS station is used to assess precipitation and temperature trends from 2004 to 2013. The RAWS station is located in an 8 to 12 inch precipitation zone approximately 8 miles west of 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”). Spring rainfall was above average in 2005 and 2011 (2” or more above the spring average). Except for 2004, temperatures during the growing season were cooler than the thirty-year average (Figure 2).

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



Wind is a common occurrence across the Jarbidge Field Office (JFO). The average wind speed ranges between 8 and 12 miles per hour and generally increases in the spring between February and May and again in early fall through winter (Figure 3). Wind gusts can range from 30 to over 50 miles per hour with prolonged periods of wind exceeding 15 miles per hour at any time throughout the year.

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

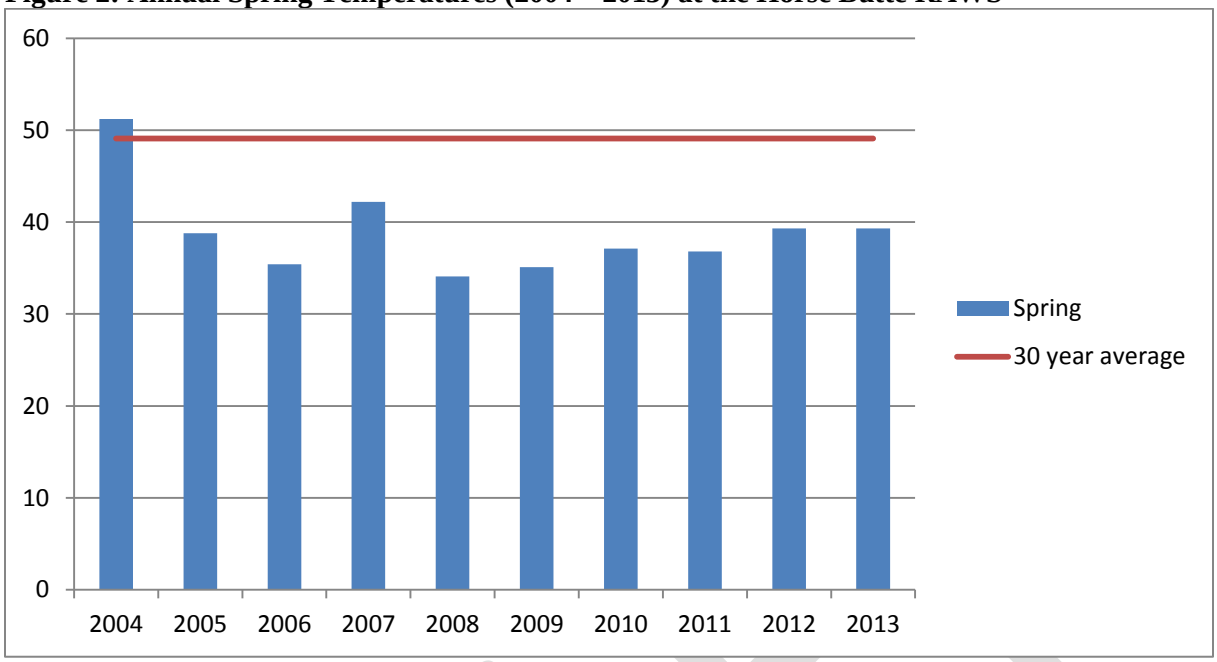
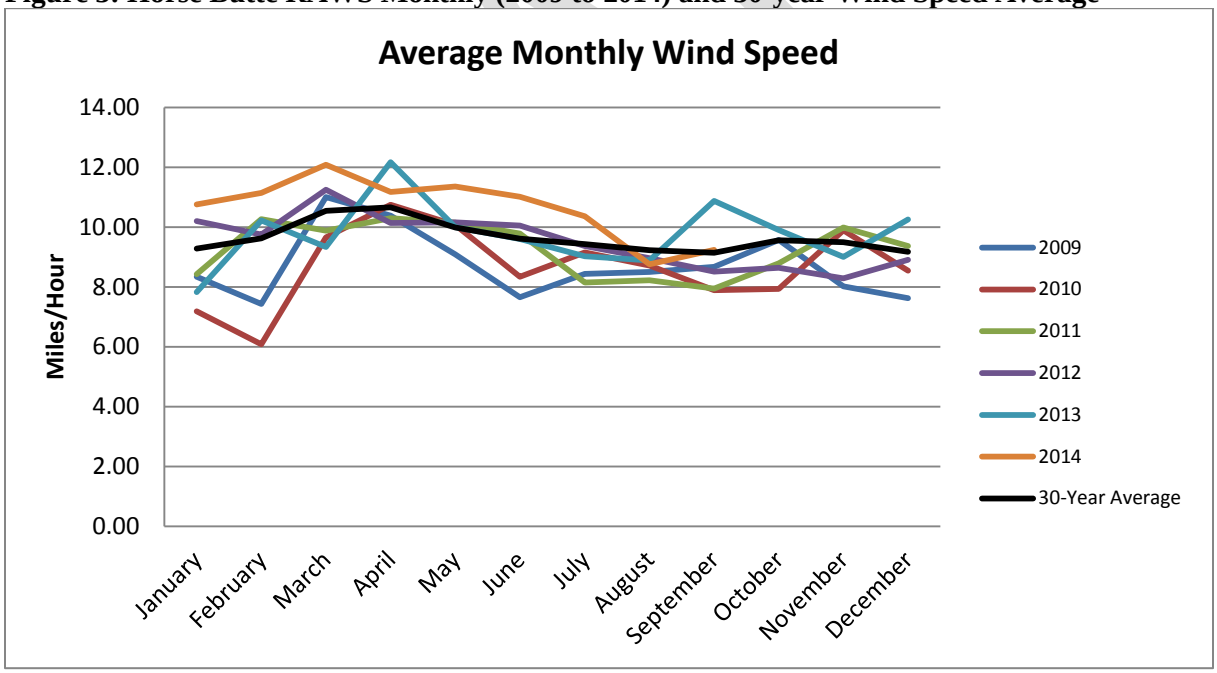


Figure 3: Horse Butte RAWS Monthly (2009 to 2014) and 30-year Wind Speed Average



Grazing Management

Two permittees have permits to graze cattle and sheep on the allotment with a combined current permitted use totaling 3,659 AUMs (Table 4). Wood River Ranches transferred their permit to Lakeside Industries, Inc. and was issued a permit for 3,589 AUMs in January 2014. The permitted season of use is authorized from November 15 to February 28 with 599 cattle and March 1 to May 15 with 600 cattle (Table 5). Guerry Inc. is authorized 70 AUMs of annual sheep grazing, typically between April and June (USDI BLM, 1990). The allotment is currently stocked at 10.5 BLM acres per AUM.

Table 4: Permitted Use for Individual Permittees in Devil Creek Balanced Rock Allotment

Permittee	Active Use	Livestock Kind	Suspended Use	Permitted Use
Lakeside Industries, Inc.	3,588 AUMs	Cattle	0 AUMs	3,589 AUMS
Guerry, Inc.	70 AUMs	Sheep	0 AUMs	70 AUMs

Table 5: Mandatory Terms and Conditions on Current Permits

Allotment	Livestock		Grazing Period		% Public Land	Type Use	AUMs
	Number	Kind	Begin	End			
Devil Creek Balanced Rock (#1133)	599	Cattle	03/01	05/15	100	Active	1,497
	600	Cattle	11/15	02/28	100	Active	2,091
	350	Sheep	06/01*	06/30	100	Active	70

*LUP allows sheep grazing outside of the permit dates, not to exceed 70 AUMs per year.

Historic active preference in the allotment was 1,820 AUMs until 2000, with 1,750 AUMs-assigned to Lakeside Industries, Inc. and 70 AUMs assigned to Guerry Inc. Actual use by Lakeside Industries, Inc. has varied in the past, depending on the availability of temporary non-renewable (TNR)[1] forage. Permitted use between 1989 and 1998 was an average of approximately 3,587 AUMs. Of that amount, 1,748 AUMs were active preference, while the remaining 1,839 AUMs represent the average TNR forage allocation (USDI BLM, 2000). In 2000, TNR AUMs were converted to permitted active use, as reflected in the current permit.

Sheep use occurs in the Balanced Rock Pasture in the spring during the months of April, May, and June and cattle use occurs in all other pastures (except the exclosure) during late fall, winter, and spring. A grazing schedule (Table 6) was created that defines prescriptions for the use of pastures (USDI BLM, 1998).This schedule was implemented to allow for a rest/deferred rotation during the critical growing season. The schedule differs from actual use (Table 7) because of the frequency of fires, especially the last ten years, which adjusted the grazing schedule.

Table 6: 1998 Cattle Grazing Schedule for Allotment

Pasture Name	Year 1		Year 2		Year 3		Year 4	
	Herd 1	Herd 2	Herd 1	Herd 2	Herd 1	Herd 2	Herd 1	Herd 2
Balanced Rock*	R	R	R	R	R	R	R	R
North End Field	Dec-Jan	NG	Jan-Feb	NG	Dec-Jan	NG	Jan-Feb	NG
North Kerbs	D	NG	Nov-Dec	NG	R	R	Nov-Dec	NG
School Bus	Mar	NG	R	R	Feb-Mar	NG	R	R
Bull Horn	Mar-Apr	NG	R	R	Mar-Apr	NG	R	R
South Kerbs	R	R	Mar-Apr	NG	R	R	Mar-Apr	NG
North Winter	Nov-Dec	NG	Apr-May	NG	Nov-Dec	NG	Apr-May	NG
South Winter	NG	Dec-Jan	NG	Jan-Feb	NG	Dec-Jan	NG	Jan-Feb
Corral Field	May	NG	R	R	May	NG	R	R
Big Field	NG	Jan-Apr	NG	Mar-May	NG	Jan-May	NG	Mar-May
Big Bend	Nov	Nov-Dec	NG	Nov-Dec	Nov	Nov-Dec	NG	Nov-Dec

R=Rest, NG=Not Grazed, D=Deferred
*Pasture is for sheep only, no cattle grazing occurs

[1] Temporary non-renewable permitted use is additional forage temporarily available for livestock grazing use that may be appropriate on a nonrenewable basis (CFR 4110.3-1).

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Table 7: Actual Use by Lakeside Industries, Inc.

Grazing Year		N. End Field		North Kerbs		School Bus		Bull Horn		South Kerbs		North Winter		South Winter		Corral Field		Big Field		Big Bend		Total AUMs
		Date	AUMs	Date	AUMs	Date	AUMs	Date	AUMs	Date	AUMs	Date	AUMs	Date	AUMs	Date	AUMs	Date	AUMs	Date	AUMs	
2004	3/1-5/15	3/11-5/9	589	Rest		Rest		Rest		Rest		3/1-3/10	50	3/1-10 5/9-14	108	Rest		3/1-15 5/8-10	177	3/15-5/8	535	**1,459**
	11/15-2/28	Rest		Rest		Rest		11/15-2/28	479	Rest		11/15-2/28	479	Rest		Rest		11/15-11/23	765	2/15-2/28	116	**1,839**
2005	3/1-5/15	Rest		Rest		Rest		3/1-3/15	68	Rest		3/1-3/15	68	3/15-5/12	405	Rest		3/15-5/15	616	3/1-3/17	140	**1,297**
	11/15-2/28	Rest		Rest		Rest		Rest		Rest		Rest		Rest		Rest		11/15-2/28	1,586	Rest		**1,586**
2006	3/1-5/15	Rest		Rest		Rest		Rest		Rest		Rest		Rest		Rest		3/1-5/15	684	4/16-5/18	294	**978**
	11/15-2/28	Rest		Rest		Rest		Rest		Rest		Rest		Rest		Rest		11/15-2/28	1,708	Rest		**1,708**
2007	3/1-5/15	Rest		Rest		Rest		Rest		Rest		Rest		Rest		Rest		3/1-5/15	1,094	4/27-5/19	151	**1,245**
	11/15-2/28	Rest		Rest		Rest		Rest		Rest		Rest		Rest		Rest		11/15-2/28	843	Rest		**843**
2008	3/1-5/15	Rest		Rest		Rest		Rest		Rest		Rest		Rest		Rest		3/1-5/17	618	Rest		**618**
	11/15-2/28	Rest		Rest		Rest		11/15-12/19	475	12/5-1/30	921	Rest		1/31-2/28	238	1/31-2/28	286	Rest		Rest		**1,920**
2009	3/1-5/15	Rest		Rest		Rest		Rest		Rest		Rest		Rest		Rest		Rest		Rest		**0**
	11/15-2/28	11/15-2/28	1,255	Rest		Rest		11/17-2/28	821	Rest		Rest		Rest		Rest		Rest		Rest		**2,076**
2010	3/1-5/15	3/1-3/10	118	3/11-3/25	178	3/25-4/19	426	Rest		4/30-5/1	24	3/1-15	118	3/16-5/17	535	5/2-12 5/18-21	145	Rest		Rest		**1544**
	11/15-2/28	Rest		2/1-2/28	230	Rest		Rest		Rest		11/15-11/30	132	12/1-1/14	370	Rest		11/15-2/28	1,220	Rest		**1,952**
2011	3/1-5/15	3/1-5/16	557	Rest		Rest		Rest		Rest		Rest		Rest		Rest		3/1-4/14 5/1-5/14	737	3/31-4/15	105	**1,399**
	11/15-2/28	11/15-2/28	683			12/15 - 12/31	224	11/17-12/14	368	1/1-2/28	684											**1,959**
2012	3/1-5/15	Rest		Rest		Rest		Rest		3/1-4/15	605	3/1-5/15	500	4/16-5/1	210	5/2-5/15	184	Rest		Rest		**1,499**
	11/15-2/28	Rest		Rest		Rest		Rest		Rest		Rest		Rest		Rest		11/15-2/28	1,394	Rest		**1,394**
2013	3/1-5/15	Rest		Rest		Rest		Rest		Rest		Rest		Rest		Rest		Rest		3/1-5/15	999	**999**
	11/15-2/28	12/1-2/28	1,143	Rest		Rest		11/15-12/5	251	Rest		Rest		Rest		Rest		Rest		Rest		**1,394**
2014	3/1-5/15	Rest		3/1-3/31	302	3/16-4/30	302			Rest		4/1-5/14	243	5/1-5/14	138	Rest		Rest		3/1-5/15	500	**1,485**
	11/15-2/28	11/15-1/31	972	12/15-2/14	547	2/1-2/14	93	2/15-2/28	138	Rest		Rest	0	Rest	0	Rest		Rest		Rest		**1,750**

*Grazing year runs from 3/1 to 2/28

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Under this rotation, the permittee divides the cattle herd into two separate herds that graze from 11/15 to 05/15 each year. Table 6 shows the scheduled rotation when livestock will be in each individual pasture, along with the time frames each pasture will be deferred and rested. Big Field Pasture is predominantly a crested wheatgrass seeding. This rotation allows for the Big Field Pasture to be separated into two use areas by turning on one of the two water troughs in the north or south ends of the pasture, thus allowing for deferment of half the pasture at least every other year.

The rotation outlines that in year 1, four pastures were to be rested for a complete year, four pastures (north/south half of Big Field) were to receive deferment for the complete growing season, and three pastures were to receive partial spring deferment. In year *2*, three pastures will be rested for a complete year, five pastures will receive deferment for the complete growing season, and three pastures will receive partial deferment during the growing season (refer to attached grazing schedule for time frames within each pasture). Spring use (March through May) was to be made in pastures consisting of crested wheatgrass seedings and use would rotate in different pastures from growing season to growing season as shown in the attached grazing schedule (Table 6).

Actual Use

Actual use was collected from Lakeside Industries, Inc. (Table 7) and from Guerry, Inc. (Table 8) for the allotment. Pasture summaries for actual use by pasture is displayed in detail below. Due to the numerous fires that have occurred on the allotment, as described below by pasture, fire closures prohibited livestock use on some of the pastures. Therefore, the permitted 3,658 AUMs were rarely available for livestock grazing in many pastures due to repeated fire and post fire recovery time

Utilization

Utilization was recorded at key areas (Appendix F, Map 1) between 2004 through 2014 for the pastures used on the allotment (Cooperative Extension Service et al., 1999).

Thurber's needlegrass and Idaho fescue were measured in three years at 0-2 percent utilization. Measured utilization by pasture for crested wheatgrass ranged between 0 and 47 percent (Table 9). Key areas represent a larger area whether it is a pasture, allotment, wildlife habitat area, herd management area, or watershed. The utilization recorded at these sites represents the average use across the entire allotment/pasture.

The allotment is divided into pastures. Some pastures have more than one key area. When there is more than one site in a pasture, the sites are looked at individually to see what location may be more representative than others; and collectively to determine the utilization of the pasture as a whole. Table 9 shows individual readings, not averages

Livestock Trailing

The livestock trailing EA identifies that trailing can be authorized annually in the allotment (EA# DOI-BLM-ID-T010-2012-0004-EA). There are four applicants that can be authorized to trail cattle and sheep through the allotment. When trailing of cattle or sheep takes place, it occurs at various times throughout the year to facilitate appropriate seasons of grazing use for individual applicants. Furthermore, timing of trailing events vary annually based on factors such as forage production, drought, resource conditions, weather, wildfire, court decisions, and individual livestock operations

Post-fire Grazing Reintroduction

Adjustments have been made following fires to allow for grazing rest of burned areas. Criteria have evolved over the last decade as to when livestock grazing can resume following wildfires. Prior to the 2007 Murphy Complex Fire, burned areas were rested for a minimum of two growing seasons.

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Following the Murphy Complex Fire, the JFO ID Team developed objectives included in the ESR plan to determine when resumption of livestock grazing would be appropriate on the burned areas. Instead of the usual rule of two years rest, the team would monitor and review each allotment or pasture after the growing season to determine if objectives were being met. In many cases, previous seedings recovered much faster than two years. These seedings could potentially grow back in just one growing season, and allow for the resumption of livestock grazing as early as the following summer if objectives were met.

After the 2012 Kinyon Road Fire, monitoring data was collected to document post-fire recovery in the allotment in 2013 (Appendix D). After review, it was determined the ESR plan objectives were met (see Standard 1) and resumption of livestock grazing was appropriate at that time.

Table 8: Actual Use by Guerry, Inc. in Balanced Rock Pasture

Devil Creek Balanced Rock (Balanced Rock) Sheep Use					
Year	**Livestock Number**	**On Date**	**Off Date**	**AUMs**	**Total AUMS**
2004	846	4/21/2004	5/3/2004	48	69
	1,053	5/19/2004	5/20/2004	9	
	971	6/2/2004	6/2/2004	4	
	846	6/13/2004	6/13/2004	4	
	1,000	6/30/2004	6/30/2004	4	
2005	495	4/16/2005	4/29/2005	30	72
	620	4/30/2005	5/7/2005	22	
	984	5/31/2005	6/1/2005	9	
	996	6/2/2005	6/2/2005	4	
	875	6/8/2005	6/8/2005	4	
	620	6/16/2005	6/16/2005	3	
2006	741	4/14/2006	4/27/2006	45	57
	1,003	5/18/2006	5/18/2006	4	
	999	5/21/2006	5/21/2006	4	
	819	5/24/2006	5/24/2006	4	
2007	743	4/9/2007	4/16/2007	26	70
	1,020	5/6/2007	5/6/2007	4	
	902	5/6/2007	5/20/2007	20	
	901	6/4/2007	6/4/2007	4	
	1,797	6/16/2007	6/17/2007	16	
2008	825	3/29/2008	4/12/2008	54	158
	1,590	6/16/2008	6/30/2008	104	
2009	1,540	5/8/2009	5/12/2009	33	53
	755	6/15/2009	6/20/2009	20	
2010	1,615	5/21/2010	6/1/2010	84	84
2011	1,050	4/14/2011	4/29/2011	73	73
2012	1,000	4/11/2012	4/26/2012	69	69
2013	1,120	4/11/2013	4/24/2013	68	68
Average:					77

Table 9: Summary of Utilization by Species between 2004 and 2014*

Grazing Year	Pasture	% Average Utilization by Species					
		Crested Wheatgrass	Thurber's Needlegrass	Sandberg Bluegrass	Squirreltail	Idaho Fescue	Multiple Species**
2014	Big Bend	-	2	-	-	-	-
2013	-	-	-	-	-	-	-

Grazing Year	Pasture	% Average Utilization by Species					
		Crested Wheatgrass	Thurber's Needlegrass	Sandberg Bluegrass	Squirreltail	Idaho Fescue	Multiple Species**
2012	Big Bend	-	0	-	-	-	-
		0	-	-	-	-	-
2011	Big Field	15	-	-	-	-	-
2010	North Winter	19	-	-	-	-	-
	South Winter	17	-	-	-	-	-
	South Kerbs	16	-	-	-	-	-
	South Winter	11	-	-	-	-	-
		13	-	-	-	-	-
2009	-	-	-	-	-	-	-
2008	South Winter	8	-	-	-	-	-
		8	-	-	-	-	-
	South Kerbs	12	-	-	-	-	-
	South Winter	8	-	-	-	-	-
		5	-	-	-	-	-
	Bull Horn	8	-	-	-	-	-
	South Winter	12	-	-	-	-	-
	South Kerbs	12	-	-	-	-	-
	Big Field	3	-	-	-	-	-
		4^	-	-	-	-	-
		3^	-	-	-	-	-
		3^	-	-	-	-	-
		47	-	-	-	-	-
		25	-	-	-	-	-
		32	-	-	-	-	-
2007	Big Field	9	-	-	-	-	-
		24	-	-	-	-	-
2006	Big Bend	-	-	19	-	-	-
		40	-	-	-	-	-
		21	-	-	-	-	-
		38	-	-	-	-	-
		-	-	14	-	-	-
		-	-	-	9	-	-
		13	-	-	-	-	-
		26	-	-	-	-	-
		-	-	12	-	-	-
		-	-	-	9	-	-
		-	-	12	-	-	-
		-	-	-	14	-	-
		12	-	-	-	-	-
		-	-	-	-	1	-
		-	-	-	8	-	-
2005	-	-	-	-	-	-	-
2004	N. End Field	-	-	-	-	-	31 26
	School Bus	-	-	-	-	-	27

*Years without numerical entries reflect no data availability

**Utilization data was collected on multiple species using the Landscape Appearance Method (Cooperative Extension Service et al., 1999)

^Utilization data was collected using the Landscape Appearance Method (Cooperative Extension Service et al., 1999)

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Vegetation & Wildfire

Wildfires have burned most of the allotment, reducing sagebrush (*Artemisia* spp.) shrub-steppe habitat to a few small scattered patches. Lightning has been the cause of most fires. While fire has historically occurred at intervals of 60-110 years (Whisenant, 1989), much of the allotment has experienced more than three fires within the past decade (Appendix F, Map 15). These changes in fire regimes have altered plant community structure and soil exposure in response to fire events where the number and frequency of rangeland fires has increased over the last 40 years and have resulted in the conversion of sagebrush steppe vegetation into grassland communities (Kaltenecker & Wicklow-Howard, 1994).

To address resource concerns regarding post-fire recovery and the potential for soil loss and dominance of burned areas by invasive plants and/or noxious weeds, most of the burned areas in the allotment were drill and/or aerially seeded consistent with Emergency Stabilization and Rehabilitation (ESR) plans (Appendix A). The stabilization treatments were developed with seed mixes predominately using variations of native and non-native species such as crested wheatgrass (*Agropyron cristatum*), 'Secar' Snake River wheatgrass, bluebunch wheatgrass (*Pseudoroegneria spicata*), and intermediate wheatgrass (*Thinopyrum intermedium*) to stabilize soils, reduce establishment or spread of invasive annuals, and to decrease erosion. In addition, some mixes also contained sagebrush, squirreltail (*Elymus elymoides)*, Sandberg bluegrass (*Poa secunda*), along with alfalfa (*Medicago sativa)*, yarrow (*Achillea* spp.), limited amounts of four-wing saltbush (*Atriplex canescens*), and numerous other species. A summary of the most recent fires, seed mixes, and the acres burned can be reviewed in Appendix A, Appendix F (Maps 3 to 15), and in the Project Record. Refer to Appendix B for common and scientific names of plants present in the allotment.

Pasture Summaries

Balanced Rock Pasture

Balanced Rock Pasture is a sheep pasture with a season of use starting from early or mid-April to the end of June. It has been grazed each of the last ten years with consecutive use not exceeding two weeks at a time. However, sheep are often trailed through the pasture to other allotments over one or two days; although time frames may be extended due to inclement weather, wet soil conditions, or other unexpected circumstances. Average actual use in the last ten years was 77 AUMs per year, the average stocking rate was 33 acres per AUM.

Thirteen fires have affected various parts of the Balanced Rock Pasture since 1974. Although small portions (<100 acres) of this pasture have burned more recently in 2007, 2012, and 2013 around the perimeter, the Clover Fire in 2005 burned virtually the entire pasture (Appendix A; Appendix F, Map 3 and 15). Prior to that, the majority of the pasture had not burned since 1999. Rehabilitation efforts after the Clover Fire resulted in 77 percent of the pasture being drill seeded with perennial grasses, shrubs, and forbs; and 81 percent aerially seeded with Wyoming sagebrush treatment. A minimum of two growing seasons of rest occurred after the 2005 fire, all later fires had no substantial impacts (<100 acres) (Table 8).

North End Field Pasture

According to the grazing prescription in the 1998 EA, the North End Field Pasture was scheduled to be grazed in the winter between December and February. It is on a rotation, Nov-Jan and Jan-Feb, so that the pasture is not grazed the same time each year. North End Field has been rested from grazing five out of the last ten years due to fire closures. In the 5 times that the pasture had been grazed in the last 10 years, the average actual use was 869 AUMs with an average stocking rate of 4 acres per AUM.

Eighteen fires have affected various parts of North End Field since 1976. The Balanced Road and Kinyon Road Fires burned 75 percent of the pasture in 2012 (Appendix A; Appendix F, Map 4 and 15). Prior to that, virtually all of the pasture burned in both the 2005 Clover Fire (96 percent) and 2007 Murphy

Complex Fire (88 percent). Following the Clover Fire, 44 percent of the pasture was drill seeded with perennial grasses, shrubs, and forbs; and 76 percent was aerially seeded Wyoming big sagebrush. After the 2007 and 2012 fires, no mechanical drill seeding occurred.

North Kerbs Pasture

According to the grazing prescription in the 1998 EA, the North Kerbs Pasture was scheduled to be grazed in the fall and winter between November-December. It is on a rest rotation grazing schedule; rested every other year. North Kerbs has been rested from grazing eight out of the last ten years. For the two times that the pasture has been grazed in the last 10 years, the average actual use was 204 AUMs with an average stocking rate of 11 acres per AUM.

Six fires have affected various parts of North Kerbs Pasture since 1998. Most recently, the Balanced Road and Kinyon Road Fires in 2012 re-burned 88 percent of the pasture after the Long Butte Fire burned the southwest half in 2010 (Appendix A; Appendix F, Map 5 and 15). Prior to that, all of the pasture burned in both the 2005 Clover Fire and the 2007 Murphy Complex Fire. The last mechanical drill seeding on record occurred following the Clover Fire.

School Bus Pasture

According to the grazing prescription in the 1998 EA, the School Bus Pasture was scheduled to be grazed in the late winter/early fall between February to Mid-March. It is on a rest rotation grazing schedule; rested every other year. The School Bus Pasture has been rested from grazing eight out of the last ten years. For the two times that the pasture has been grazed in the last 10 years, the average actual use was 325 AUMs with an average stocking rate of 6 acres per AUM.

Six fires have affected various parts of the School Bus Pasture since 1997. The most recent Balanced Road and Kinyon Fires burned in 2012 and combined together, burned the entire pasture (Appendix A; Appendix F, Map 6 and 15). Prior to that, the entire pasture burned in each of the 2005 Clover Fire and the 2007 Murphy Complex Fires, and the 2010 Long Butte Fire re-burned both the northern and southern portions of the pasture. Mechanical drill seeding took place only once and was accompanied by aerial seeding of sagebrush after the 2005 Clover Fire across 82 percent of the pasture. Aerial seeding of sagebrush also occurred after the Murphy Complex (96 percent) and, most recently, after the Long Butte Fire (68 percent).

Bull Horn Pasture

According to the grazing prescription in the 1998 EA, the Bull Horn pasture was scheduled to be grazed in the spring from March to April. It is on a rest rotation grazing schedule; rested every other year. The Bull Horn Pasture has been rested from grazing five out of the last ten years. For the five times that the pasture has been grazed in the last 10 years, the average actual use was 492 AUMs with an average stocking rate of 4 acres per AUM.

Five fires have affected the Bull Horn pasture since 2005. The entire pasture burned in the 2005 Clover Fire, 2007 Murphy Complex Fire, and the 2010 Long Butte Fire. Additionally, 82 percent of the pasture burned again in the 2012 Kinyon Road Fire (Appendix A; Appendix F, Map 7 and 15). Mechanical and aerial seeding took place across 87 percent of the pasture in 2005, and records indicate that no drill seeding has occurred since then. Aerial seed applications of sagebrush took place in 2008 and 2011, but subsequent fires eliminated the seedlings.

South Kerbs Pasture

According to the grazing prescription in the 1998 EA, the South Kerbs Pasture was scheduled to be grazed in the spring from March to April. It is on a rest rotation grazing schedule; rested every other year. The South Kerbs Pasture has been rested from grazing seven out of the last ten years. For the three times

that the pasture has been grazed in the last 10 years, the average actual use was 745 AUMs with an average stocking rate of 3 acres per AUM.

Ten fires have affected various parts of South Kerbs since 1974. Virtually the entire pasture burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, the 2010 Long Butte Fire, and most recently again in the 2012 Kinyon Road Fire (Appendix A; Appendix F, Map 8 and 15). The last drill seeding on record took place following the 2005 Clover Fire, and along with aerial application treated 68 percent of the pasture. Since then, two additional aerial seedings of sagebrush have occurred within the seeded perennial grassland.

North Winter Pasture

According to the grazing prescription in the 1998 EA, the North Winter Pasture was scheduled to be grazed in the fall, winter, and spring from April-May and November-December. It is on a rotation grazing system; rested fall and spring every other year. The North Winter Pasture has been rested from grazing five out of the last ten years. For the five times that the pasture had been grazed the last 10 years, the average actual use was 269 AUMs with an average stocking rate of 6 acres per AUM.

Nine fires have affected various parts of the North Winter Pasture since 1974. The entire pasture burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, and again in the 2012 Kinyon Road Fire (Appendix A; Appendix F, Map 9 and 15). The last mechanical drill seeding on record occurred following the 2005 Clover Fire and was followed by aerial seeding of sagebrush in 2008 and 2010.

South Winter Pasture

According to the grazing prescription in the 1998 EA, the South Winter Pasture was scheduled to be grazed in the winter between December and February. It is on a rotation grazing system, Dec-Jan and Jan-Feb, so that the range is not grazed the same time each year, opposite of North End Field Pasture. The South Winter Pasture has been rested from grazing three out of the last ten years. For the seven times that the pasture has been grazed in the last 10 years, the average actual use was 311 AUMs with an average stocking rate of 9 acres per AUM.

Thirteen fires have burned various parts of the South Winter Pasture since 1974. The 2005 Clover Fire, 2007 Murphy Complex Fire, 2010 Long Butte fire, and the most recent Kinyon Road Fire each burned virtually the entire pasture (Appendix A; Appendix F, Map 10 and 15). The last mechanical seeding on record took place following the 2005 Clover Fire and was implemented across the northern half of the pasture.

Corral Field Pasture

According to the grazing prescription in the 1998 EA, the Corral Field Pasture was scheduled to be grazed in May. It is on a rest rotation grazing system so that the pasture is not grazed during the same time in consecutive years. The Corral Field Pasture has been rested from grazing seven out of the last ten years. For the three times that the pasture had been grazed in the last 10 years, the average actual use was 205 AUMs with an average stocking rate of 10 acres per AUM.

Eleven fires have affected various parts of Corral Field Pasture since 1974. The entire pasture burned in both the 2005 Clover Fire and the 2007 Murphy Complex Fire. The 2010 Long Butte Fire burned the northern half of the pasture and the 2012 Kinyon Road Fire re-burned much of that same area (66 percent).The most recent Coonskin Fire in 2013 burned 21 percent of the southern portion of the pasture (Appendix A; Appendix F, Map 11and 15). Subsequent to the Kinyon Road Fire, approximately 1,200 acres were drill seeded followed by 1,180 acres of aerial sagebrush seeding; drill seeding occurred on 460 acres following the Coonskin Fire, also followed by aerial sagebrush seeding.

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Big Field Pasture
According to the grazing prescription in the 1998 EA, the Big Field Pasture was scheduled to be grazed in January-May in a deferred rotation grazing system. Every other year the pasture is grazed January-March and the other years is grazed March-May so that the pasture is not grazed the same time each year. The Big Field Pasture has been rested from grazing three out of the last ten years. For the 7 years that the pasture has been grazed in the last 10 years, the average actual use was 1,430 AUMs with an average stocking rate of 5 acres per AUM.

Eleven fires have affected various parts of Big Field Pasture since 1980. Several fires have burned only small areas while the 1995 Blue Gulch Fire burned nearly the entire pasture, and the 2007 Murphy Complex burned the south half. The most recent 2013 Coonskin Fire (small at 111 acres) and the 2012 Kinyon Road Fire burned a total of 23 percent along the western boundary and the northern portion of the pasture (Appendix A; Appendix F, Maps 11 and 14). The majority of the aerial and drill seeding on record occurred after the 1995 Blue Gulch Fire, followed by aerial sagebrush seeding across 13 percent after the Murphy Complex Fire. Currently this pasture consists almost entirely of seeded perennial grassland with isolated small patches of intact sagebrush.

Big Bend Pasture
According to the grazing prescription in the 1998 EA, the Big Bend Pasture was scheduled to be grazed in November-December. Grazing has occurred outside of the November-December rotation system the last ten years, with the pasture being grazed as early as mid-February to mid-May due to the closure of other pastures following fire. For the 6 times the pasture has been grazed in the last 10 years, the average actual use was 390 AUMs with an average stocking rate of 21 acres per AUM.

Nine fires have affected various parts of Big Bend Pasture since 1972. The 2007 Murphy Complex Fire burned across the entire pasture (Appendix A; Appendix F, Maps 12 and 14). Prior to that, only small portions of Big Bend Pasture had burned. In addition, the most recent Coonskin Fire burned less than 1 percent along the northwestern boundary in 2013. Following the Murphy Complex Fire, a small area of the pasture was chemically treated with glyphosate to reduce cheatgrass, and a small area along the western boundary was drill seeded. Aerial seeding for sagebrush occurred over two consecutive years, covering the majority of the pasture. Currently, the Big Bend Pasture consists almost entirely of seeded perennial grassland with some small islands of sagebrush.

Exclosure
The exclosure accounts for 1,306 acres of the allotment and is completely fenced on the DCBR side (west side). Gap fencing also exists on the east side of the canyon adjacent to the 2 different allotments that border Devil Creek canyon. No livestock grazing has been authorized in the exclosure since 2000.

Five fires have occurred in the exclosure since 1980. The 1995 Blue Gulch Fire burned the majority of the exclosure and was subsequently mechanically and aerially seeded. The 2007 Murphy Complex burned most of the southern and central areas and the most recent 2012 Kinyon Road Fire burned the northern portion (Appendix A; Appendix F, Maps 13 and 14). In 2014, observations in the exclosure indicated recovery from the most recent fire, with established crested wheatgrass plants.

Since livestock grazing has not occurred since 2000 and will continue to be excluded, this designated exclosure will not be discussed further.

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Monitoring

Ecological Site Description and Baseline Reference Site

A total of 3 ecological sites occur within the allotment, however, most of the area is within the Loamy 8-12" Wyoming sagebrush (*Artemisia tridentata* ssp. *wyomingensis*)/bluebunch wheatgrass (*Pseudoroegneria spicata*)-Thurber's needlegrass (*Achnatherum thurberianum*) ecological site, which is also where all study sites within the allotment occur. Additional ecological sites are Loamy Bottom 8-14", Sandy Loam 8-12", and Loamy 8-12". The first two occur in the northern end of the allotment and together constitute less than 150 acres (less than 0.4 percent of the allotment). Due to the location and the small amount of area they represent in the allotment, no data were collected on these sites; therefore, they will not be discussed further.

Natural and man-made forces have impacted the vegetation community in the allotment over time. In the 1960s and 1970s, sagebrush in the Jarbidge resource area was sprayed with herbicide to reduce cover, and large areas of the allotments were seeded with crested wheatgrass to provide forage for livestock use (allotment file). Since 2005, the fire frequency interval has shortened considerably within the allotment. In the last 10 years, Pastures 3 through 9 burned at least 30 percent of their area 4 times, putting a majority of the allotment at a 2.5 year fire interval.

Extensive drill seeding occurred in 1995 after the Blue Gulch Fire and in 2005 after the Clover Fire. As a result of wildfire and rangeland seeding, conditions would be expected to resemble a similar plant community to 'Community Phase 1.3: Bluebunch Wheatgrass – Sandberg Bluegrass (*Poa secunda*)' (ESD R011XY001ID) but with the seeded deep-rooted perennial grasses replacing native deep-rooted perennial grasses. However, repeated and short fire frequency in the recent past has greatly reduced Wyoming big sagebrush and other shrubs along with several other desirable understory species such as Indian ricegrass (*Achnatherum hymenoides*) and Thurber's needlegrass. Forbs remain about in the same proportion as Plant Community A.

Rangeland Health Field Assessments & Vegetation Transects

In 1999, an "Assessment for Rangeland Health Standards" for the allotment was completed and included site monitoring and additional information from one trend site. At the time of the assessment, the overall findings resulted in the allotment meeting each applicable standard.

In 2014, an interdisciplinary (ID) team conducted IIRH field evaluations at twelve sites in the allotment during April and June. Protocols used were in accordance with techniques identified in BLM technical reference 1734-6 Interpreting Indicators of Rangeland Health – Version 4 (USDI BLM, 2005). Each pasture contains a minimum of one IIRH site at which Step Point Method (BLM, 1996) ground cover transects were collected. North End Field, Corral Field, and Big Field pastures include additional ground cover transects and soil stability information. Of the twelve IIRH field evaluations, five were conducted at Sage-grouse Habitat Assessment Framework (HAF) sites that were previously determined at random (Appendix C and E; Appendix F, Map 1).

The ID team completed an IIRH field evaluation form at each site, took photographs, and listed observed plant species. The sites were rated on the degree of departure from reference condition based on the ecological site description (ESD) reference sheet. In addition to evaluating rangeland health indicators at each of the twelve IIRH sites, the ID Team also examined other areas to ensure evaluation sites were representative of the vegetation communities throughout each pasture.

Indicator and attribute ratings for each pasture in the allotment collected at the IIRH evaluation sites were compared to the Natural Resource Conservation Service's (NRCS) reference sheet for the soil type and potential vegetation community associated with the Loamy 8-12" Wyoming sagebrush/bluebunch

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wheatgrass-Thurber's needlegrass ecological site (ESD R011XY001ID) and are summarized in Appendix C – Tables 1 to 4.

Trend

Five trend sites are present in the allotment, 3 are located in the Big Field Pasture and 2 are located in the Big Bend Pasture. Nested Frequency protocols have been used to collect data at the sites (BLM, 1996). Nested frequency records the frequency of plant species at each site using 4 different nested plots. For species that are common, the smallest nested plot (plot 1) size is generally chosen to describe changes in frequency. A larger plot size is generally chosen (plots 2-4) for species that occur at a lower frequency.

Factors that limit the comparison of trend data over time include: 1) data were not always collected at the same time of the year; 2) not all forbs were recorded by genus and species; 3) annual forbs were not always noted; 4) inconsistencies between persons reading the photo plots over the years; 5) ground cover for shrubs and biological soil crusts were not always recorded when the plots were established; 6) repeated short fire return interval between site readings.

A short summary of relevant trend monitoring data are included under Standard 1 (Watersheds) and Standard 5 (Seedings). With the exception of Site 12S12E10, all others were burned over in the more recent 2007 and 2012 fires, making the data less relevant to trend interpretations. Effects of fire and subsequent drill seedings on vegetation should be considered when comparisons of current trend data are made to the previously collected trend data.

2006 Ecological Site Inventory (ESI)

In May of 2006, Ecological Site Inventory (ESI) data were collected at two sites in the Big Field Pasture and at three sites in Big Bend Pasture. All but one site, RA-34 in Big Field Pasture (Appendix F, Map 1), burned during the Murphy Complex Fire in 2007 one year after the inventory took place. As a result, the cover and production information collected in 2006 is no longer current for these sites. Findings for the one remaining unburned site RA-34 (Appendix D) are discussed where applicable in this document.

Emergency Stabilization & Rehabilitation and Grazing Resumption Monitoring

Monitoring data were collected at seven sites (Appendix D; Appendix F, Map 1) to document post-fire recovery and to determine if resumption of grazing would be appropriate based on the most recent 2012 Kinyon Road ESR Plan. Additional fire information can be found in Appendix A and includes brief descriptions of seed mixes from 2004-2014 and associated treatment acres (Appendix A). Detailed descriptions of BLM's ESR post-fire treatments can be found in the project record. All pastures consist almost entirely of seeded perennial grassland and despite several post-fire aerial sagebrush seed applications, generally lack a shrub component. This is for the most part due to re-burning of prior seedings in the 2007 Murphy Complex, and the 2012 Kinyon Road and Balanced Road fires. Most of the area burned by these fires was not seeded with sagebrush due to limited seed supply and regional priorities. In addition, sagebrush seedings in areas that have not re-burned have not had time to fully express as a major community component. This typically takes 15 to 20 years following seeding in the absence of repeated fire.

Sage-grouse Habitat Assessments

The current conditions of sage-grouse seasonal habitats were assessed following protocols outlined in the Sage-grouse Habitat Assessment Framework (HAF) (Stiver et al., 2010). Sage-grouse habitat suitability assessments were conducted in 2012 and 2013 at 10 sites within the allotment (Appendix F, Map 1). Several of the 2012 sites burned shortly after data collection during the 2012 Kinyon Road Fire and primarily serve as a pre-fire comparison at locations where 2014 step point method (BLM, 1996) data were collected.

General

Aside from the IIRH, HAF, post-fire grazing resumption, and ESI monitoring results displayed in Appendix D, additional data were reviewed and deemed unusable due to subsequent fires, especially if no corresponding post-fire monitoring occurred at the same location to reflect current condition. This includes several 2012 HAF sites, one trend photo plot site, and all but one of the 2006 ESI plots.

Noxious Weeds

The State of Idaho has listed 65 plant species as noxious weeds; out of these, five different species have been identified and treated within the allotment (Appendix F, Map 18). Most known noxious weed infestations are found and treated through the Twin Falls District (TFD) ESR program. Approved ESR plans allow three year funding for weed control and play a vital part in the reestablishment of naturally recovering vegetation, as well as in the successful establishment of newly seeded areas. Weed personnel grid the burned areas and treat noxious weed during reestablishment of desired vegetation. Crews also treat road corridors throughout the field office which helps prevent the spread of weeds from vehicles that may be transporting weed seeds to new areas. Control methods used within the TFD for the treatment of noxious weeds include biological, mechanical, and chemical. 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.

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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 allotment due to variances in the land type and geographical area. Of the eight Idaho Standards for Rangeland Health, the following standards are applicable:

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

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

Standards 2, 3, 4, and 6 do not apply to the allotment.

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
Multiple soil series exist within the allotment and typically consist of silt loam soils that cover much of the rhyolite and basalt flats that make up the majority of the Jarbidge Field Office. Most of the allotment lacks any relevant topographic features except for the Devil Creek drainage and steeper relief along the short stretch of the eastern boundary of the allotment adjacent to Salmon Falls Creek Canyon.

The Soil Survey Geographic (SSURGO) Database shows that 23 percent of the allotment has a severe wind erosion hazard, 72 percent has a moderate wind erosion hazard, 3 percent has a slight wind erosion hazard, and 3 percent has no data for wind erosion hazard within the canyon breaks.

In addition, soil survey data shows that the allotment is divided in terms of water erosion factor with 1 percent as severe within the canyon breaks, 49 percent as high, and 49 percent as medium. No data is available for the remaining 2 percent of the allotment.

The attributes of rangeland health related to Standard 1 are Soil and Site Stability and Hydrologic Function. Twelve of the 17 indicators utilized in the Interpreting Indicators of Rangeland Health (IIRH) (Appendix C) are related to the Soil and Site Stability and Hydrologic Function attributes. The analysis of Standard 1 considers the ratings of the soil and site stability and hydrologic function attributes (Appendix C). Locations for IIRH evaluations and all other monitoring sites that contribute to this analysis can be found on Map 1 in Appendix F.

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Balanced Rock Pasture

Rangeland Health
Site RH01 is located in a seeded vegetation community where 'Secar" Snake River wheatgrass is the dominant cover (70% cover) and Sandberg bluegrass is sub-dominant (17% cover). Biological soil crusts comprise 11 percent cover (Appendix D) at the site. The site is of relatively flat topography and burned in the Clover Fire of 2005. A soil stability test was completed at the site during IIRH and the soil stability value averaged 4.8, indicating adequate soil surface resistance to erosion.

The field evaluation (Appendix C - Table C-1) indicates that water flow patterns are absent with plentiful seeded perennial deep-rooted perennial bunchgrasses providing effective cover. A few rills are present in an adjacent natural drainage of increased slope within otherwise flat topography. Active pedestaling is rare and limited to Sandberg bluegrass dispersed within interspaces, resulting in a slight-to-moderate rating. While some loss of the A horizon was observed, the overall stable conditions contributed to a none-to-slight rating for soil surface resistance to erosion and soil surface loss or degradation.

Deep-rooted perennial bunchgrasses and shallow-rooted perennial species are well distributed at the site. Sagebrush and rabbitbrush (*Chrysothamnus & Ericameria spp.)* are rare and their recruitment may be restricted due to the abundance and density of the seeded cultivar 'Secar' Snake River wheatgrass (*Elymus wawawaiensis*). Bare ground falls within expected ESD levels at 9 percent. Non-persistent litter (small twigs, leaves and other plant debris scattered on the ground) is more than expected for the site, totaling 64 percent cover. While the seeding appears robust and vigorous, very few plants displayed seed heads and were reproductive during the time of the field evaluation. However, 'Secar' Snake River wheatgrass tends to have relatively low seed head production, particularly in older plants.

The soil and site stability and hydrologic function attributes were each rated none-to-slight departure from the reference condition (Table SOIL-1). As a whole, the hydrologic function allows for the proper capture, storage, and management of moisture and, along with sufficient soil and site stability, appears to be functioning.

Habitat Assessment Framework
In HAF site #1, a sage-grouse habitat assessment was undertaken in May of 2013 and provides additional cover information for the eastern portion of the pasture (Appendix E - Table E-1). The ground cover transect shows that increased levels of rocks and gravels add to soil and site stability and biological soil crusts comprise 7 percent cover. Litter is above the range described in the ESD reference sheet with a total of 52 percent, and contributes to the low amount of bare ground (3%). While sagebrush cover is reduced, some seedlings have established and add to infiltration and overall hydrologic function.

North End Field Pasture

Rangeland Health
Site RH02 is located in a seeded vegetation community where Sandberg bluegrass is the dominant cover (14% cover) and 'Secar" Snake River wheatgrass is sub-dominant (12% cover). Biological soil crusts comprise 10 percent cover (Appendix D) at the site. Bare ground exceeds the range described in the ESD reference sheet at 44 percent. The site is of relatively flat topography and burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, and the 2012 Kinyon Road Fire. A soil stability test was completed at the site during IIRH and the soil stability value averaged 2.4, which is lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a moderate departure from the reference condition for soil surface resistance to erosion.

Signs of active and historic soil erosion are present (Appendix C – Table C-1) in the form of pedestals and water flow patterns associated with drill rows from previous mechanical seeding activities. Some hoof imprints are present at the site, with some up to 4 inches deep. Both pedestals and water flow pattern indicators were rated at a slight-to-moderate departure from reference condition.

The indicator for soil surface loss or degradation was rated moderate due to some wind deposition of grey silty sediments under the canopies of some bunchgrasses and in a few patches across the soil surface; noted to be a result of wildfire.

The indicator for plant community composition and distribution relative to infiltration, as it relates to hydrologic function, is rated slight-to-moderate due to shrubs being essentially absent, although other vegetation is abundant and vigorous. Re-establishment of sagebrush has been hindered by repeated wildfire in this area.

Deep-rooted perennial bunchgrasses dominate production at the site, followed by shallow-rooted perennial bunchgrasses. Litter levels are lower than the range described in the ESD and represent only 9 percent cover. This can limit site stability and reduce much needed organic matter necessary for nutrient exchange and water holding capacity within the soil profile. However, lower levels of litter are expected following wildfire, particularly with dry climatic conditions during the growing season following the fire.

The soil and site stability attribute was rated a moderate departure from the reference condition due to slight pedestalling, soil surface loss or degradation, higher bare ground, and lower soil surface resistance to erosion. The hydrologic function attribute was also rated moderate due to the lack of a seed source for recruitment of shrubs to assist in the capture of snow, reduced soil surface resistance to erosion, and reduced litter (Table SOIL -2).

A step point method transect was performed to record cover data and photos were taken at site RHPP02 to provide information for the northern portion of the pasture. Cover information indicates that non-persistent litter is above expected levels at 55 percent. Bare ground was recorded at 14 percent cover, and is within the range described in the ESD reference sheet. Biological soil crusts were 7 percent cover. Deep-rooted perennial bunchgrasses and shallow-rooted bunchgrasses are both abundant at the site.

Post-fire Grazing Reintroduction Monitoring
After the Kinyon Road Fire of 2012, this pasture was closed to grazing. In the fall of 2013, resource specialists collected cover data in this and several other pastures to help determine if livestock grazing could resume (Appendix D). Ground cover data shows that deep- and shallow-rooted bunchgrasses comprised 31 and 21 percent cover, respectively. Litter was recorded at 12 percent, biological crusts at 1 percent, and bare ground at 24 percent. Based on an evaluation of collected data, monitoring results met the established ESR objectives and indicated that resumption of grazing was appropriate within this pasture.

North Kerbs Pasture

Rangeland Health
Site RH03 is located in a seeded vegetation community where ‘Secar” Snake River wheatgrass is the dominant cover (38% cover) and Sandberg bluegrass is sub-dominant (17% cover). Biological soils crusts comprise 11 percent cover (Appendix D) at the site. Bare ground is 28 percent and where bare soils are present, surface sealing is common. The site is of relatively flat topography and burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, and the 2012 Balanced Road Fire. A soil stability test was completed at the site during IIRH and the soil stability value averaged 2.4, which is lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a moderate departure from the reference

condition for soil surface resistance to erosion. Rocks and gravel provide permanent cover at the site that aids in stabilizing soils, in addition to litter that totals 29 percent cover.

The soil surface loss and degradation indicator was rated slight-to-moderate due to wind erosion following wildfire, especially in the interspaces. This is displayed by areas of deposition of ashy grey silts on the leeward side of plants, with some swaths that are 6 to 8 feet wide and up to 2 inches deep. Hoof prints were observed at the site but are limited to areas directly adjacent to a livestock trail. In general, livestock trails are uncommon. No water flow patterns were observed.

Lack of shrubs can affect hydrologic function and soil function through changes in soil moisture and recharge patterns; however, these functions are, in part, ameliorated by the dominating cover of deep-rooted perennial bunchgrasses within the seeding. The soil and site stability attribute was rated a slight-to-moderate departure from the reference condition due to soil surface loss or degradation and lower soil surface resistance to erosion. The hydrologic function attribute was also rated slight-to-moderate, due to the lack of shrubs (Table SOIL-3).

<u>School Bus Pasture</u>

Rangeland Health
Site RH04 is located in a seeded vegetation community where Sandberg bluegrass is the dominant cover (40% cover) and deep-rooted perennials such as crested wheatgrass and 'Secar" Snake River wheatgrass are the sub-dominant (25% cover) cover. Biological soil crusts comprise 9 percent cover (Appendix D) at the site. Bare ground (22%) was near the range described in the ESD reference sheet and displays surface sealing in isolated larger patches. The site is of relatively flat topography and burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, the 2010 Long Butte Fire, and the 2012 Balanced Road Fire. A soil stability test was completed at the site during IIRH and the soil stability value averaged 2.6, which is lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a moderate departure from the reference condition for soil surface resistance to erosion. Gravels and cobbles present at the site aid in protection from soil surface erosion. Total litter was recorded at 44 percent cover at the site.

Some slight active pedestaling was observed (Appendix C – Table C 1) and was rated a slight-to-moderate departure from reference condition. Some older physical disturbances from hooves in the form of depressions up to two inches deep are present. Wind deposition of silty sediments was observed at the site in patches as large as 10 to 20 feet and 1 to 3 inches deep, signifying wind erosion following wildfire and contributing to the moderate departure from reference conditions for wind scoured, blowouts, and/or deposition areas.

The indicator for plant community composition and distribution relative to infiltration, as it relates to hydrologic function, was rated at a slight-to-moderate departure from the reference condition due to the absence of shrubs. Some of the Snake River wheatgrass plants appeared stressed and displayed smaller plant stature and lacked seed heads compared to neighboring plants and other species. This was a commonly observed phenomenon across the northern half of the allotment and seems to only affect seeded 'Secar' Snake River wheatgrass and was likely due to recent wildfire followed by dry climatic conditions during the growing season. In addition, 'Secar' Snake River wheatgrass tends to have relatively low seed head production, particularly in older plants.

Lack of shrubs can affect hydrologic function and soil function through changes in soil moisture and recharge patterns; however, these functions are, in part, ameliorated by the abundant cover of deep-rooted perennial bunchgrasses within the seeding. The soil and site stability attribute was rated a slight-to-moderate departure from the reference condition due to soil surface loss or degradation and low soil

surface resistance to erosion. The hydrologic function attribute was also rated slight-to-moderate due primarily to the lack of shrubs (Table SOIL-4).

Post-fire Grazing Reintroduction Monitoring
In the fall of 2013, resource specialists collected cover data in this and several other pastures to help determine if livestock grazing could resume (Appendix D) following the 2012 Kinyon Road Fire. Ground cover data shows that deep- and shallow-rooted perennial bunchgrasses co-dominate cover at 33 percent. Litter was 8 percent and bare ground was 23 percent. No biological soil crusts were observed. Lower amounts of litter and biological soil crusts are expected following wildfire. Based on an evaluation of collected data, monitoring results met the established ESR objectives and indicated that resumption of grazing was appropriate within this pasture.

Bull Horn Pasture

Rangeland Health
Site RH05 is located in a seeded vegetation community where crested wheatgrass is the dominant cover (34% cover) and Sandberg bluegrass is sub-dominant (28% cover). Biological soils crusts comprise 4 percent cover (Appendix D) at the site. The site is of relatively flat topography and burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, the 2010 Long Butte Fire, and the 2012 Kinyon Road Fire. A soil stability test was completed at the site during IIRH and the soil stability value averaged 3.2, which is lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a slight-to-moderate departure from the reference condition for soil surface resistance to erosion.

The field evaluation (Appendix C – Table C-1) indicates that most indicators related to the soil and site stability and hydrologic function attributes are rated none-to-slight. Water flow patterns were not observed and pedestals were rare and associated primarily with Sandberg bluegrass, while bare ground levels were at 23 percent. The lack of a noticeable A-horizon at the site suggests that alterations of the soil surface have occurred and can likely be related to ongoing wind erosion following wildfire, resulting in a slight-to-moderate departure rating for soil surface loss or degradation.

The indicator for plant community composition and distribution relative to infiltration, as it relates to hydrologic function, shows a slight-to-moderate degree of departure. While shrubs are absent, deep-rooted perennial bunchgrasses provide for the dominant cover within the seeding, followed by a sub-dominance of shallow-rooted perennial grass species. The amount of litter was recorded at 46 percent cover, which is slightly higher than expected. As a whole, Bull Horn Pasture has a slight-to-moderate degree of departure for the soil and site stability and hydrologic function attributes (Table SOIL-5).

Post-fire Grazing Reintroduction Monitoring
In the summer of 2013, resource specialists collected cover data in this and several other pastures to help determine if livestock grazing could resume (Appendix D) following the 2012 Kinyon Road Fire. Ground cover data shows that deep-rooted perennial bunchgrasses at 24 percent dominate cover over shallow-rooted bunchgrasses at 8 percent. Additional cover was provided by 16 percent litter, 1 percent persistent litter (large twigs and woody debris), 1 percent gravel, and 1 percent rock, with 41 percent bare ground. No biological soil crusts were recorded along the transect. Higher amounts of bare ground, as well as lower amounts of biological soil crusts are expected following wildfire. Based on an evaluation of collected monitoring data, monitoring results met the established ESR objectives and indicated that resumption of grazing was appropriate within this pasture.

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South Kerbs Pasture

Rangeland Health
Site RH06 is located in a seeded vegetation community where Sandberg bluegrass and 'Secar" Snake River wheatgrass co-dominate cover at 28 and 24 percent cover, respectfully. Biological soils crusts comprise 13 percent cover (Appendix D) at the site. Bare ground exceeds the range described in the ESD reference sheet at 35 percent. Litter totaled 33 percent and provides cover and organic material to the soil. The site is of relatively flat topography and burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, the 2010 Long Butte Fire, and the 2012 Kinyon Road Fire. A soil stability test was completed at the site during IIRH and the soil stability value averaged 3.3, which is lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a slight-to-moderate departure from the reference condition for soil surface resistance to erosion.

Water flow patterns (Appendix C – Table C-1) were not observed at the site. Some slight active pedestals were observed associated with shallow-rooted Sandberg bluegrass, but pedestals are primarily historic and not active. The indicator for pedestals was rated as a slight-to-moderate departure from reference conditions. Signs of soil deposition were observed, suggesting ongoing soil movement due to wind erosion that is rated as slight-to-moderate.

The indicator for plant community composition and distribution relative to infiltration, as it relates to hydrologic function, shows a slight-to-moderate degree of departure due to shrubs being absent. Deep-rooted perennial bunchgrasses comprise 24 percent cover at the site, and shallow-rooted perennial bunchgrasses comprise 28 percent.

The soil and site stability attribute was rated a slight-to-moderate departure from the reference condition due to slight pedestalling, increased bare ground, and low soil surface resistance to erosion. The hydrologic function attribute was also rated slight-to-moderate due to the lack of shrubs to assist in the capture of snow and aid in infiltration, increased bare ground, and low soil surface resistance to erosion (Table SOIL -6).

Habitat Assessment Framework
HAF site #2 shares the same location as IIRH site RH06 and was monitored in 2012 just before the Kinyon Road Fire. The cover transects show general differences between pre- and post-fire cover; however, direct comparison between the cover transects is not appropriate due to the difference in actual transect location, as well as the difference in protocols followed to collect the data. These differences contribute to variability in cover values. Moreover, decline in vegetation and litter cover, and increase in bare ground, is expected following wildfire.

The 2012 data showed that deep-rooted perennial bunchgrass comprised 56 percent cover at the site. Meanwhile, shallow-rooted perennial bunchgrass cover was 11 percent, non-persistent litter was 45 percent, and biological soil crusts were 2 percent cover in 2012.

Post-fire Grazing Reintroduction Monitoring
In the fall of 2013, resource specialists collected cover data in this and several other pastures to help determine if livestock grazing could resume (Appendix D) following the 2012 Kinyon Road Fire. This location also serves as utilization key area site DBSK-1T. Ground cover data shows that deep-rooted bunchgrasses dominate cover at 37 percent over shallow-rooted bunchgrasses at 24 percent. Non-persistent litter is 9 percent and its reduced presence likely contributes to bare ground levels of 28 percent. No biological soil crusts were recorded along the cover transect at this site. Higher amounts of bare ground, as well as lower amounts of litter and biological soil crusts are expected following wildfire.

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Based on an evaluation of collected data, monitoring results met the established ESR objectives and indicated that resumption of grazing was appropriate within this pasture.

North Winter Pasture

Rangeland Health
Site RH07 is located in a seeded vegetation community where Sandberg bluegrass is the dominant cover (22% cover) and deep-rooted perennials such as Snake River wheatgrass and squirreltail are sub-dominant (16% cover). Biological soil crusts comprise 17 percent cover (Appendix D) at the site and provide increased soil and stability. Bare ground exceeds the range described in the ESD reference sheet at 41 percent. Non-persistent litter (23%) is only slightly below the range described in the ESD reference sheet. The site is of relatively flat topography and burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, and the 2012 Kinyon Road Fire. A soil stability test was completed at the site during IIRH and the soil stability value averaged 2.8, which is lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a moderate departure from the reference condition for soil surface resistance to erosion.

This site is situated among a network of stable ephemeral draws that are shallow and generally flow west-to-east. There is little indication of water flow patterns outside of the draws within the otherwise flat, broad valley bottom (Appendix C – Table C-3). Pedestals that are associated with Sandberg bluegrass are not active. No compaction was found outside of livestock trails that lead to the water trough about 0.25 miles away. Mosaics of windblown silts are deposited across the site and average 3 – 4 inches in depth, although the largest accumulations occur in portions of the shallow ephemeral draws. These windblown deposits suggest ongoing soil movement following the fire.

The soil and site stability attribute was rated a moderate departure from the reference condition due to increased bare ground, soil surface loss or degradation, and low soil surface resistance to erosion. The hydrologic function attribute was rated slight-to-moderate, primarily due to the lack of shrubs to assist in the capture of snow and aid in infiltration (Table SOIL-7).

Post-fire Grazing Reintroduction Monitoring
In the fall of 2013, resource specialists collected cover data in this and several other pastures to help determine if grazing could resume (Appendix D) following the 2012 Kinyon Road Fire. This location also serves as utilization key area site DBNW-1T. Ground cover data shows deep-rooted bunchgrasses at 24 percent cover and shallow-rooted bunchgrasses at 13 percent cover. Non-persistent litter is 25 percent while bare ground levels are 36 percent. No biological soil crusts were recorded at the site. Higher amounts of bare ground, as well as lower amounts of biological soil crusts are expected following wildfire. Based on an evaluation of collected data, monitoring results met the established ESR objectives and indicated that resumption of grazing was appropriate within this pasture.

South Winter Pasture

Rangeland Health
Site RH08 is located in a seeded vegetation community where Sandberg bluegrass is the dominant cover (28% cover) and deep-rooted perennials such as crested wheatgrass and squirreltail are sub-dominant (17% cover). Biological soil crusts comprise 7 percent cover (Appendix D) at the site. It was noted that biological soil crusts were stabilizing pedestals at the site, but the percentage recorded in the ground cover transect seemed to be lower than expected. Non-persistent litter cover is also less than the range described in the ESD reference sheet, totaling 23 percent. Meanwhile, bare ground exceeds the range described in the ESD reference sheet at 40 percent. The site is of relatively flat topography and burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, and the 2012 Kinyon Road Fire. A soil stability test was

completed at the site during IIRH and the soil stability value averaged 3.8, which is slightly lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a slight-to-moderate departure from the reference condition for soil surface resistance to erosion. No signs of water flow patterns were observed (Appendix C). Some pedestals are present on Sandberg bluegrass but are mostly non-active.

The soil and site stability attribute was rated a slight-to-moderate departure from the reference condition due to increased bare ground. The hydrologic function attribute was also rated slight-to-moderate, due to the combination of increased bare ground and the lack of shrubs to assist in the capture of snow and aid in infiltration (Table SOIL-8).

Habitat Assessment Framework
This HAF site (HAF site #1) shares the same location as IIRH site RH08 and was monitored in 2012 just before the Kinyon Road Fire. The cover transects show general differences between pre- and post-fire cover; however, direct comparison between the cover transects is not appropriate due to the difference in actual transect location, as well as the difference in protocols followed to collect the data. These differences contribute to variability in cover values. Moreover, decline in vegetation and litter cover, and increase in bare ground, is expected following wildfire.

The 2012 data shows that deep-rooted perennial bunchgrass comprised 40 percent cover at the site. Meanwhile, shallow-rooted perennial bunchgrass cover was 21 percent, non-persistent litter was 28 percent, and biological soil crusts were 16 percent cover in 2012.

Post-fire Grazing Reintroduction Monitoring
In the fall of 2013, resource specialists collected cover data in this and several other pastures to help determine if grazing could resume (Appendix D) following the 2012 Kinyon Road Fire. This location also serves as utilization key area site DBSW-1T. Ground cover data shows that deep- and shallow-rooted bunchgrass cover is similar at 24 and 20 percent, respectively. Non-persistent litter is 17 percent while bare ground is at 39 percent. No biological soil crusts were recorded at the site. Higher amounts of bare ground, as well as lower amounts of biological soil crusts are expected following wildfire. Based on an evaluation of collected data, monitoring results met the established ESR objectives and indicated that resumption of grazing was appropriate within this pasture.

Corral Field Pasture

Rangeland Health
Site RH09 is located in a seeded vegetation community where Sandberg bluegrass is the dominant cover (21% cover), followed by deep-rooted perennials such as crested wheatgrass, Snake River wheatgrass and squirreltail at a combined 11 percent cover. Cheatgrass represents 6 percent cover at the site. Biological soil crusts were not recorded in the cover transect (Appendix D) at the site. Bare ground exceeds the range described in the ESD reference sheet at 47 percent. Non-persistent litter totaled 17 percent and shrubs are absent from the site, aside from a few scattered rabbitbrush plants. The site is of relatively flat topography and burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, and the 2012 Kinyon Road Fire. A soil stability test was completed at the site during IIRH and the soil stability value averaged 3.0, which is lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a moderate departure from the reference condition for soil surface resistance to erosion.

The field assessment (Appendix C – Table C-3) indicates that pedestals are mostly inactive and associated with Sandberg bluegrass. Windblown silts are scattered across the site in variable sized patches and on the leeward side of vegetation indicating ongoing soil surface loss or degradation following the fire.

The soil and site stability attribute was rated a moderate departure from the reference condition due to increased bare ground, soil surface loss or degradation, and low soil surface resistance to erosion. The hydrologic function attribute was also rated moderate due to the combination of increased bare ground and the lack of shrubs to assist in the capture of snow and aid in infiltration (Table SOIL-9).

A step point method cover transect was performed to record cover data, photos were taken, and a soil stability test was conducted at site RHPP09 to provide information for the southern portion of the pasture. No IIRH field assessment was recorded because the area was just drill seeded in the previous year and has had little time to recover from the 2013 Coonskin Fire.

Cover information shows that bare ground is 47 percent at the site. Higher amounts of bare ground can be expected following wildfire. Litter is 31 percent cover and is providing surface protection. The plant community is dominated by shallow-rooted bunchgrasses and annual invasive grasses. Distribution of deep-rooted bunchgrasses is patchy and shrubs are absent. Biological soil crusts represented 3 percent cover at this site. A soil stability test was completed within the pasture and resulted in an average soil stability value of 3.1.

Habitat Assessment Framework
A sage-grouse habitat assessment was performed at HAF Site #1in May of 2013 and provides additional cover information for the middle portion of the pasture (Appendix D). Ground cover data shows that bare ground is low at the site, representing just 6 percent cover. Deep-rooted perennial bunchgrasses comprise 25 percent cover at the site, and shallow-rooted perennial grass species 12 percent. However, cheatgrass dominates cover at the site at 46 percent; litter is at 76 percent. Biological soil crusts and shrubs are absent, which is as expected following repeated wildfire (2005, 2007, and 2010).

Big Field Pasture

Rangeland Health
Site RH10A is located in a seeded vegetation community representative of the overall pasture where Sandberg bluegrass is the dominant cover (26% cover) and crested wheatgrass is sub-dominant (20% cover). Biological soils crusts comprise 20 percent cover (Appendix D) at the site and provide increased soil and site stability. The site is of relatively flat topography and burned most recently in the 2007 Murphy Complex Fire. A soil stability test was completed at the site during IIRH and the soil stability value averaged 3.6, which is slightly lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a slight-to-moderate departure from the reference condition for soil surface resistance to erosion.

Water flow patterns are short and disrupted and resulted in a none-to-slight rating (Appendix C – Table C-3). Pedestals associated with Sandberg bluegrass are not active. Occasional hoof prints in wet soils, with depressions up to 2 inches in depth, were observed.

Bare ground is 15 percent (Appendix D: Table D-3) at the site and is within the range described in the ESD reference sheet. Non-persistent litter totals 65 percent cover. Rabbitbrush and sagebrush are scarcely present at the site.

The soil and site stability attribute was rated a none-to-slight departure from the reference condition. The hydrologic function attribute was rated slight-to-moderate due to the lack of shrubs to assist in the capture of snow and aid in infiltration (Table SOIL-10).

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Habitat Assessment Framework
A sage-grouse habitat assessment was performed at HAF site #1 in June of 2012 and provides additional cover information for a small isolated unburned patch in the northeast portion of the pasture that represents ~ 230 acres or just 3 percent of the pasture (Appendix D – Table D-3). Cover data shows that shallow-rooted bunchgrass cover is at 8 percent and deep-rooted perennial bunchgrasses were just 3 percent cover. Wyoming big sagebrush represents 24 percent cover at the site. Bare ground was recorded at 27 percent. Biological soil crusts account for 46 percent of ground cover. Overall vegetative cover is low at 39 percent and appears to be connected to increased levels of sagebrush and biological soil crusts.

HAF site #2 shares the same location as IIRH site RH10A and was drill and aerially seeded in 1995 after the Blue Gulch Fire and last burned in the 2007 Murphy Complex Fire. The 2012 assessment shows deep-rooted perennial bunchgrasses dominate the site at 34 percent cover, followed by shallow-rooted perennial bunchgrass at 22 percent. Non-persistent litter is 58 percent and bare ground is at 7 percent. Biological soil crusts were recorded at 6 percent cover.

Post-fire Grazing Reintroduction Monitoring
In the summer of 2013, resource specialists collected cover data in this and several other pastures to help determine if grazing could resume (Appendix D) following the 2012 Kinyon Road Fire. This location also serves as utilization key area site DBBF-4. Ground cover data shows seeded non-native deep-rooted perennial bunchgrasses at 25 percent cover, dominating cover over shallow-rooted perennial bunchgrasses at 11 percent. Non-persistent litter is 8 percent and gravel and rock make up 1 and 13 percent, respectfully. Bare ground is 40 percent at the site and no biological soil crusts were recorded. Higher amounts of bare ground and lower abundance of biological soil crusts can be expected following wildfire; especially under dryer than normal conditions during the growing season (2013) following the fire (Figure 1). Based on an evaluation of collected data, monitoring results met the established ESR objectives and indicated that resumption of grazing was appropriate within this pasture.

Upland Trend
Current conditions at trend site 11S12E34 were captured in a ground cover assessment in 2014 under RHPP10 above. As mentioned there, this location is not representative of the pasture. This site was established in 1987 after two fires, one in 1980 and the other in 1984. Two additional fires occurred in 1995 and 2012 with the latter taking place only a month after the 2012 upland trend monitoring was completed. The area was drill seeded with crested wheatgrass and aerially seeded for Wyoming big sagebrush after the 1995 Blue Gulch Fire. While the trend data do not contribute to, or reflect, the current situation due to the 2012 fire, they provide for a general distribution of ground cover at pre-fire conditions specific to this small area.

Pre-fire conditions show that ground cover in the form of biological soil crusts and overall live vegetation increased significantly from 1987 and 2012. Bare ground decreased significantly, with litter also showing a reduction. Frequency data shows that both non-native deep-rooted perennial bunchgrasses and native shallow rooted perennial bunchgrasses significantly increased between 1987 and 2012. The site shows a decline in squirreltail that was present in 1987 but was not recorded in 2012. Cheatgrass also decreased at the site.

Long-term trend was established at site 12S12E22 in 1998, three years after the site was drill seeded with crested wheatgrass and aerially seeded with Wyoming big sagebrush after the 1995 Blue Gulch Fire. The last fire occurred in 2007 and the site was again aerial seeded with sagebrush. The site was re-read in 2012.

Trend data shows an overall increase in vegetative cover at the site in 2012. Sandberg bluegrass has increased significantly while squirreltail has declined significantly. A trace amount (2.5 percent

frequency, Plot 4) of Thurber's needlegrass was recorded in 1998 but was not noted in 2012. Non-native deep-rooted perennial bunchgrasses remained static.

Ground cover shows a significant decrease in biological soil crusts from 28 to 4 percent. Bare ground also decreased from 16 percent in 1998 to 11.5 percent in 2012, with levels remaining within the range described in the ESD reference sheet both years. Litter increased significantly, likely due to the increase in vegetation.

2006 ESI Monitoring
Data from a 2006 ESI monitoring cover transect at site RA-34 (Appendix D - Table D-4; Appendix F, Map 1) provides additional cover information for the pasture; however, the site only represents approximately 4 percent of the Big Field Pasture.

Bare ground was 18 percent while biological soils crusts were 15 percent of ground cover. Litter totaled 56 percent cover and appeared to be relatively evenly distributed underneath existing plants and within interspaces. Shallow rooted native perennial bunchgrasses dominate cover at the site at 29 percent while deep-rooted perennial bunchgrasses were 10 percent. In addition, sagebrush represents 15 percent cover at the site.

Cover Transect and Soil Stability
A step point method cover transect was performed to record cover data, photos were taken, and a soil stability test was conducted at site RHPP10 in the northwest corner of the pasture in a small area that is not representative of the pasture. This site was chosen because of the shared location with trend site 11S12E34 that burned after data were collected in 2012.

A soil stability test was completed at the site and resulted in an average soil stability value of 3.6. Deep-rooted perennial bunchgrasses comprise 9 percent cover, and shallow-rooted perennial bunchgrasses comprise 23 percent. Bare ground is 59 percent at this site but higher amounts of bare ground can be expected following wildfire; especially under dryer than normal conditions during the growing season (2013) following the fire (Figure 1). Non-persistent litter is 11 percent, and biological soil crusts were not recorded along the cover transect at the site. Lower amounts of litter and biological soil crusts can also be expected following wildfire.

Big Bend

Rangeland Health
Site RH011A is located in a seeded vegetation community where Sandberg bluegrass is the dominant cover (32% cover) and deep-rooted perennial grasses such as Thurber's needlegrass, bluebunch wheatgrass, crested wheatgrass, and squirreltail are sub-dominant at a combined 20 percent cover. Biological soils crusts comprise 15 percent cover (Appendix D) at the site and provide increased soil and stability. The site is of relatively flat topography and burned most recently in the 2007 Murphy Complex Fire. A soil stability test was completed at the site during IIRH and the soil stability value averaged 3.7, which is slightly lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a slight-to-moderate departure from the reference condition for soil surface resistance to erosion.

Water flow patterns are short, small, and infrequent resulting in a none-to-slight rating (Appendix C – Table C-3). Slickspots are present at the site and display common surface sealing. Some scattered hoof prints, up to 3 inches deep, were observed at the site.

Bare ground is 17 percent (Appendix D: Table D-4) at the site and is within the range described in the ESD reference sheet. Non-persistent litter totals 57 percent cover while shrubs are present in trace

amounts at the site.

The soil and site stability attribute was rated a none-to-slight departure from the reference condition. Meanwhile, the hydrologic function attribute was rated slight-to-moderate due to the combination of slightly decreased soil surface resistance to erosion and lack of shrubs to assist in the capture of snow and aid in infiltration (Table SOIL-11).

Site RH011B is located in a native vegetation community that the 2014 field evaluation sheet notes to be representative of the majority of the Big Bend Pasture. Sandberg bluegrass is the dominant native grass (17% cover) at the site and deep-rooted perennial grasses such as Thurber's needlegrass, bluebunch wheatgrass, and squirreltail represent a combined 3 percent cover. Meanwhile, cheatgrass comprises 21 percent cover at the site. Biological soils crusts were not recorded in the cover transect (Appendix D). The site is of relatively flat topography and burned most recently in the 2007 Murphy Complex Fire. A soil stability test was completed at the site during IIRH and the soil stability value averaged 2.8, which is lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a moderate departure from the reference condition for soil surface resistance to erosion.

Water flow patterns are infrequent, short, and limited to the few cattle trails at the site, resulting in a none-to-slight rating. Pedestals are common but are mostly inactive and associated with shallow-rooted perennial bunchgrasses. A weak compaction layer was noted at the site but is not restrictive to root penetration or infiltration.

Bare ground exceeds the range described in the ESD reference sheet at 29 percent. Deep-rooted perennial bunchgrasses comprise just 3 percent cover, while shallow-rooted perennial bunchgrasses comprise 17 percent. Shrubs are greatly reduced at the site. Increased abundance of shallow-rooted bunchgrasses and invasive annuals can contribute to reduced efficiency in infiltration and overall hydrologic function. Non-persistent litter totals 41 percent with accumulations up to 1.5+ inches deep, especially within cheatgrass patches.

The soil and site stability attribute was rated a slight-to-moderate departure from the reference condition due to increased bare ground, soil surface loss or degradation, and low soil surface resistance to erosion. Meanwhile, the hydrologic function attribute was rated moderate due to the combination of increased bare ground, soil surface loss or degradation, low soil surface resistance to erosion, reduced abundance of deep-rooted perennial bunchgrasses, and the lack of shrubs to assist in the capture of snow and aid in infiltration (Table SOIL-12).

Habitat Assessment Framework

HAF site #1 provides additional cover information from 2012 for a small isolated unburned island. It represents ~130 acres, or 2 percent of the pasture, in the northern portion. Both HAF sites #2 and #3 share the same locations as the 2014 IIRH sites RH11A and RH11B, respectively. HAF site #2 was aerial and drill seeded in 2000 after the Grass Fire and aerial seeded after the 2007 Murphy Complex Fire with the latter treatment also applying to HAF site #3.

Deep-rooted perennial bunchgrasses dominate cover at HAF Site #1 at 14 percent, followed by shallow-rooted perennial bunchgrass at 11 percent. Bare ground is within expected levels at 14 percent cover. Biological soil crusts are abundant at the site at 41 percent cover and litter comprises 35 percent of total ground cover. Total vegetative cover is at 66 percent, including 30 percent cover of sagebrush.

The 2012 assessment at HAF Site #2 shows that deep-and shallow-rooted perennial bunchgrass cover is similar at 16 and 15 percent and is competing against cheatgrass that comprises 22 percent cover. A high amount (76%) of litter was found at the site. Biologic soil crusts are 5 percent cover and bare ground is

within the range described in the ESD reference sheet at 6 percent.

In 2012, deep-rooted perennial bunchgrass cover At HAF Site #3 was at 8 percent while shallow-rooted bunchgrass cover is slightly higher at 12 percent. Cheatgrass dominates the site at 40 percent cover. A high amount (63%) of litter was found at the site. Biological soil crusts are low at 1 percent while bare ground is within the range described in the ESD reference sheet at 6 percent.

Upland Trend
Long-term trend was established at site 12S12E30 in 1987 and was re-read in 1998 and 2012. Based on available data, the most recent fire occurred in 2007. This site was aerially seeded for sagebrush after the 2007 Murphy Complex Fire.

The key species at the site are Thurber's needlegrass and Sandberg bluegrass. The percent frequency for comparison between years is based on plot 4 within the nested frequency frame for Thurber's needlegrass and plot 2 for Sandberg bluegrass. Frequency of Thurber's needlegrass has decreased at the site from 41 percent in 1987 to 16 percent in 2012. Meanwhile, frequency of Sandberg bluegrass has also decreased from 65 percent in 1987 to 16 percent in 2012. Cheatgrass was recorded at the site for the first time in 1998 at 25 percent frequency (Plot 3) and increased significantly to 100 percent frequency in 2012.

Ground cover data shows that bare ground was at 57 percent in 1987 and decreased significantly to 27 percent in 2012. Litter has remained fairly static at the site although vegetative cover has increased significantly. Data for biological soil crusts are unreliable since it was collected inconsistently.

Evaluation of Standard 1
The indicator for rills was rated slight-to-moderate at the IIRH site in the Balanced Rock Pasture due to rills occurring in a natural drainage adjacent to the site. The indicator for rills was rated none-to-slight at all other IIRH sites within the allotment (Appendix C, Tables C-1 and C-3). In addition, the indicator for water flow patterns was rated slight-to-moderate at the IIRH site in the North End Field Pasture but the water flow patterns were noted to be associated with drill rows. This indicator was also rated none-to-slight at all other sites within the allotment.
Pedestals were noted to occur at several sites within the allotment; however, in most areas it was noted that pedestals were associated with hoof prints, drill rows, or frost heaving, which are not erosional pedestals. In most instances where erosional pedestals were observed, they were noted to be inactive or only slightly active and limited to Sandberg bluegrass. With this, the indicator for pedestals and/or terracettes was rated slight-to-moderate at six of the twelve IIRH sites in the allotment; with a none-to-slight rating at the remaining six sites.

An increased amount of bare ground was recorded at eight of the twelve IIRH sites within the allotment. The indicator for bare ground was rated a moderate departure from the reference condition at six sites, slight-to-moderate at two sites, and none-to-slight at the remaining four sites. Higher amounts of bare ground can be expected following wildfire; particularly after dryer than normal conditions during the growing season (2013) following the fire (Figure 1).

Depositions of grey to dark silty sediments were observed on the leeward side of plants in patches at many of the sites that burned recently in the 2012 Kinyon Road Fire. These windblown deposits suggest ongoing soil movement following the fire. Therefore, the indicator for wind scoured, blowout, and/or depositional areas was rated a moderate departure from the reference condition at three sites and slight-to-moderate at an additional three sites. This indicator was rated none-to-slight at the remaining six sites.

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Soil stability values were below the range described in the ESD reference sheet in most areas of the allotment, indicating a reduced soil surface resistance to erosion. With this, the indicator for soil surface resistance to erosion was rated none-to-slight at one site, slight-to-moderate at five sites, and moderate at six sites. With the exception of the Balanced Rock Pasture where soil stability was within the range described in the ESD reference sheet, all IIRH sites within the allotment have burned at least once since 2007; and a reduction in soil stability can be expected following wildfire.

Signs of soil surface loss or degradation were noted in many of the areas of the allotment that burned in 2005, 2007, and 2012. Some of these areas also burned in 2010. The indicator for soil surface loss or degradation was rated as a departure from the reference condition at nine of the twelve IIRH sites within the allotment; rated slight-to-moderate at six sites, and moderate at the remaining three sites.

The indicator for plant community composition and distribution relative to infiltration and runoff was rated as a departure from the reference condition at eleven of the twelve IIRH sites within the allotment. Shrubs have been removed from much of the allotment due to wildfire, which has changed the overall composition of the plant community. Shrubs are important to range sites as they trap snow which can increase infiltration. Therefore, nine of the IIRH sites were rated slight-to-moderate due to the lack of shrubs. Meanwhile, the site in the Corral Field Pasture was rated moderate due to the combination of the lack of shrubs and abundance of invasive plants. Further, site RH11B in the Big Bend Pasture was also rated moderate due to the lack of shrubs in combination with a reduced abundance of deep-rooted perennial bunchgrasses.

A slight compaction layer was noted at five sites within the allotment. Generally, the compaction layer was weak and was not restrictive to root penetration or water infiltration.

The amount of litter found in most areas of the allotment is below the range described in the ESD reference sheet; however, lower amounts of litter can be expected following wildfire. On the other hand, the amount of litter was higher than the range described in the ESD reference sheet at one site in each of the Big Bend and Big Field Pastures.

The Soil and Site Stability attribute was rated none-to-slight departure from the reference condition at three sites and slight-to-moderate at six sites within the allotment (Appendix C). The Soil and Site Stability attribute was rated moderate at the remaining sites located in the North End Field, North Winter, and Corral Field Pastures. The Hydrologic Function attribute was rated slight-to-moderate at eight sites and none-to-slight at one site. The Hydrologic Function attribute was rated moderate at the remaining sites located in the North End Field, Corral Field, and Big Bend Pasture.

Evaluation Finding – Balanced Rock, North Kerbs, School Bus, Bull Horn, South Kerbs, South Winter, and Big Field Pastures are:

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 some biological soil crusts, is present within the Balanced Rock, North Kerbs, School Bus, Bull Horn, South Kerbs, South Winter, and Big Field Pastures of the Devil Creek Balanced Rock Allotment to provide protection for site stability.

Observations made in representative areas during 2014 IIRH, as well as cover data (Appendix D) collected in these pastures indicate that ground cover is sufficient for soil stability. Although bare ground is slightly higher than the range described in the ESD reference sheet in some of these pastures, higher

amounts of bare ground is expected following wildfire, particularly after dryer than normal conditions during the growing season (2013) following the fire (Figure 1). Moreover, bare ground is expected to decrease over time as the vegetation communities continue to recover from the fires.

Soil stability test values were lower than the range expected within the ESD reference sheet in most areas, indicating reduced soil surface resistance to erosion. However, it is reasonable to expect reduced soil stability values in areas recovering from recent wildfires. In addition, abundant perennial grasses, and some biological soil crusts, are present in these pastures to assist in soil protection and overall site stability.

No significant signs of soil erosion were noted in these pastures. While some pedestalling was noted during IIRH, they were either non-erosional, or were noted to be minor or only slightly active. Moreover, other signs of accelerated erosion, such as active rills, water flow patterns, gullies, or other indications of soil erosion were minor or absent within most areas. Additionally, topography is relatively flat in most areas, further reducing the potential for soil erosion. Infiltration, retention, and release of water processes relative to soil, vegetation, climate and landform are providing for nutrient and hydrologic cycling and energy flow within the Balanced Rock, North Kerbs, School Bus, Bull Horn, South Kerbs, South Winter, and Big Field Pastures.

Due to recent wildfires (2005, 2007, 2010, and 2012), shrubs are of low abundance within the plant communities of the Devil Creek Balanced Rock Allotment. Aerial sagebrush seeding projects have been carried out in some areas but repeated wildfire has hindered shrub establishment. Shrubs trap snow and have a taproot that penetrates deep into the soil profile; therefore, the lack of shrubs has the potential to affect infiltration and retention of soil moisture. However, abundant deep-rooted perennial bunchgrasses are present to carry soil moisture deep into the soil profile. In addition, perennial grasses appeared vigorous and were producing seed heads as expected, suggesting that the reduction of shrub cover is not negatively affecting infiltration to the point of reducing plant vigor or reproductive capability.

Based on the preponderance of evidence, the Soil and Site Stability attribute was rated none-to-slight departure from the reference condition in the Balanced Rock and Big Field Pastures, and was rated only a slight-to-moderate departure in the North Kerbs, School Bus, Bull Horn, South Kerbs, and South Winter Pastures (Appendix C). Further, the Hydrologic Function attribute was rated none-to-slight in the Balanced Rock Pasture and only a slight-to-moderate departure in the North Kerbs, School Bus, Bull Horn, South Kerbs, South Winter, and Big Field Pastures.

Although soil and site stability and hydrologic function are currently reduced following recent wildfires, conditions are expected to continue to recover. At this time, watershed function is still maintaining adequate nutrient and hydrologic cycling and energy flow. Therefore, Standard 1 is being met in the Balanced Rock, North Kerbs, School Bus, Bull Horn, South Kerbs, South Winter, and Big Field Pastures of the Devil Creek Balanced Rock Allotment.

Evaluation Finding – North End Field, North Winter, Corral Field, and Big Bend Pastures are:

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

Rationale for Evaluation Finding

The combined departures from reference condition regarding increased bare ground, wind erosion, decreased soil surface resistance to erosion, soil surface loss or degradation, and shifts in plant community composition and distribution has altered soil and site stability and hydrologic function and

does not allow for proper nutrient cycling, hydrologic cycling, and energy flow at this time. Standard 1 is therefore not met in the North End Field, North Winter, Corral Field, and Big Bend Pastures.

Based on the preponderance of evidence, the Soil and Site Stability attribute was rated a moderate departure from the reference condition in the North End Field, North Winter, and Corral Field Pastures, and was rated a slight-to-moderate departure at the representative site in the Big Bend Pasture (Appendix C). Further, the Hydrologic Function attribute was rated moderate in the North End Field, Corral Field, and at the representative site in the Big Bend Pasture, and a slight-to-moderate departure in the North Winter Pasture.

Observations made during 2014 IIRH, as well as cover data collected in the North End Field, North Winter, Corral Field, and Big Bend Pastures indicate that perennial grasses are present in most areas to assist in site protection (Appendix D). However, soil stability values were low within each of the pastures, indicating a reduced soil surface resistance to erosion. While it is reasonable to expect reduced soil stability values in areas recovering from recent wildfires and drill seedings, the soil stability values in these pastures were significantly lower than the range of 4 to 6 described in the ESD reference sheet, representing a moderate departure from the reference condition.

Biological soil crusts are lacking in some areas of the pastures but were present in most areas and even abundant at some monitoring sites. Bare ground is shown to be at the higher end of the expected range for the ESD reference sheet in the Big Bend Pasture and is much higher in the North End Field, North Winter, and Corral Field Pastures. Increased bare ground in these areas further reduces soil surface resistance to erosion. An increase in bare ground is expected following wildfire due to the removal of vegetation and litter; however, non-persistent and persistent litter is needed to provide for erosion prevention, nutrient source, water-holding capacity, and soil structure aggregation. Recurring fires have therefore contributed to frequent litter removal that, over the long term, can affect proper soil and hydrologic function (Miller, Chambers, Pyke, Pierson, & Williams, 2013).

There is evidence of ongoing wind erosion and deposition at the IIRH sites within these pastures. Evidence of soil surface loss or degradation was observed within all four pastures; representing a moderate departure in the North End Field and Corral Field and a slight-to-moderate departure in the North Winter and Big Bend Pastures; it is reasonable to expect some soil surface loss following wildfire, especially in windy areas (Figure 3). Soil surface wind erosion and a shift in the hydrologic regime affect soil properties, especially during the first year after a fire (Sankey, Germino, Sankey, & Hoover, 2012). Increased fire frequency may therefore decrease the resilience of soils to withstand change following disturbance in the sagebrush steppe (Sankey, Germino, Sankey, & Hoover, 2012).

Due to recent wildfires (2005, 2007, 2010, and 2012), shrubs are of lower abundance within the plant communities of the Devil Creek Balanced Rock Allotment. Wildfire has essentially eliminated shrubs in most areas, with only small unburned patches of sagebrush remaining. Although aerial seedings have taken place throughout the past few years, repeated wildfire has hindered sagebrush establishment in most areas. Shrubs trap snow and have a taproot that penetrates deep into the soil profile; therefore, the lack of shrubs has the potential to affect infiltration and retention of soil moisture. Further, a continued lack of shrubs resulting from recurring fire across the pastures affect soil and hydrologic function through changes in soil moisture, soil temperature, and recharge patterns (Miller, Chambers, Pyke, Pierson, & Williams, 2013).

Deep-rooted perennial bunchgrasses are of adequate abundance in most areas to carry soil moisture deeper into the soil profile. However, cover information (Appendix D) indicates a decrease of deep-rooted perennial grass cover in some areas; likely a result of recent fire followed by low growing season precipitation (Figure 1). As a result, infiltration and water holding capacity can change and can modify

nutrient cycling and energy flow in these areas. Infiltration and water holding capacity, and nutrient cycling and energy flow are expected to increase over time as deep-rooted perennial grasses continue to recover from the recent wildfires.

Cheatgrass invasion is of particular concern within the North End Field, Corral Field, and Big Bend Pastures (Appendix D). Ground cover trend data collected in the Big Bend Pasture displayed an overall decline of bunchgrasses and an increase in invasive annuals. While vegetative ground cover increased and contributed to a decline in bare ground, the reduction is due to a significant increase in cheatgrass and leaves bare ground levels still higher than the range described in the ESD reference sheet. Invasive annuals can play a primary role in soil temperature and soil water distribution, and reduced site and soil stability and nutrient exchange and can adversely alter ecosystem processes (Germino, Belnap, Stark, Allen, & Rau, in progress).

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 Does Not Apply

According to the National Hydrography Dataset (USGS 2014), there are approximately 8.5 miles of intermittent stream and over 100 miles of ephemeral streams within the allotment. However, the 8.5 miles of intermittent Devil Creek have been converted to an ephemeral channel because the flow is diverted upstream of the allotment boundary and the reaches within the allotment are dewatered.

Riparian vegetation is absent along Devil Creek due to the lack of hydric soils to support it and the function of the riparian area has been altered. Therefore, all of the drainages within the allotment are ephemeral and Standards 2 and 3 are not applicable in relation to BLM management of the allotment.

All of the streams that occur within the allotment are ephemeral drainages. Ephemeral streams only contain surface flows in direct response to precipitation and have a stream channel that is above the water table at all times (BLM 1998). The BLM does not evaluate the functional condition of ephemeral streams under Standards 2 and 3.

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 Does Not Apply

See the discussion under Standard 2 above.

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 Does Not Apply

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All pastures within the allotment have been seeded and have vegetation communities comprised mainly of seeded and native species. The BLM does not evaluate seeded pastures under Standard 4 but under Standard 5 - Seedings.

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.

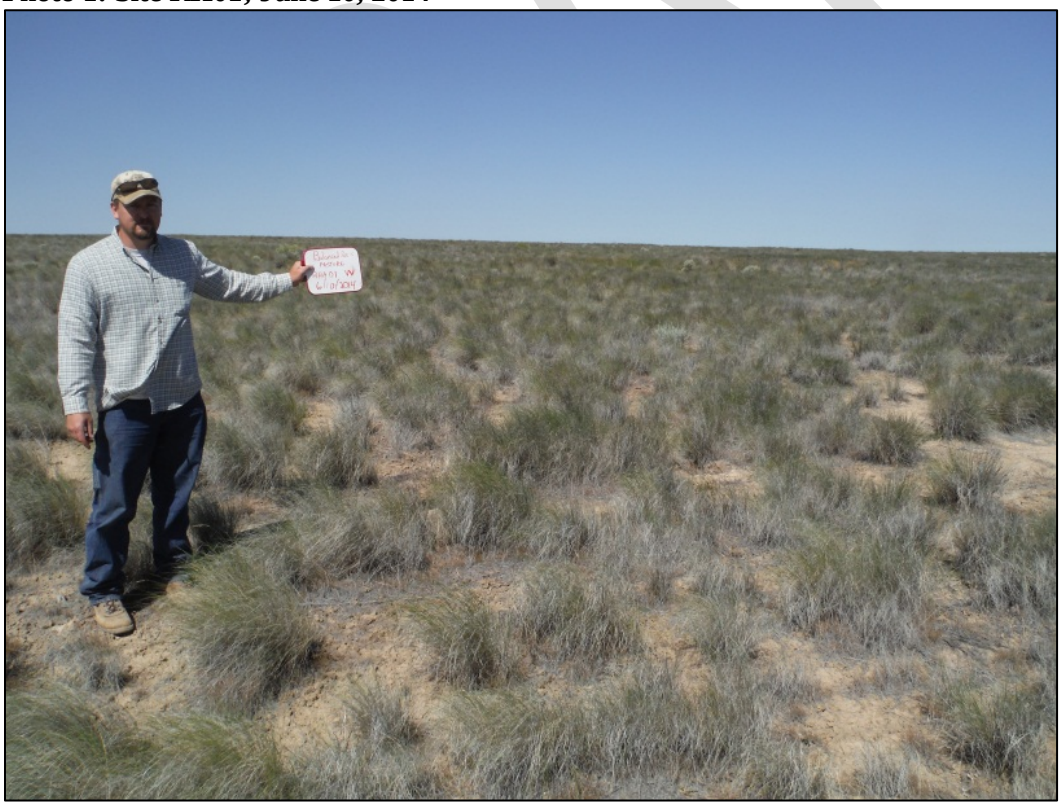
Balanced Rock Pasture

This pasture has had the least amount of fire relative to all other pastures in the allotment (Appendix F, Map 3). Between 1974 and 1994 there were three smaller acreage fires (less than 20 percent of the pasture) followed by the widespread Clover fire in 2005. A small perimeter fire in 2007 burned approximately 5 percent of the pasture to the east.

Rangeland Health

Site RH01 is located in a seeded vegetation community where 'Secar" Snake River wheatgrass (Photo 1) is the dominant cover (70% cover) and Sandberg bluegrass is sub-dominant (17% cover). Biological soil crusts comprise 11 percent cover (Appendix D) at the site. Six perennial forb species were observed at the site, although they were not recorded within the cover data. Bare ground is 9 percent at the site. The site is of relatively flat topography and burned most recently in the Clover Fire of 2005. A soil stability test was completed at the site during IIRH and the soil stability value averaged 4.8, indicating adequate soil surface resistance to erosion.

Photo 1: Site RH01; June 10, 2014



Invasive annual forbs are present in a limited distribution. Cheatgrass and rush skeletonweed are present but uncommon. Cheatgrass was generally found in small patches. Diffuse knapweed (*Centaurea diffusa*) is present along roadways, has been treated, and remains part of the JFO weed treatment plan. Overall, the invasive plants indicator rating is a slight-to-moderate departure (Appendix C).

'Secar' Snake River wheatgrass is the dominant cover and appeared healthy and vigorous but with minimal seed head production. This tends to be common for this cultivar, particularly as plants age. Mature sagebrush was rare but when present provide seed source for recruitment. Reproductive capability of perennial plants and the functional/structural group indicators are rated a moderate departure from reference condition (Appendix C).

All other indicators related to the Biotic Integrity attribute were rated none to slight departure from the reference condition. Therefore, due to the overall indicator ratings, the Biotic Integrity attribute was rated as a slight-to-moderate departure from reference condition (Appendix C).

Habitat Assessment Framework
A sage-grouse habitat assessment was performed in May of 2013 and provides additional cover information for the eastern portion of the pasture (Appendix D). This site last burned in the 2005 Clover Fire. The ground cover transect shows deep-rooted perennial bunchgrasses comprise 23 percent cover and shallow-rooted perennial bunchgrasses comprise 27 percent cover. Sagebrush was not recorded in the cover transect, but seedlings were noted to be present at the site. No perennial forb species were recorded in the cover data. Biological soil crusts represent 7 percent of total ground cover at the site while bare ground is just 3 percent. Cheatgrass was recorded at 10 percent cover at the site, and non-persistent litter 52 percent.

Noxious Weeds
Diffuse knapweed and rush skeleton weed both occur within the pasture, mainly along roadways. The JFO weeds database contains 6 known locations and 1 new location observed during a 2014 field visit (Appendix F, Map 18). The 6 previously known locations have a limited distribution of 1 acre or less individually and have been treated chemically. The newly observed site has been added to the weed database.

North End Field Pasture

Rangeland Health
Wildfires over the last 10 years have all burned the majority of the North End Pasture with the exception of the 2010 Long Butte Fire. The IIRH site in the southeast portion of the pasture (RH02) burned most recently in the 2012 Kinyon Road Fire (Appendix F, Map 4). An additional step-point method cover transect was completed in the northeastern portion of the pasture (RHPP02) to provide supplemental cover information for the pasture. Site RHPP02 also burned in 2012.

Site RH02 is located in a seeded vegetation community representative of the North End Field Pasture where Sandberg bluegrass is the dominant cover (14% cover) and 'Secar" Snake River wheatgrass is sub-dominant (12% cover). Biological soil crusts comprise 10 percent cover (Appendix D) at the site. Perennial forbs are present but are at low diversity and abundance. Bare ground is 44 percent at the site. The site is of relatively flat topography and burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, and the 2012 Kinyon Road Fire.

A soil stability test was completed at the site during IIRH and the soil stability value averaged 2.4, which is lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a moderate departure from the reference condition for soil surface resistance to erosion. The indicator for soil surface loss or

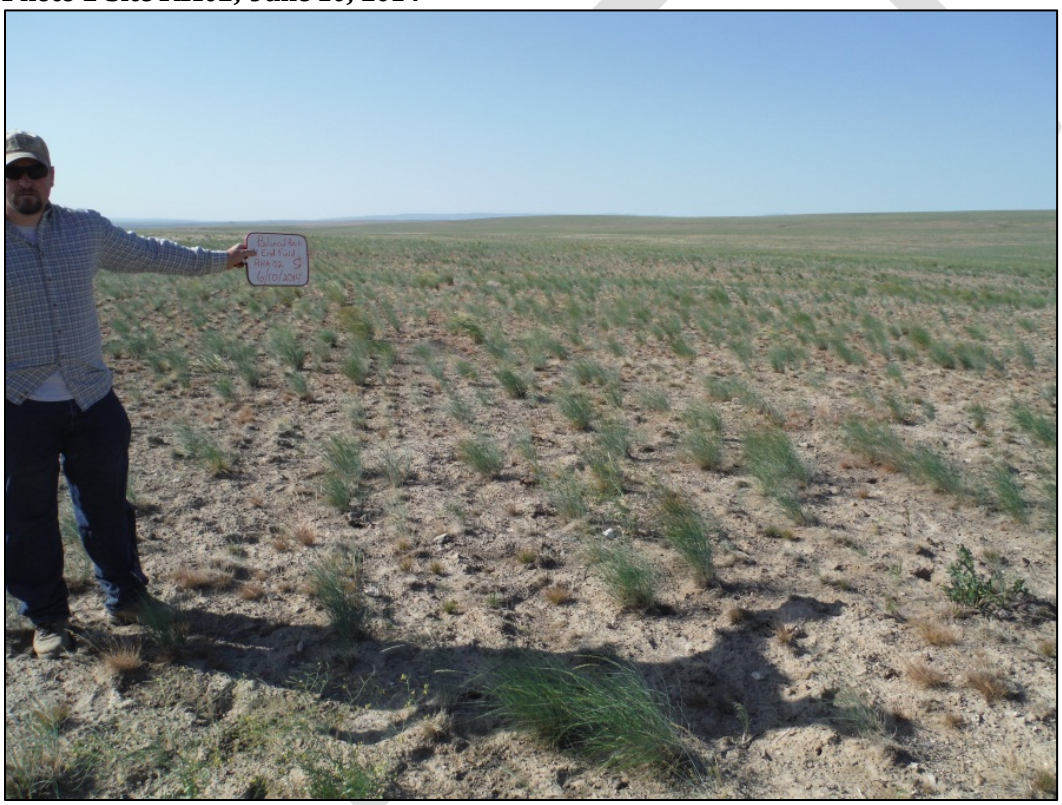
degradation was rated moderate due to some wind deposition of grey silty sediments under the canopies of some bunchgrasses and in a few patches across the soil surface; noted to be a result of wildfire.

The functional/structural group indicator is rated at a slight-to-moderate departure (Appendix C) from the reference condition primarily due to the lack of shrubs. Deep-rooted perennial bunchgrasses dominate production at the site, although they are at reduced abundance following the recent wildfire.

Invasive annual forbs and cheatgrass are present but with low abundance, resulting in a slight-to-moderate departure rating for invasive plants.

Plant mortality is rated a slight-to-moderate departure from the reference condition due to patches of Snake River wheatgrass die off. However, this perceived die-off may be low growth or dormancy as a result of recent wildfire followed by two years of low precipitation during the growing season. Moreover, deep-rooted perennial grasses were noted to have good vigor at the site. Litter is 9 percent cover at the site and is rated a moderate-to-extreme departure (Appendix C) from the reference condition.

Photo 2 Site RH02; June 10, 2014

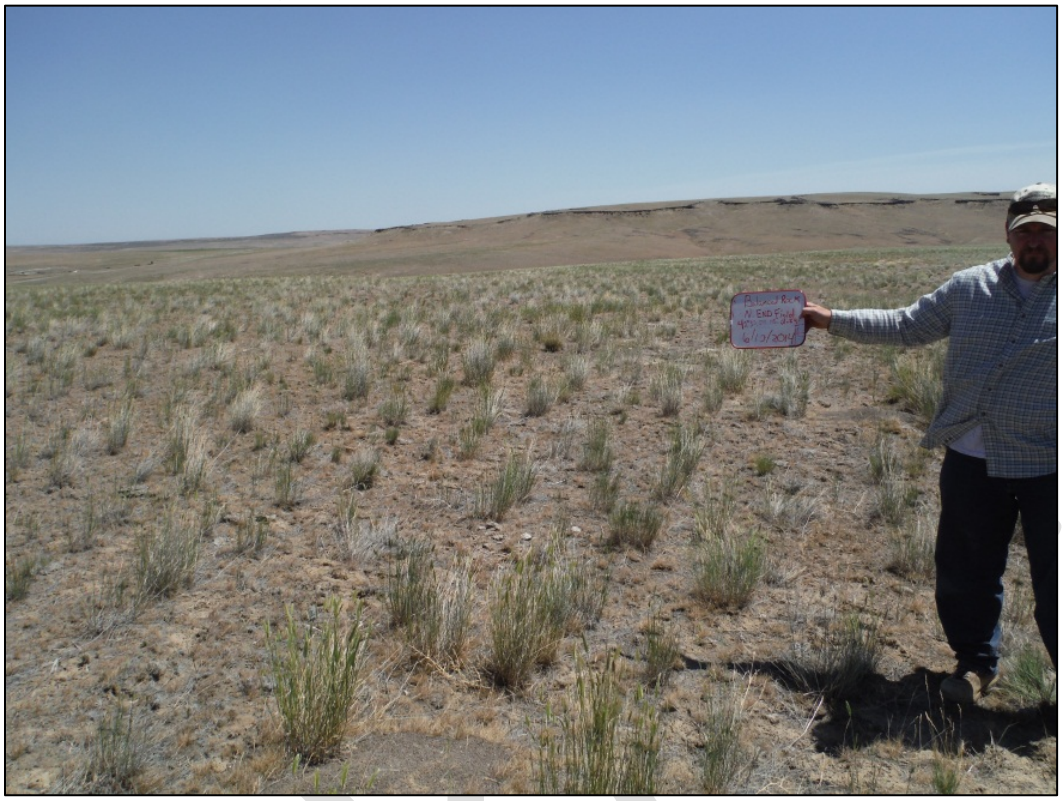


The biotic integrity attribute rating is at a moderate departure from reference condition (Appendix C) due to compromised soil properties, low species diversity, and low perennial plant cover which decrease water availability, nutrient cycling, and energy cycling.

A step-point method transect was performed to record cover data and photos were taken at site RHPP02 (Photo 3) to provide cover information for the northern portion of the pasture. This site burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, and the 2012 Balanced Road Fire. The ground cover transect shows deep-rooted perennial bunchgrasses comprise 21 percent cover and shallow-rooted perennial bunchgrasses comprise 39 percent. Sagebrush was not recorded in the cover transect. Four

perennial forb species were observed at the site, although they were not recorded within the cover data. Biological soil crusts represent 7 percent of total ground cover at the site and bare ground is 14 percent. Cheatgrass was recorded at 13 percent cover at the site, and non-persistent litter 55 percent.

Photo 3: Site RHPP02; June 10. 2014



2013 Post-fire Grazing Reintroduction Monitoring
After the Kinyon Road Fire of 2012, this pasture was closed to grazing. In the fall of 2013, resource specialists collected cover data in this and several other pastures to help determine if livestock grazing could resume (Appendix D). Ground cover data shows that deep- and shallow-rooted bunchgrasses comprised 31 and 21 percent cover, respectively. Litter was recorded at 12 percent, biological crusts at 1 percent, and bare ground at 24 percent. Based on an evaluation of collected data, monitoring results met the established ESR objectives and indicated that resumption of grazing was appropriate within this pasture.

Noxious Weeds
Three known occurrences of rush skeletonweed occur in the northwest corner of the pasture along a main road. All known noxious weed sites are located in the northern quarter of the pasture (Appendix F, Map 18). These sites have a limited distribution of 1 acre or less and have been treated chemically.

<u>North Kerbs Pasture</u>

Rangeland Health
In 2005 and 2007 North Kerbs Pasture burned in entirety. Sixty percent of the pasture burned again in 2010 and all but 12 percent of the pasture burned (Appendix F, Map 5) again in 2012. The IIRH site was burned by all afore mentioned fires except in 2010.

Site RH03 is located in a seeded vegetation community (Photo 4) where 'Secar" Snake River wheatgrass is the dominant cover (38% cover) and Sandberg bluegrass is sub-dominant (17% cover). Biological soils crusts comprise 11 percent cover (Appendix D) at the site. Ten perennial forb species were observed at the site, although they were not recorded within the cover data, indicating good forb diversity for a seeding. Bare ground is 28 percent at the site. Total litter is just below expected values at 29 percent. The site is of relatively flat topography and burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, and the 2012 Balanced Road Fire.

A soil stability test was completed at the site during IIRH and the soil stability value averaged 2.4, which is lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a moderate departure from the reference condition for soil surface resistance to erosion (Appendix C). Rocks and gravel provide permanent cover at the site that aids in stabilizing soils. The soil surface loss and degradation indicator was rated slight-to-moderate due to wind erosion following wildfire, especially in the interspaces. This is displayed by areas of deposition of ashy grey silts on the leeward side of plants, with some swaths that are 6 to 8 feet wide and up to 2 inches deep.

Photo 4: Site RH03; June 10, 2014

Soil compaction is rated slight-to-moderate due to signs of soil compaction such as platy clay layers and restricted root penetration.

The functional/structural group indicator is rated at a slight-to-moderate departure (Appendix C) from the reference condition primarily due to the lack of shrubs.

Invasive forbs and cheatgrass are present in disturbed areas and scattered outside of the seeded areas, resulting in a slight-to-moderate departure rating.

Due to the overall indicator ratings, the Biotic Integrity attribute was rated as a slight-to-moderate departure from the reference condition (Appendix C).

Noxious Weeds
No noxious weeds have been recorded in this pasture.

<u>School Bus Pasture</u>

Rangeland Health
The School Bus Pasture burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, and most recently in the 2012 Balanced Road and Kinyon Road Fires (Appendix F, Map 6). Two-thirds of the pasture also burned in the 2010 Long Butte Fire. Map 15 provides an overview of the fire frequency and burn patterns of past fires within the Devil Creek Balanced Rock Allotment.

Site RH04 is located in a seeded vegetation community (Photo 5) where Sandberg bluegrass is the dominant cover (40% cover) and deep-rooted perennials such as crested wheatgrass and 'Secar" Snake River wheatgrass are the sub-dominant (25% cover) cover. Biological soil crusts comprise 9 percent cover (Appendix D) at the site. Thirteen perennial forb species were observed at the site, although they were not recorded within the cover data, indicating good forb diversity. Bare ground is 22 percent at the site. Total litter is also near the range described in the ESD reference sheet at 44 percent cover. The site is of relatively flat topography and burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, the 2010 Long Butte Fire, and the 2012 Balanced Road Fire.

Photo 5: Site RH04

A soil stability test was completed at the site during IIRH and the soil stability value averaged 2.6, which is lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a moderate departure

from the reference condition for soil surface resistance to erosion. Soil surface loss or degradation was also rated a moderate departure due to signs of soil loss, especially in interspaces (Appendix C).

The functional/structural group indicator is rated at a slight-to-moderate departure (Appendix C) from the reference condition due to the lack of shrubs and reduction in the number of species at the site.

Cheatgrass is scattered in patches throughout the site. Russian thistle (*Salsola kali*), tall tumble mustard, and curveseed butterwort are present in recently disturbed areas. Rush skeletonweed is also present at the site. The invasive plants indicator is rated a moderate departure (Appendix C) from the reference condition.

Due to the overall indicator ratings, the Biotic Integrity attribute was rated as a slight-to-moderate departure from the reference condition (Appendix C).

2013 Post-fire Grazing Reintroduction Monitoring
In the fall of 2013, post-fire grazing reintroduction monitoring (Appendix D) was undertaken to evaluate conditions after the 2012 Kinyon Road Fire. Ground cover data showed that deep- and shallow-rooted bunchgrasses co-dominate cover at 33 percent cover. Litter was recorded at 8 percent and bare ground 23 percent. No biological soil crusts were recorded in the cover transect. Based on an evaluation of collected data, monitoring results met the established ESR objectives and indicated that resumption of grazing was appropriate within this pasture.

Noxious Weeds
Three rush skeleton weed plants were recorded at the IIRH site. The new occurrence has been added to the JFO weeds database and will be treated according to the Twin Falls District weed management plan. There are no other known noxious weed occurrences within this pasture.

Bull Horn Pasture

Rangeland Health
The Bull Horn Pasture burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, and most recently in the 2012 Balanced Road and Kinyon Road Fires (Appendix F, Map 7). Ninety percent of the pasture also burned in the 2010 Long Butte Fire. Map 15 provides an overview of the fire frequency and burn patterns of past fires within the Devil Creek Balanced Rock Allotment.

Site RH05 is located in a seeded vegetation community (Photo 6) where crested wheatgrass is the dominant cover (34% cover) and Sandberg bluegrass is sub-dominant (28% cover). Biological soils crusts comprise 4 percent cover (Appendix D) at the site. Eight perennial forb species were observed at the site, although they were not recorded within the cover data; indicating moderate diversity but limited abundance. Bare ground is 23 percent at the site. The site is of relatively flat topography and burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, the 2010 Long Butte Fire, and the 2012 Kinyon Road Fire.

A soil stability test was completed at the site during IIRH and the soil stability value averaged 3.2, which is lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a slight-to-moderate departure from the reference condition for soil surface resistance to erosion. Soil surface loss or degradation was also rated a slight-to-moderate departure due to speculation of soil loss following past wildfire (Appendix C).

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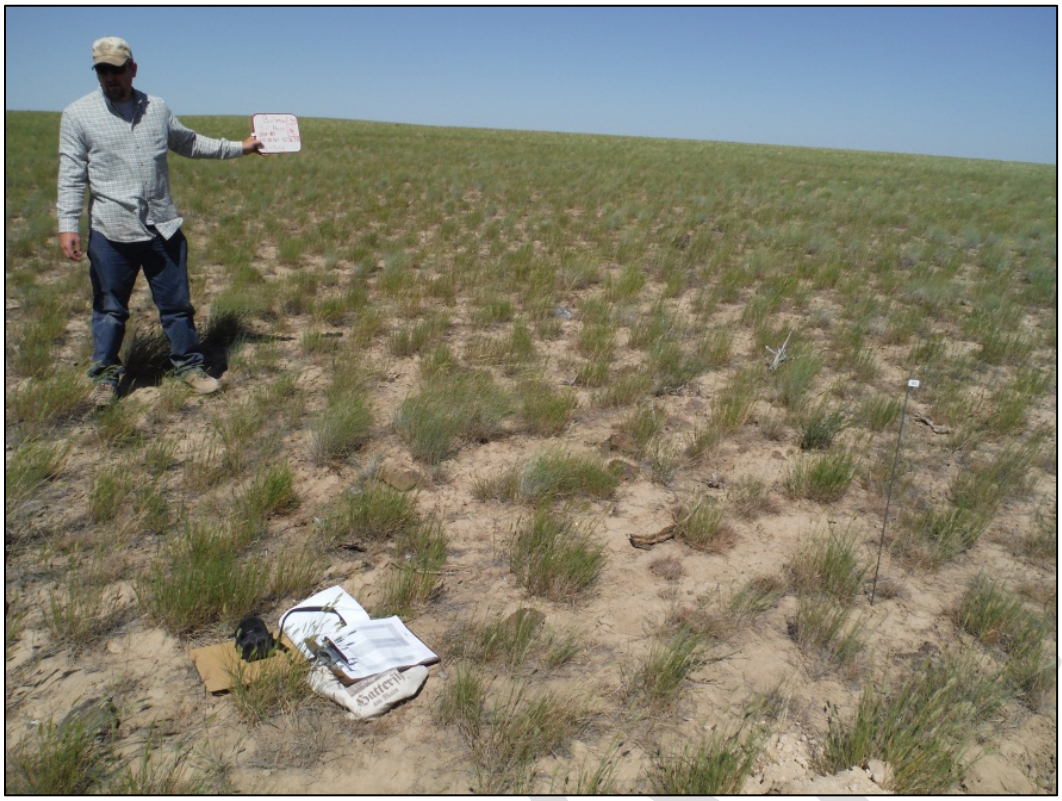
Photo 6: Site RH05; June 10, 2014



The functional/structural group indicator is rated at a slight-to-moderate departure (Appendix C) from the reference condition primarily due to the lack of shrubs at the site.

The invasive plants indicator is rated a moderate departure (Appendix C) from the reference condition due to cheatgrass and curveseed butterwort being scattered throughout the site.

Due to the overall indicator ratings, the Biotic Integrity attribute was rated as a slight-to-moderate departure from the reference condition (Appendix C).

2013 Post-fire Grazing Reintroduction Monitoring
In the summer of 2013, post-fire grazing reintroduction monitoring (Appendix D) was undertaken to evaluate conditions after the 2012 Kinyon Road Fire. Ground cover data showed that deep-rooted bunchgrasses at 24 percent cover dominate over shallow-rooted bunchgrasses at 8 percent. Additional cover was provided by 17 percent litter, 1 percent gravel, and 1 percent rock with 41 percent of bare ground. No biological soil crusts were recorded while cheatgrass was 7 percent cover. Based on an evaluation of collected data, monitoring results met the established ESR objectives and indicated that resumption of grazing was appropriate within this pasture.

Noxious Weeds
No noxious weed occurrences have been recorded in this pasture.

South Kerbs Pasture

Rangeland Health
The South Kerbs Pasture burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, the 2010 Long Butte Fire, and most recently in the 2012 Kinyon Road Fire (Appendix F, Map 8). Map 15 provides an overview of the fire frequency and burn patterns of past fires within the Devil Creek Balanced Rock Allotment.

Site RH06 is located in a seeded vegetation community (Photo 7) where Sandberg bluegrass and 'Secar" Snake River wheatgrass co-dominate cover at 28 and 24 percent cover, respectfully. Biological soils crusts comprise 13 percent cover (Appendix D) at the site. Twelve perennial forb species were observed at the site, although they were not recorded within the cover data, indicating good forb diversity but low abundance. Bare ground is 35 percent at the site. Litter totaled 33 percent and provides cover and organic material to the soil. The site is of relatively flat topography and burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, and the 2012 Kinyon Road Fire.

A soil stability test was completed at the site during IIRH and the soil stability value averaged 3.3, which is lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a slight-to-moderate departure from the reference condition for soil surface resistance to erosion. Soil surface loss or degradation was also rated a slight-to-moderate departure due to evidence of drill seeding and deposition/soil movement from wind erosion (Appendix C).

Photo 7: Site RH06-HAF June 10, 2014

Soil compaction is rated slight-to-moderate due to a rarely present and weakly restrictive soil compaction layer. Reproductive capability of perennial plants was also rated a slight-to-moderate departure

(Appendix C) because Snake River wheatgrass had low seed head production, which tends to be normal for this cultivar.

The functional/structural group indicator is rated at a slight-to-moderate departure (Appendix C) from the reference condition due to the lack of shrubs and reduced diversity at the site.

The invasive plants indicator is rated a moderate departure (Appendix C) from the reference condition (Appendix C) due to cheatgrass being scattered throughout the site.

Due to the overall indicator ratings, the Biotic Integrity attribute was rated as a slight-to-moderate departure from the reference condition (Appendix C).

Habitat Assessment Framework
HAF site 2, which was monitored in 2012 just before the Kinyon Road Fire, shares the same location as IIRH site RH06 (Appendix D). Direct comparison of the 2012 and 2014 data would not be appropriate due to the different protocols used for data collection. Further, changes in cover data from 2012 to 2014 may be attributed to different transect locations or variability over the landscape. However, the data can provide general similarities or differences between pre- and post-fire conditions. Deep-rooted perennial bunchgrasses comprised 56 percent cover in the 2012 data and 24 percent in the 2014 data. Conversely, shallow rooted perennial bunchgrasses were recorded at 11 percent cover in 2012 and 28 percent in 2014. Similarly, bare ground was recorded at 11 percent in 2012 and 35 percent in 2014. On the other hand, biological soil crusts were recorded at 13 percent cover in 2012 and 7 percent in 2014. Litter also decreased after the fire from 45 percent in 2012 to 30 percent in 2014.

Noxious Weeds
No noxious weed occurrences have been recorded in this pasture.

2013 Post-fire Grazing Reintroduction Monitoring
In the fall of 2013, post-fire grazing reintroduction monitoring (Appendix D) was undertaken at Utilization Site DBSK-1T to evaluate conditions after the 2012 Kinyon Road Fire. Ground cover data shows that deep-rooted bunchgrasses dominate cover at 37 percent over shallow-rooted bunchgrasses at 24 percent. Litter was recorded at 9 percent cover while bare ground was 28 percent. No biological soil crusts were recorded in the cover transect. Based on an evaluation of collected data, monitoring results met the established ESR objectives and indicated that resumption of grazing was appropriate within this pasture.

North Winter Pasture

Rangeland Health
Two small wildfires burned through the southern portion of the North Winter Pasture in 1974 and 2002. The entire pasture burned in the 2005 Clover Fire, the 2007 Murphy Fire, and most recently in the 2012 Kinyon Road Fire (Map 9). In addition, thirty-five percent of the pasture burned in the 2010 Long Butte Fire. Map 15 provides an overview of the fire frequency and burn patterns of past fires within the Devil Creek Balanced Rock Allotment.

Site RH07 is located in a seeded vegetation community (Photo 8) representative of the pasture where Sandberg bluegrass is the dominant cover at 22 percent and deep-rooted perennials such as Snake River wheatgrass and squirreltail are sub-dominant at a combined 16 percent cover. Biological soil crusts comprise 17 percent cover (Appendix D) at the site and provide increased soil and stability. Eleven perennial forb species were observed at the site, although they were not recorded within the cover data; indicating good forb diversity but low abundance. Bare ground is 41 percent at the site. Total litter

represents 23 percent cover and is only slightly below the range described in the ESD reference sheet. The site is of relatively flat topography and burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, and the 2012 Kinyon Road Fire.

A soil stability test was completed at the site during IIRH and the soil stability value averaged 2.8, which is lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a moderate departure from the reference condition for soil surface resistance to erosion. Soil surface loss or degradation was rated a slight-to-moderate departure due to evidence of drill seeding and deposition/soil movement from wind erosion (Appendix C).

The functional/structural group indicator is rated at a slight-to-moderate departure (Appendix C) from the reference condition due to the lack of shrubs and trace amounts of perennial forbs. Sagebrush and rabbitbrush were sparse and infrequent; no recruitment was observed.

Total litter (23%) is slightly lower than the range described in the ESD reference sheet, resulting in a slight-to-moderate departure rating.

Photo 8 Site RH07; June 4, 2014

The invasive plants indicator is rated a moderate departure (Appendix C) from the reference condition due to cheatgrass being scattered throughout the site. Early successional invasive forbs were also noted to be present at the site.

Reproductive capability is also rated a slight-to-moderate departure from reference condition (Appendix C) because Snake River wheatgrass had a low number of seed heads, which is not unusual for older individuals of this cultivar. It was also noted that these plants were robust.

Due to the overall indicator ratings, the Biotic Integrity attribute was rated as a slight-to-moderate departure from the reference condition (Appendix C).

Noxious Weeds
Four noxious weed locations are known to occur within the pasture. Two locations of Russian knapweed (*Acroptilon repens*) are located along the main north-south road bisecting the pasture, and two rush skeletonweed locations occur in the northern central portion of the pasture and the east central part of the pasture (Appendix F, Map 18). These sites have a limited distribution of less than 0.1 acre and have been treated chemically.

2013 Post-fire Grazing Reintroduction Monitoring
In the fall of 2013, post-fire grazing reintroduction monitoring (Appendix D) was performed at Utilization Site DBNW-1T to evaluate conditions after the 2012 Kinyon Road Fire. Ground cover data showed that deep-rooted perennial bunchgrasses at 24 percent cover dominate over shallow-rooted perennial bunchgrasses at 13 percent. Total litter was at 25 percent while bare ground was at 36 percent. No biological soil crusts were recorded in the cover transect. Based on an evaluation of collected data, monitoring results met the established ESR objectives and indicated that resumption of grazing was appropriate within this pasture.

<u>South Winter Pasture</u>

Rangeland Health
The entire South Winter Pasture burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, and most recently in the 2012 Kinyon Road Fire (Map 10). At least 50 percent of the pasture burned in 1995, 1997, and 2010. Map 15 provides an overview of the fire frequency and burn patterns of past fires within the Devil Creek Balanced Rock Allotment.

Photo 9: Site RH08, June 4, 2015

Site RH08 is located in a seeded vegetation community (Photo 9) where Sandberg bluegrass is the dominant cover (28% cover) and deep-rooted perennials such as crested wheatgrass and squirreltail are the sub-dominant (17% cover) cover. Biological soil crusts comprise 7 percent cover (Appendix D) at the site. Five perennial forb species were observed at the site, although they were not recorded within the cover data. Total litter is 23 percent cover and bare ground is 40 percent. The site is of relatively flat topography and burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, and the 2012 Kinyon Road Fire.

A soil stability test was completed at the site during IIRH and the soil stability value averaged 3.8, which is slightly lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a slight-to-moderate departure from the reference condition for soil surface resistance to erosion. Soil surface loss or degradation was rated a slight-to-moderate departure due to evidence of drill seeding and deposition/soil movement from wind erosion (Appendix C).

The functional/structural group indicator is rated a moderate departure (Appendix C) from the reference condition due to the lack of shrubs, low abundance and diversity of forbs, and cheatgrass being scattered throughout the site.

Total litter (23%) is slightly lower than the range described in the ESD reference sheet, resulting in a slight-to-moderate departure rating.

The invasive plants indicator is rated a moderate departure (Appendix C) from the reference condition due to cheatgrass and curveseed butterwort being scattered throughout the site. Early successional invasive forbs were also noted to be present in disturbed areas at the site.

Due to the overall indicator ratings, the Biotic Integrity attribute was rated as a moderate departure from the reference condition (Appendix C).

Habitat Assessment Framework
HAF site 1, which was monitored in 2012 just before the Kinyon Road Fire, shares the same location as IIRH site RH08 (Appendix D). Direct comparison of the 2012 and 2014 data would not be appropriate due to the different protocols used for data collection. Further, changes in cover data from 2012 to 2014 may be attributed to different transect locations or variability over the landscape. However, the data can provide general similarities or differences between pre- and post-fire conditions. Deep-rooted perennial bunchgrasses comprised 40 percent cover in the 2012 data and 17 percent in the 2014 data. Conversely, shallow rooted perennial bunchgrasses were recorded at 21 percent cover in 2012 and 28 percent in 2014. Similarly, bare ground was recorded at 14 percent in 2012 and 40 percent in 2014. On the other hand, biological soil crusts were recorded at 16 percent cover in 2012 and 7 percent in 2014. Litter also decreased after the fire from 28 percent in 2012 to 23 percent in 2014.

Noxious Weeds
There are 9 documented noxious weed locations within the pasture, generally along roadways with a concentration on the eastern border of the pasture (Appendix F, Map 18). All sites have a distribution of 1 acre or less and have been treated chemically.

2013 Post-fire Grazing Reintroduction Monitoring
In the summer of 2013, post-fire grazing reintroduction monitoring (Appendix D) was performed at Utilization Site DBSW-1T to evaluate conditions after the 2012 Kinyon Road Fire. Ground cover data shows that deep- and shallow-rooted bunchgrass cover is similar at 24 and 20 percent, respectively. Litter is 17 percent while bare ground levels are at 39 percent. No biological soil crusts were recorded in the

cover transect. Based on an evaluation of collected data, monitoring results met the established ESR objectives and indicated that resumption of grazing was appropriate within this pasture.

<u>Corral Field Pasture</u>

Rangeland Health

Large areas of the Corral Field Pasture burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, the 2010 Long Butte Fire, and most recently in the 2012 Kinyon Road Fire and 2013 Coonskin Fire (Appendix F, Map 11). In 2009, an aerial application of glyphosate[2] occurred on approximately 1,000 acres of the pasture on the southern third and the northeast corner of the pasture for weed control. Map 15 provides an overview of the fire frequency and burn patterns of past fires within the Devil Creek Balanced Rock Allotment.

Site RH09 is located in a seeded vegetation community (Photo 10) where Sandberg bluegrass is the dominant cover (21% cover), followed by deep-rooted perennials such as crested wheatgrass, Snake River wheatgrass, and squirreltail at a combined 11 percent cover. Cheatgrass represents 6 percent cover at this site. Biological soil crusts were not recorded in the cover transect (Appendix D). Five perennial forb species were observed at the site, although they were not recorded within the cover data. Total litter is 17 percent cover while bare ground is 47 percent. Shrubs are absent from the site aside from a few scattered rabbitbrush plants. The site is of relatively flat topography and burned in the 2005 Clover Fire, the 2007 Murphy Complex Fire, and the 2012 Kinyon Road Fire.

A soil stability test was completed at the site during IIRH and the soil stability value averaged 3.0, which is lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a moderate departure from the reference condition for soil surface resistance to erosion. Soil surface loss or degradation was rated a moderate departure due to evidence of movement/deposition of windblown silts (Appendix C) throughout the site.

The functional/structural group indicator is rated a moderate-to-extreme departure (Appendix C) from the reference condition due to reduced abundance of deep-rooted perennial bunchgrasses and forbs caused by competition from invasive annuals. There is also a low abundance of shrubs (rabbitbrush) at the site.

Early successional invasive forbs are common and abundant at the site. Cheatgrass is also common throughout the site and can also be found in dense patches. Therefore, the invasive plants indicator is rated moderate-to-extreme (Appendix C).

Due to the overall indicator ratings, the Biotic Integrity attribute was rated as a moderate-to-extreme departure from the reference condition (Appendix C).

A step-point method cover transect was performed to record cover data, photos were taken (Photo 11), and a soil stability test was conducted at site RHPP09 to provide information for the southern portion of the pasture. No IIRH field assessment was recorded because the area was just drill seeded in the previous year and has had little time to recover from the 2013 Coonskin Fire.

[2]Glyphosate is a non-selective herbicide. It is applied to the leaves of plants to kill both broadleaf plants and grasses. Glyphosate chemically prevents the plants from making certain proteins that are needed for plant growth. (National Pesticide Information Center/Oregon St. Univ., npic@ace.orst.edu)

Photo 10 Site RH09; June 4, 2014

Photo 11 Site RHPP09; June 4, 2014

Cover information shows that bare ground is 47 percent at the site. Higher amounts of bare ground can be expected following wildfire. Litter is 31 percent cover and is providing surface protection. The plant community is dominated by shallow-rooted bunchgrasses and annual invasive grasses. Distribution of deep-rooted bunchgrasses is patchy and shrubs are absent. Biological soil crusts represent 3 percent cover at this site. A soil stability test was completed within the pasture and resulted in an average soil stability value of 3.1.

Crested wheatgrass seedlings were apparent in most drill rows and small patches of squirreltail are scattered throughout the area. Cheatgrass is present throughout the site and can be found in dense patches in some areas. Tall tumble mustard appears abundant. Shrubs are not present and forbs are of low cover and diversity.

Habitat Assessment Framework
A sage-grouse habitat assessment was performed in May of 2013 and provides additional cover information for the middle portion of the pasture (Appendix D). Ground cover data shows that bare ground is low at the site, representing just 6 percent cover. Deep-rooted perennial bunchgrasses comprise 25 percent cover at the site, and shallow-rooted perennial grass species 12 percent. However, cheatgrass dominates vegetative cover at the site at 46 percent, and litter is 76 percent ground cover. Biological soil crusts and shrubs are absent, which is expected following repeated wildfires at this site in 2005, 2007, and 2010.

Noxious Weeds
One new location of rush skeletonweed was recorded at the RH09 assessment site in 2014. This is a new occurrence that has been added to the JFO weeds database and TFD weed management plan. There are no other known noxious weed occurrences.

Big Field Pasture

Rangeland Health
The Big Field Pasture has been affected by several smaller acreage fires. Larger fires occurred in the pasture in 1980 and 1995, and more recently in 2007 and 2012 (Appendix F, Map 12). Map 15 provides an overview of the fire frequency and burn patterns of past fires within the Devil Creek Balanced Rock Allotment.

Site RH10A is located in a seeded vegetation community (Photo 12) representative of the overall pasture where Sandberg bluegrass is the dominant cover (26% cover) and crested wheatgrass is the sub-dominant (20% cover) cover. Biological soils crusts comprise 20 percent cover (Appendix D) at the site and provide increased soil and site stability. Eight perennial forb species were observed at the site, although they were not recorded within the cover data; indicating moderate diversity but low abundance. Total litter is 65 percent of ground cover while bare ground is 15 percent. The site is of relatively flat topography and burned in 1995 and most recently in the 2007 Murphy Complex Fire.

A soil stability test was completed at the site during IIRH and the soil stability value averaged 3.6, which is slightly lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a slight-to-moderate departure from the reference condition for soil surface resistance to erosion.

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Photo 12: Site RH10 a June 3, 2014

The functional/structural group indicator is rated a slight-to-moderate departure (Appendix C) from the reference condition due primarily to the lack of shrubs.

Total litter (66%) is higher than the range described in the ESD reference sheet and is rated at a slight-to-moderate departure from the reference condition.

The invasive plants indicator is rated a moderate departure (Appendix C) from the reference condition due to cheatgrass and curveseed butterwort being scattered throughout the site. Infrequent patches of cheatgrass occur in areas that have been disturbed.

Due to the overall indicator ratings, the Biotic Integrity attribute was rated as a slight-to-moderate departure from the reference condition (Appendix C).

A step-point method cover transect was performed to record cover data, photos were taken, and a soil stability test was conducted at site RHPP10 (the same location as Trend Site 11S12E34) in the northwest corner of the pasture in a small area that is not representative of the pasture. This site was chosen because of the shared location with trend site 11S12E34 that burned after data were collected in 2012.

A soil stability test was completed at the site and resulted in an average soil stability value of 3.6. Deep-rooted perennial bunchgrasses comprise 9 percent cover, and shallow-rooted perennial bunchgrasses comprise 23 percent. Early successional annual forbs were common throughout the site. Bare ground is 59 percent at this site but higher amounts of bare ground can be expected following wildfire; especially under dryer than normal conditions during the growing season (2013) following the fire (Figure 1). Total litter is 11 percent, and biological soil crusts were not recorded at the site. Lower amounts of litter and biological soil crusts can also be expected following wildfire.

Upland Trend
Current conditions at Trend Site 11S12E34 were captured in a ground cover assessment in 2014 under RHPP10 above. As mentioned there, this location is not representative of the pasture. This site was established in 1987 after two fires, one in 1980 and the other in 1984. Two additional fires occurred in 1995 and 2012 with the latter taking place only a month after the 2012 upland trend monitoring was completed. The area was drill seeded with crested wheatgrass and aerially seeded with Wyoming big sagebrush after the 1995 Blue Gulch Fire. While the trend data do not contribute to, or reflect the current condition due to the 2012 fire, they provide for a general comparison of the pre-fire ground cover conditions specific to this small area.

Photos from 1987 and 2012 depict a grassland community. Pre-fire conditions show that ground cover in the form of biological soil crusts and overall live vegetation increased significantly between 1987 and 2012. Bare ground decreased significantly, with litter also showing a significant reduction. Frequency data shows that both non-native deep-rooted perennial bunchgrasses and native shallow-rooted perennial bunchgrasses significantly increased between 1987 and 2012. The 1995 seeding of crested wheatgrass contributes to its elevated frequency since 1987 (Howard, 1997) (Zlatnik, 1999). The site shows a decline in squirreltail that was present in 1987 but was not recorded in 2012. Cheatgrass also decreased at the site from 55 percent in 1987 to 27 percent in 2012 (Plot 4). The decrease in cheatgrass may be attributed to increased competition of the upland plant community following the 1995 crested wheatgrass seeding. No shrubs were observed at either shrub density plot in either year trend data was collected; however, a few rabbitbrush plants were present in the vicinity of the site.

Long-term trend was established at Trend Site 12S12E22 in 1998, three years after the site was drill seeded with crested wheatgrass and aerially seeded with Wyoming big sagebrush following the 1995 Blue Gulch Fire. The site most recently burned in 2007 and the site was again aerial seeded with sagebrush. The site was re-read in 2012.

Trend data shows an overall increase in vegetative cover at the site in 2012. Frequency data shows Sandberg bluegrass increased significantly from 38 percent (Plot 1) in 1998 to 60 percent in 2012. Meanwhile, squirreltail declined significantly at the site from 40 percent (Plot 3) in 1998 to 2 percent in 2012. A trace amount (2.5 percent frequency, Plot 4) of Thurber's needlegrass was recorded in 1998 but was not noted in 2012. Non-native deep-rooted perennial bunchgrasses (crested wheatgrass) remained static at 81 percent (Plot 2) in 1998 and 80 percent in 2012. Cheatgrass remained static at the site with 7 percent (Plot 4) in 1998 and 9 percent in 2012.

Ground cover shows a significant decrease in biological soil crusts from 28 to 4 percent. Bare ground also decreased from 16 percent in 1998 to 11.5 percent in 2012, with levels remaining within the range described in the ESD reference sheet both years. Litter increased significantly, likely due to the increase in vegetation.

Habitat Assessment Framework
HAF Site 1 is located in an isolated remnant sagebrush stand that represents approximately 230 acres (3%) of the pasture and provides cover data for the unburned and unseeded area (Appendix D; Appendix F, Map 1). Biological soil crusts comprise 46 percent cover at the site and sagebrush is at 24 percent. Deep-rooted perennial grasses were recorded at only 3 percent cover. Likewise, shallow-rooted perennial grasses were low at 8 percent of total cover. Cheatgrass is 2 percent at the site and perennial forb abundance and diversity is low. Perennial plant cover totals 35 percent cover with 24 percent being sagebrush.

A sage-grouse habitat assessment (HAF Site 2) was completed in June of 2012 at the same location as IIRH site RH10A, and has not burned since data collection (Appendix D). Deep-rooted perennial grasses

were recorded at 34 percent cover and shallow-rooted perennial grasses at 22 percent cover. Biological soil crusts comprise 6 percent cover at the site. Cheatgrass was recorded at 1 percent cover.

Noxious Weeds
Four noxious weed species are known to occur within the pasture (Appendix F, Map 18). Three of the four species occur along the western boundary road. Rush skeletonweed is the most widespread with 30 known locations, 29 of which occur along the perimeter of, or within, the 2002 Devil Skin Fire in the southern end of the pasture (Map 18). One rush skeletonweed site is approximately 8 acres in size, while all other sites are less than a tenth of an acre is size. The 3 locations of other species are approximately an acre in size. All sites have been chemically treated.

2006 ESI Monitoring
The 2006 ESI site at which cover data was collected (Appendix D), is located in the southeastern portion of the pasture and last burned in 1995 (Appendix F, Map 1). Biological soil crusts and sagebrush each comprised 15 percent cover at the site. Sandberg bluegrass had the highest cover at 29 percent, followed by sagebrush and biological soil crusts. Squirreltail and crested wheatgrass represents 7 and 3 percent cover, respectfully. Total litter cover was at 56 percent at the site. Bare ground was within the expected range at 18 percent. Cheatgrass was recorded at 1 percent cover at the site.

2013 Post-fire Grazing Reintroduction Monitoring
In the summer of 2013, post-fire grazing reintroduction monitoring (Appendix D) was performed at Utilization Site DBBF-4 to evaluate conditions after the 2012 Kinyon Road fire. Ground cover data shows that the seeded crested wheatgrass is at 25 percent cover, dominant over shallow-rooted bunchgrasses (Sandberg bluegrass) at 11 percent. Cheatgrass is low (1 percent) at the site. Total litter is 8 percent cover while gravel provides 1 percent, and rock 13 percent. Bare ground was 40 percent and no biological soil crusts were recorded along the cover transect. Based on an evaluation of collected data, monitoring results met the established ESR objectives and indicated that resumption of grazing was appropriate within this pasture.

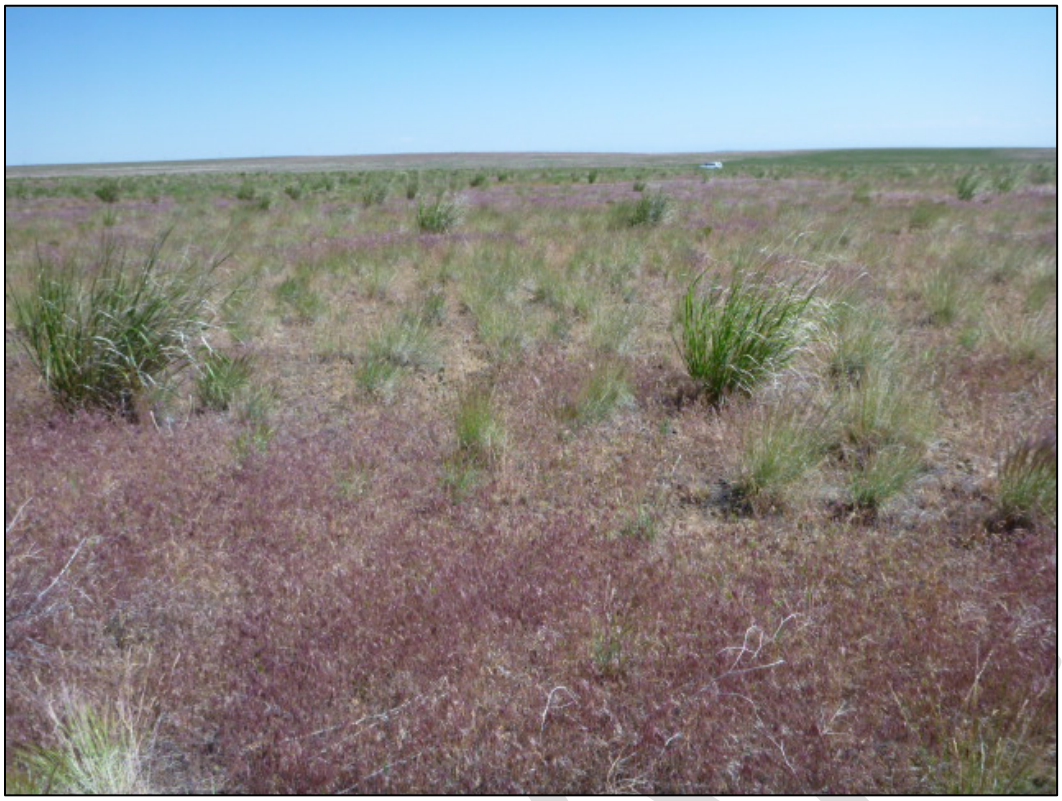
Big Bend Pasture

Rangeland Health
The Big Bend Pasture has been affected by several small acreage fires (from less than 1 percent to 20 percent of the pasture). The 2007 Murphy Complex fire is the only large fire to burn essentially the entire pasture (Appendix F, Map 13). Map 15 provides an overview of the fire frequency and burn patterns of past fires within the Devil Creek Balanced Rock Allotment. Approximately, 3,000 acres in the western half of the pasture were aerial sprayed with glyphosate for weed control in 2009.

Site RH011A is located in a seeded vegetation community where Sandberg bluegrass is the dominant cover (32% cover) and deep-rooted perennial grasses such as Thurber's needlegrass, bluebunch wheatgrass, crested wheatgrass, and squirreltail are sub-dominant at a combined 20 percent cover. Biological soils crusts comprise 15 percent cover (Appendix D) at the site. Seventeen perennial forb species were observed at the site indicating good diversity. Total litter is 57 percent of ground cover while bare ground is 17 percent. Cheatgrass comprises 24 percent cover at the site. The site is of relatively flat topography and burned most recently in the 2007 Murphy Complex Fire.

A soil stability test was completed at the site during IIRH and the soil stability value averaged 3.7, which is slightly lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a slight-to-moderate departure from the reference condition for soil surface resistance to erosion.

Photo 13: RH11a; June 3, 2014



Functional/structural groups were rated at a moderate-to-extreme departure (Appendix C) cheatgrass being the sub-dominant (24 percent) cover at the site. The field notes indicate cheatgrass was present in dense stands scattered throughout the site (Phot 13). Deep-rooted perennial grasses represent 17 percent of the cover at the site while shallow-rooted perennial bunchgrasses represent 32 percent. Forb diversity was moderate but abundance was low. Shrubs (rabbitbrush and sagebrush) were a minor component of the cover, although some recruitment of sagebrush seedlings (less than 10) was noted.

Total litter (57%) is higher than the range described in the ESD reference sheet and is rated at a moderate departure from the reference condition. Field notes indicate the high amount of cheatgrass as the site is contributing to the increase in litter.

Invasive plants were rated moderate-to-extreme (Appendix C) with cheatgrass common throughout the site and also found in dense stands scattered throughout the site (Photo 13).

Due to the overall indicator ratings, the Biotic Integrity attribute was rated as a moderate-to-extreme departure from the reference condition (Appendix C).

Site RH011B is located in a native vegetation community that the 2014 field evaluation sheet notes to be representative of the majority of the Big Bend Pasture. Sandberg bluegrass is the dominant native grass (17% cover) at the site and deep-rooted perennial grasses such as Thurber's needlegrass, bluebunch wheatgrass, and squirreltail represent a combined 3 percent cover. Meanwhile, cheatgrass comprises 21 percent cover at the site. Biological soils crusts were not recorded in the cover transect (Appendix D). Ten perennial forb species were observed at the site indicating moderate diversity. Total litter is 41 percent of ground cover while bare ground is 29 percent. The site is of relatively flat topography and burned most recently in the 2007 Murphy Complex Fire.

A soil stability test was completed at the site during IIRH and the soil stability value averaged 2.8, which is lower than the range of 4 – 6 described in the ESD reference sheet; resulting in a moderate departure from the reference condition for soil surface resistance to erosion. Soil surface loss or degradation was rated a slight-to-moderate departure at the site.

Photo 14: RH11B June 3, 2015

Soil compaction is rated slight-to-moderate due to a weak, non-restrictive soil compaction layer.

Functional/structural groups were rated at a moderate-to-extreme departure (Appendix C) cheatgrass being the dominant (21 percent) cover at the site. Deep-rooted perennial grasses comprised 3 percent of the total cover. Even though the number of forb species present represents a moderate diversity, abundance was low. Rabbitbrush and sagebrush were scarcely present; however, some surrounding remnant shrub islands provide a seed source for recruitment.

Plant mortality was noted on Sandberg bluegrass plants and rated slight-to-moderate; although large bunchgrasses were noted to be healthy. Litter is just above the expected range and was also rated slight-to-moderate. Field notes indicate the high amount of cheatgrass as the site is contributing to the increase in litter.

Invasive plants were rated moderate-to-extreme (Appendix C) with cheatgrass common throughout the site and also found in dense stands scattered throughout the site. In addition to cheatgrass, weedy invasive annual forbs were also present at the site

Due to the overall indicator ratings, the Biotic Integrity attribute was rated as a moderate-to-extreme departure from the reference condition (Appendix C).

Habitat Assessment Framework
HAF Site 1 is located in an isolated remnant sagebrush stand that represents approximately 125 acres (2%) of the pasture and provides cover data for the unburned and unseeded area (Appendix D; Appendix F, Map 1). Biological soil crusts comprise 41 percent cover at the site and sagebrush is at 30 percent. Deep-rooted perennial grasses were recorded at 14 percent cover. Likewise, shallow-rooted perennial grasses were 11 percent of total cover. Litter and bare ground are within the expected range at 35 percent and 14 percent, respectfully. Cheatgrass is 4 percent at the site and perennial forb abundance was low and diversity is low to moderate.

A sage-grouse habitat assessment was completed in June of 2012 at the same location as IIRH site RH11A (HAF Site 2) and burned most recently in the 2007 Murphy Complex Fire (Appendix D; Appendix F, Map 1). Biological soil crusts comprise 5 percent cover at the site while sagebrush was not recorded. Deep-rooted perennial grasses were recorded at 12 percent cover. Similarly, shallow-rooted perennial grasses were 15 percent of total cover. Litter represents 76 percent cover and bare ground was just 6 percent. Cheatgrass is 22 percent at the site and perennial forb abundance was low and diversity is low to moderate. Forb diversity and abundance were noted to be moderate.

A sage-grouse habitat assessment was completed in June of 2012 at the same location as RH11B (HAF Site 3) and also last burned in the 2007 Murphy Complex Fire (Appendix D; Appendix F, Map 1). Biological soil crusts comprise 1 percent cover at the site and sagebrush was not recorded. Deep-rooted perennial grasses were recorded at 8 percent cover. Similarly, shallow-rooted perennial grasses were 9 percent total cover. Litter represents 63 percent cover and bare ground was just 6 percent. Cheatgrass is 40 percent at the site and perennial forb abundance was low and diversity is low to moderate. Forb diversity and abundance were noted to be moderate.

Upland Trend Data
Long-term trend was established at Trend Site 12S12E30 in 1987 and was re-read in 1998 and 2012. Based on available data, the most recent fire occurred in 2007. This site was aerially seeded for sagebrush after the 2007 Murphy Complex Fire.

The key species at the site are Thurber's needlegrass and Sandberg bluegrass. The percent frequency for comparison between years is based on plot 4 within the nested frequency frame for Thurber's needlegrass and plot 2 for Sandberg bluegrass. Frequency of Thurber's needlegrass has decreased at the site from 41 percent in 1987 to 16 percent in 2012. Meanwhile, frequency of Sandberg bluegrass has also decreased from 65 percent in 1987 to 16 percent in 2012. Cheatgrass was recorded at the site for the first time in 1998 at 25 percent (Plot 3) and increased significantly to 100 percent in 2012. The 2007 fire contributed opportunity for cheatgrass expansion with the removal of sagebrush and reduction in perennial grass cover.

Ground cover data shows that bare ground was at 57 percent in 1987 and decreased significantly to 27 percent in 2012. Litter has remained fairly static at the site although vegetative cover has increased significantly. Data for biological soil crusts are unreliable since it was collected

Noxious Weeds
Two known locations of noxious weeds occur along Kinyon Road on the northern boundary of the pasture, Russian and diffuse knapweed (Appendix F, Map 18). Both sites were chemically treated in 2008 and are approximately an acre in size.

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Evaluation of Standard 5
The Biotic Integrity attribute was rated slight to moderate for the Balanced Rock, North Kerbs, School Bus, Bull Horn, South Kerbs, North Winter, and Big Field Pastures. Meanwhile, this attribute was rated moderate for the North End Field and South Winter Pastures and moderate-to-extreme for the Corral Field and Big Bend Pastures.

Soil stability values were below the range described in the ESD reference sheet in most areas of the allotment, indicating a reduced soil surface resistance to erosion. With this, the indicator for soil surface resistance to erosion was rated none-to-slight at one site, slight-to-moderate at five sites, and moderate at six sites. With the exception of the Balanced Rock Pasture where soil stability was within the range described in the ESD reference sheet, all IIRH sites within the allotment have burned at least once since 2007; and a reduction in soil stability can be expected following wildfire.

Signs of soil surface loss or degradation were noted in many of the areas of the allotment that burned in 2005, 2007, and 2012. Some of these areas also burned in 2010. The indicator for soil surface loss or degradation was rated as a departure from the reference condition at nine of the twelve IIRH sites within the allotment; rated slight-to-moderate at six sites, and moderate at the remaining three sites.

A slight compaction layer was noted at five sites within the allotment. Generally, the compaction layer was weak and was not restrictive to root penetration or water infiltration.

Wildfire has removed shrubs from the vast majority of the Devil Creek Balanced Rock Allotment. With this, two pastures (Corral Field and Big Bend) were rated as a moderate-to-extreme departure for the functional/structural group indicator due to the absence of shrubs, reduced abundance/diversity of perennial forbs, and high amounts of cheatgrass (Appendix D). The Balanced Rock and South Winter Pastures were rated as a moderate departure for the functional/structural indicator due to the absence of shrubs, reduced abundance and diversity of forbs, and cheatgrass being scattered. The remaining pastures (North End Field, Bull Horn, North Kerbs, School Bus, South Kerbs, North Winter, and Big Field) were all rated a slight-to-moderate departure for the functional/structural indicator primarily due to the absence of shrubs.

The amount of litter found in most areas of the allotment is below the range described in the ESD reference sheet; however, lower amounts of litter can be expected following wildfire. On the other hand, the amount of litter was higher than the range described in the ESD reference sheet at one site in each of the Big Bend and Big Field Pastures.

Invasive plants were rated moderate-to-extreme departure from the reference condition in the Corral Field and Big Bend Pastures due to cheatgrass being common and found in dense patches in some areas. Invasive plants were rated moderate in the School Bus, Bull Horn, South Kerbs, North Winter, South Winter, and Big Field Pastures, and slight-to-moderate in the Balanced Rock, North End Field, and North Kerbs Pastures. Cheatgrass ranged from being found in disturbed areas to scattered within these pastures.

Evaluation Finding – Balanced Rock, North Kerbs, School Bus, Bull Horn, South Kerbs, North Winter, and Big Field Pastures are:
_X_Meeting the Standard
___ Not meeting the Standard, but making significant progress towards meeting
___ Not meeting the Standard

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Rationale for Evaluation Finding

Plant communities within the Balanced Rock, North Kerbs, School Bus, Bull Horn, South Kerbs, North Winter, and Big Field Pastures have been modified. Drill and aerial seedings have taken place throughout these pastures. Over 90 percent of the Devil Creek Balanced Rock Allotment has been drill and/or aerial seeded at least once with native and non-native grass species to enhance post-fire recovery of the burned areas. The seedings within these pastures are productive and contain healthy, vigorous perennial grasses and low amounts of invasive annuals. Although many of the seeded species were not recorded on the vegetative cover transect, numerous species were observed during the field evaluation. Several perennial forb species were present within the seedings but were found to be at lower levels than expected. The overall diversity of perennial species within the seeded areas of these pastures do not appear to be diminishing over time, as evidenced by the continued presence (2014 IIRH field notes, and Appendix D) of both seeded and native plant species.

Based on the preponderance of evidence, the Biotic Integrity attribute was rated slight-to-moderate departure from the reference condition in each of these (Balanced Rock, North Kerbs, School Bus, Bull Horn, South Kerbs, North Winter, and Big Field) pastures (Appendix C).

Soil stability test values were lower than the range expected within the ESD reference sheet in most areas, indicating reduced soil surface resistance to erosion. However, it is reasonable to expect reduced soil stability values in areas recovering from recent wildfires. In addition, abundant perennial grasses, and some biological soil crusts, are present in these pastures to assist in soil protection and overall site stability.

Due to recent wildfires (2005, 2007, 2010, and 2012), shrubs are of low abundance within the plant communities of the Devil Creek Balanced Rock Allotment. Aerial sagebrush seeding projects have been carried out in some areas but repeated wildfire has hindered shrub establishment. The ID Team rated the functional/structural group indicator at a slight-to-moderate departure in most of these pastures based on the lack of shrubs, presence of deep-rooted perennial bunchgrasses, shallow rooted grasses, and perennial forbs. Although shrubs are lacking overall, deep-rooted perennial bunchgrasses can help support nutrient cycling and energy flow due to their above and below ground structure. Perennial species present within the seeded areas are vigorous, appropriately productive, and are capable of reproduction and recruitment of new seedlings.

Cheatgrass ranged from 0 to 5 percent cover at the IIRH sites representative of these pastures and was noted to be found in disturbed areas or scattered. Cheatgrass was found to be slightly higher at some other sites within the Balanced Rock (10%), Bull horn (7%), and South Kerbs (7%) Pastures; however, a high abundance of native and seeded species in most areas, along with cover of biological crusts, reduces the risk of invasive species increasing within the pastures. Invasive species such as cheatgrass and noxious weeds can become a threat to biotic integrity following large scale disturbances such as wildfire; however, adequate desirable perennial species and biological soil crusts are present within the seeded plant communities to hinder the spread or establishment of invasive or noxious plant species.

The current plant communities lack vertical structure due to wildfires removing the shrubs component. Use by native wildlife dependent on sagebrush for their habitat [i.e. sage thrasher (*Oreoscoptes montanus*), sagebrush vole (*Lemmiscus curtatus*), sagebrush lizard (*Sceloporus graciosus*), least chipmunk (*Neotamius minimus*), and Vesper sparrow (*Pooecetes gramineus*)] is limited at this time. As shrubs re-establish and mature, these animals should return to the area. In the meantime, the seeded plant communities provide habitat for grassland [Savannah sparrow (*Passerculus sandwichensis*), grasshopper sparrow (*Ammodramus savannarum*), and montane vole (*Microtus montanus*)] and generalist wildlife species [horned lark (*Eremophila alpestris*), Western meadowlark (*Sternella neglecta*), deer mouse

(*Peromyscus maniculatus*), and coyote (*Canis latrans*)]. It also can provide seasonal forage for mule deer (*Odocoileus hemionus*), pronghorn (*Antilocapra americana*), and elk (*Cervus elaphus*).

Although biotic integrity is currently reduced following recent wildfires, conditions are expected to continue to recover. At this time, the seeded vegetation communities within the Balanced Rock, North Kerbs, School Bus, Bull Horn, South Kerbs, North Winter, and Big Field Pastures of the Devil Creek Balanced Rock Allotment are still functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle. Current management is expected to provide for maintenance of seeded and native vegetation, native animal habitat, and ecological processes (nutrient cycling, hydrologic cycling, and energy flow) within the seeded plant communities. Therefore, the Balanced Rock, North Kerbs, School Bus, Bull Horn, South Kerbs, North Winter, and Big Field Pastures of the Devil Creek Balanced Rock Allotment are meeting Standard 5.

Evaluation Finding – North End Field, South Winter, Corral Field, and Big Bend Pastures are:
___ Meeting the Standard
___ Not meeting the Standard, but making significant progress towards meeting
_X_ Not meeting the Standard

Rationale for Evaluation Finding
Plant communities within the North End Field, South Winter, Corral Field, and Big Bend Pastures have been modified. Drill and aerial seedings have taken place throughout these pastures. Over 90 percent of the Devil Creek Balanced Rock Allotment has been drill and/or aerial seeded at least once with native and non-native grass species to enhance post-fire resilience of the burned areas. In addition, some areas of the Corral Field and Big Bend Pastures have been chemically treated to reduce cheatgrass. The frequency of wildfire has increased in these pastures over the past decade, with fires occurring in 2005, 2007, 2010, 2012, and 2013 (Appendix F, Map 15).

Based on the preponderance of evidence, the biotic integrity attribute was rated a moderate departure from the reference condition in the North End Field and South Winter Pastures and moderate-to-extreme in the Corral Field and Big Bend Pastures. These departure ratings were based primarily on shifts in functional structural groups, invasive plants, decreased soil stability, and evidence of soil loss or degradation. Due to the short time period since wildfire in these pastures, biotic integrity of the plant communities is low at this time.

Areas within the North End Field, South Winter, Corral Field, and Big Bend Pastures display a shift in functional/structural group composition. In many areas of the pastures, cover of perennial vegetation is reduced while cover of invasive weeds such as cheatgrass is high. Trend data collected within the Big Bend Pasture shows that Thurber's needlegrass and Sandberg bluegrass have both decreased in the pasture over time. Perennial forbs were noted to be of low abundance throughout the pastures. In addition, due to recent wildfires (2005, 2007, 2010, and 2012), shrubs are of very low abundance across the plant communities. Wildfire has essentially eliminated shrubs in most areas, with only small unburned patches of sagebrush remaining. Although aerial seedings have taken place throughout the past few years, repeated wildfire has hindered sagebrush establishment in most areas.

Cheatgrass and annual forbs are scattered to common and of ecological concern within the North End Field, South Winter, Corral Field, and Big Bend Pastures. Cheatgrass ranges from 0-46 percent cover (Appendix D) at the sites monitored within these pastures. Cheatgrass was scattered in some areas but was also noted to be common throughout other areas, and even dominant in patches. Trend data collected in the Big Bend Pasture shows that cheatgrass has significantly increased within the pasture since 1998. Invasive species such as cheatgrass can influence ecological processes and is a threat to biotic integrity in the Corral Field and Big Bend Pastures and has the potential to become a threat in the North End Field

and South Winter Pastures. Biological soil crusts are of relatively low abundance across many of these areas which can provide further opportunity for invasive species expansion, displacement of desirable species, and reduced soil protection. Residual dense litter from cheatgrass further decreases opportunity for recruitment of desirable species and can reduce biological soil crust cover (Serpe, Roberts, Eldridge, & Rosentreter, 2013).

Soil stability values within each of the pastures were lower than the range of 4 to 6 described in the ESD reference sheet, indicating a reduced soil surface resistance to erosion. While it is reasonable to expect reduced soil stability values in areas recovering from recent wildfires, perennial vegetation and biological soil crusts were also reduced in some areas, further decreasing soil and site stability. There is also evidence of ongoing wind erosion and deposition within these pastures. Evidence of soil surface loss or degradation was observed within all four pastures; representing a moderate departure in the North End Field and Corral Field and a slight-to-moderate departure in the South Winter and Big Bend Pastures. It is reasonable to expect some soil surface loss following wildfire, especially in windy areas (Figure 3). Soil surface wind erosion and a shift in the hydrologic regime affect soil properties, especially during the first year after a fire (Sankey, Germino, Sankey, & Hoover, 2012). Increased fire frequency may therefore decrease the resilience of soils to withstand change following disturbance in the sagebrush steppe (Sankey, Germino, Sankey, & Hoover, 2012).

The seeded plant communities within the North End Field, South Winter, Corral Field, and Big Bend Pastures are not functioning to maintain life form diversity, production, native animal habitat, and nutrient and hydrologic cycling, and energy flow at this time. Competition from invasive species decreases opportunity for recruitment of desirable species. Portions of the pastures are dominated by cheatgrass and rush skeletonweed is invading, indicating that the seeded plant community is not being maintained and is at risk for further weed invasion.

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 Does Not Apply

All pastures within the allotment have been drill and/or aerial seeded. The vegetation communities are comprised of seeded and native species and, therefore, are evaluated under Standard 5 – Seedings.

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

Evaluation Finding – Balanced Rock, North End Field, North Kerbs, School Bus, Bull Horn, South Kerbs, North Winter, South Winter, Corral Field, and Big Field Pastures:

_X_ Standard Does Not Apply

The Idaho Department of Environmental Quality (IDEQ) has not completed water quality assessments within these pastures due to the absence of perennial and intermittent streams. Beneficial uses have not been designated within the pastures (IDEQ, 2014). Due to the absence of intermittent or perennial water bodies, Standard 7 does not apply to the Balanced Rock, North End Field, North Kerbs, School Bus, Bull Horn, South Kerbs, North Winter, South Winter, Corral Field, and Big Field Pastures.

Big Bend Pasture

Rangeland Health Assessment
Idaho Department of Environmental Quality (IDEQ) designates basins, sub-basins, and assessment units in order to manage the States waterways. The 2012 Integrated Report (Department of Environmental Quality, 2014) uses assessment units (AUs) within the sub-basin to evaluate water quality and the reasons water quality is impaired. Assessment units are groups of similar streams within a sub-basin that have similar land use practices, ownership, or land management. Assessment units are assessed for pollutants and assigned beneficial uses with associated State Water Quality Standards. The Beneficial Use Reconnaissance Program (BURP) is a field assessment of stream segments (all IDEQ data and standards mentioned here are available on the IDEQ web site http://www.deq.idaho.gov). There are two IDEQ AUs within the Big Bend Pasture of the allotment. Therefore, Standard 7 applies to this pasture.

The 2012 Integrated Report (IDEQ 2014) identifies approximately 10.7 miles of intermittent and/or perennial stream on BLM lands within the Big Bend Pasture that are not supporting the cold water aquatic life beneficial use. The Jarbidge Field Office has identified the ephemeral streams within the planning area, and those reaches have been removed from the water quality analysis. Thus, Standard 7 discusses only those AUs that contain intermittent and perennial stream reaches that are either not supporting the beneficial use and/or are 303(d) listed as water quality impaired.

There are portions of two AUs within the Big Bend Pasture that are not supporting the beneficial uses assigned to them (Table 10). The AUs # ID17040213SK002_03 and ID17040213SK002_04 have streams that are not meeting the cold water aquatic life beneficial use. The reason for non-attainment of the designated beneficial use is elevated water temperature. Both of the AUs were removed from the 303(d) list of water quality impaired streams (Category 5 Streams) for water temperature after the Environmental Protection Agency's (EPA) approval of the Salmon Falls Creek Subbasin Assessment and Total Daily Maximum Load (TMDL) (IDEQ 2008). They are currently included in the 2012 Integrated Report as Category 4a streams (waters with a completed TMDL).

Table 10: IDEQ Water Quality Information for the Allotment

Assessment Unit #	AU Name	Pasture	Beneficial Use Not Meeting	Pollutant/ Pollution	Total Maximum Daily Load
ID17040213SK002_03	Devil Creek - 3rd order segment	Big Bend	CWAL[1]	Temp.	Yes
ID17040213SK002_04	Devil Creek - 4th order segment to mouth	Big Bend	CWAL	Temp.	Yes

[1]CWAL = cold water aquatic life

Evaluation of Standard 7

Evaluation Finding – Big Bend Pasture is:
___ Meeting the Standard
___ Not meeting the Standard, but making significant progress towards meeting
_X_ Not meeting the Standard

Rationale for Evaluation Finding
Although the BLM did not apply Standards 2 and 3 to the allotment, Standard 7 is not being met in Big Bend Pasture. Standard 7 is not applicable in the remaining pastures because there are no intermittent or perennial streams present. The evaluation of Standard 7 is based on IDEQ beneficial use support status and water quality impairment information (IDEQ 2014). Standard 7 is not being met in Big Bend Pasture because reaches of Devil Creek that occur within AU # ID17040213SK002_03 and

ID17040213SK002_04 are not meeting their beneficial uses due to elevated water temperature. However, the 8.5 miles of intermittent Devil Creek have been converted to an ephemeral channel because the flow is diverted upstream of the allotment boundary and the reaches within the allotment are dewatered. As a result of this dewatering, all of the streams that occur within the allotment are functioning as ephemeral drainages (BLM 1998). The absence of riparian vegetation and hydric soils along Devil Creek further supports the conclusion that surface water is not present in the reach of Devil Creek within the allotment (Big Bend Pasture).

The current livestock grazing management for the allotment does not include diverting surface flows from Devil Creek, which occurs upstream of the allotment. Devil Creek within the allotment does not contain the optimum flows required to meet the IDEQ numeric water temperature criteria (IDEQ 2014). The primary cause of the non-attainment for water temperature is due to the absence of surface water, which is diverted from Devil Creek upstream of the allotment, and is not due to livestock grazing. Although livestock grazing can impact streamside vegetation, which can alter water temperature regimes, this is not the primary cause of non-attainment of water temperature criteria for the allotment. Therefore, livestock grazing on the allotment is not causing Devil Creek to fail to support its designated beneficial uses.

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

Rangeland Health Assessment
Plants:
There are no known BLM sensitive plants within the allotment. The allotment contains 11,348 acres (29 percent of allotment) of slickspot peppergrass (*Lepidium papilliferum*; Proposed Endangered, BLM sensitive species) potential habitat (Appendix F, Maps 16-17). Approximately 7,429 acres have been surveyed for slickspot peppergrass; while slickspots were noted no plants were encountered. However, systematic inventories for other special status plants have not been conducted in the allotment.

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). In order to better address the needs of the species, a GIS model was developed to help focus inventory efforts on areas that would have a higher probability of finding slickspot peppergrass plants: BLM Slickspot Peppergrass Occurrence Potential Model 2014. This model used updated data for soils, existing vegetation communities, fire frequency, slope, and elevation to further refine potential habitat and to categorize the habitat into potential categories for finding the species (GIS) (Steward, 2012)). Special Status Plants: Table 1 summarizes acreages in potential habitat categories for this RHA area. Habitats with the highest potential for slickspot peppergrass to occur are remnant native shrub stands, the largest of which occurs in Big Bend with 44% high potential habitat.

The allotment contains 4,131 acres of high potential, 3,193 acres of medium potential, and 3,920 acres of low potential habitat for slickspot peppergrass (Table11). The nearest known occupied habitat for slickspot peppergrass is 8 miles away, on the west side of Clover Creek. There have been no occurrences of slickspot peppergrass found east of Clover Creek.

Table 11: Slickspot Peppergrass Potential Habitat (Acres)

Pasture	Potential Habitat (Acres)		
	High	Medium	Low
Balanced Rock	107	347	131
North End Field	57	236	2
North Kerbs	0	60	>1
School Bus	0	469	0
Bull Horn	0	468	72
South Kerbs	0	0	0
North Winter	0	102	0
South Winter	1	54	35
Corral Field	0	46	1
Big Field	338	202	1,257
Big Bend	3,626	1,195	2,421
Exclosure	0	14	>1

Animals:

Presence of various special status wildlife species are primarily based on incidental observations by BLM personnel and data entered into the Conservation Data Center database by other individuals.

Assessments for special status species and other wildlife habitats within the allotment focus on three major habitat types: cliff, shrub steppe, and grassland. No riparian-wetland or aquatic habitat occurs on this allotment. Assessments for each habitat type, with descriptions of a representative sample of special status species from each, are used to inform BLM on the suitability of the habitats for both special status species and other wildlife. Appendix E contains a list of BLM sensitive species that occur within the Jarbidge Field Office with a brief habitat description, where the habitat may be found on the allotment, and what habitat category or categories each species fits under. If a species is not expected to occur within the allotment, it is identified in the table and will not be discussed further.

Canyonland habitats are important to a variety of special status species as roosting and nesting sites, including, golden eagle, peregrine falcon, big brown bat, canyon bat, pallid bat, spotted bat and many others. Within the allotment, canyonland habitat occurs along the Devil Creek drainage and adjacent to the allotment along Salmon Falls Creek. Cliffs and rock outcrops are used by a variety special status species that likely forage within the allotment. Typical multiple use practices within the allotment have little or no effect on the availability and suitability of cliff habitat but they may affect the condition of other habitats where these species forage. The condition of the foraging habitats would-determine whether the available and otherwise suitable cliff habitat is used by special status species.

Sagebrush is the most wide spread vegetation in the intermountain lowlands in the western United States (USDI USFWS, 2010). More than 350 species of wildlife rely on sagebrush steppe habitats for all or part of their existence (Suring et al. 2005). The entire allotment was historically sagebrush-steppe. However, due to frequent and repeated wildfires, sagebrush-steppe habitat has been reduced to multiple small patches totaling approximately 481 acres within the allotment. The only remaining sagebrush occurs in small isolated patches in the Big Bend Pasture (169 acres, 2 percent of pasture), Big Field Pasture (217 acres, 3 percent of pasture), Corral Field Pasture (36 acres, 2 percent of pasture), North Winter Pasture (4 acres, 0.2 percent), Balanced Rock Pasture (7 acres, 0.2 percent) and the exclosure along Devil Creek (48 acres, 8 percent of pasture).

The grassland habitat within the allotment is a result of seeding efforts after wildfires and consists of various mixes of species, including crested wheatgrass, Snake River wheatgrass, squirreltail, Sandberg bluegrass, and Thurber's needlegrass. Many of these seeded areas also have reduced forb abundance and diversity compared to what would be expected in the reference state after a wildfire.

Greater Sage-Grouse (*Centrocercus urophasianus*)

Sage-grouse are treated as a sensitive species by the BLM. Sage-grouse are considered sagebrush obligates that require extensive stands of sagebrush with a diverse and vigorous herbaceous understory to meet their seasonal needs (Connell et al. 2000) (Holloran, et al., 2005). Sage-grouse display and breed on leks (i.e., display grounds with sparse vegetation cover) between March and May and afterwards hens disperse to nest in areas around the leks. Sage-grouse often return to the same general area to breed and nest each year. Hens seek out nest sites that are concealed from predators, especially avian predators (Conover et al. 2010), by utilizing a combination of sagebrush and grass cover. When chicks hatch, they feed on insects and forbs and slowly move with their mother towards wetter areas like wet meadows or streams and springs where forbs are still green and growing.

A diverse and abundant forb component is necessary as forage, and a diverse and intact shrub steppe community is necessary to support a variety of insects that are critical to the growth of young sage-grouse (Knick & 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 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).

According to the BLM's 2014 sage-grouse habitat planning map, the public land on the Devil Creek Balanced Rock Allotment is categorized as approximately 1 percent (~481 acres) Key Habitat, 91 percent (~34,267 acres) R1 (perennial grassland), 7 percent (~2,746 acres) R2 (annual grassland) (Appendix F, Map 2). This map is updated annually based on wildfires and management activities and is considered a living document (Idaho Sage-grouse Advisory Committee, 2006). Key habitat consists of areas of generally intact sagebrush that provide sage-grouse habitat during some portion of the year (Idaho Sage-grouse Advisory Committee, 2006). Sage-grouse have been observed within or near the allotment during all seasons of the year. As of 2014, the allotment contains 1 occupied lek; within five miles of the allotment there are 10 occupied and 6 unoccupied leks (Appendix F, Map 2), Sage-grouse lek attendance at occupied leks within 5 miles of the allotment are shown in Table 11.

Table 11: Survey Results of Occupied Leks Within Five Miles of the Allotment (2000-2014)

Lek	Location	Survey Year and Number of Birds Observed[1]														
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14
2O-165	Big Bend Pasture	9	8	7	--	8	--	--	9	9	4	2	4	--	0	4
2O-065	3.5 miles west	#	#	#	#	#	#	#	# *	#	12	5	--	--	--	--
2O-697	0.3 miles west	#	#	#	#	#	#	#	2*	0	0	4	1	4	0	0
2O-150	4.7 miles west	#	#	#	#	#	19	--	7 *	15	7	6	0	--	--	--
2T-151	0.3 miles east	13	11	8	--	0	0 *	0	0 *	19	10	18 *	0	4 *	8	4
2T-152	0.02 miles east	0	0	0	--	0	0 *	0	-- *	0	0	-- *	13	0 *	0	0
2T-149	4.4 miles east	18	16	12	--	--	2	3	--	0	8	0	4	12*	16	9
2T-162	1.8 miles east	18	5	8	--	--	18	8	11 *	12	14	5	8	3	10	6
2T-170	0.6 miles east	9	2	--	--	--	16	17	24 *	16	6	4	0	0	0	0
2T-210	4.3 miles southeast	#	#	#	#	#	#	#	#	#	#	#	#	#	#	18

[1]Surveys were not conducted in years indicated by dashes (--); an asterisk indicates area around lek burned in a wildfire that year (*). # indicates that the lek had not been discovered at that time.

Large and re-occurring fires, such as the Clover Fire in 2005, the Murphy Complex Fire of 2007, the Long Butte Fire of 2010, and the Kinyon Road Fire of 2012, have eliminated the majority of key habitat in the allotment. HAF site Big Bend 1 is located within a ~130 acre patch of intact sagebrush habitat, however, only approximately 2 percent (~169 acres) of the pasture does have intact sagebrush habitat. Additionally, Big Field Site 1 is located within a ~200 acre patch of relatively intact sagebrush, but only approximately 3 percent (~217 acres) of the allotment is intact sagebrush while the vast majority is seeded grassland. Additionally, deep-rooted perennial grasses are greatly reduced within the intact sagebrush habitat in the Big Field Pasture. Therefore, while these two sites indicate that there is some intact sagebrush, they are not representative of large portions of the allotment or even these two pastures. The data from the remaining HAF sites and the other IIRH sites indicate that sagebrush has been almost completely removed from the allotment (see Appendix C and E). Perennial bunchgrasses are abundant throughout the allotment as a result of seeding efforts would provide the necessary herbaceous cover for sage-grouse if adequate shrub cover was also present. Cheatgrass is present in most pastures of the allotment, but is most common in the Corral Field and Big Bend Pastures (see Appendix C and E; Appendix F, Map 2). The allotment has been seeded and is now native and exotic perennial grassland.

Nesting and Early Brood Rearing Habitat

The current conditions of sage-grouse seasonal habitats were assessed following protocols outlined in the Sage-grouse Habitat Assessment Framework (HAF) (Stiver, Rinkes, & Naugle, 2010). Sage-grouse habitat suitability assessments were conducted in 2012 at 9 sites within the allotment (Appendix F, Map 2), but shortly after, the majority of the allotment burned in Kinyon Road Fire of 2012 (Maps 3 to 15).

In 2013, data were collected at 2 HAF sites in the Corral Field and Balanced Rock Pastures (Appendix F, Map 1). During the 2012 and 2013 data collection, a single sage-grouse chick was observed at the Big Field HAF site 2 but no other sage-grouse or their sign was recorded at any of the other sites.

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Sage-grouse habitat suitability assessments are indicators of habitat suitability but, are not necessarily an indication of rangeland health. However, vegetation data collected as part of the habitat suitability assessments may be used to inform and interpret other rangeland health information and observations. Sage-grouse habitat suitability assessments are shown in Table 12.

Table 12: Sage-Grouse Habitat Assessment, Nesting and Early Brood Rearing (Arid Sites)[1]

Habitat Parameters	Pasture Names and Numbers/ HAF Sites										
	Balanced Rock	South Kerbs		North Winter	South Winter	Corral Field	Big Field		Big Bend		
	1	1*!	2*	1*	1*	1	1	2	1	2	3
Average Sagebrush Canopy Cover S =15-25% M=10-<15% or >25% U= <10%	U 2%	U 0%	U 0%	U 0%	U 0%	U 0%	S 23.5%	U 0%	M 30%	U 0%	U 0%
Average Sagebrush Height S=12-30” M=10-11” or >30” U= <10”	M 34”	U 0”	U 0”	U 0”	U 0”	U 0%	S 27”	U 0”	S 20”	U 0”	U 0”
Sagebrush Growth Form S=Spreading M=Mix Spreading and Columnar U=Columnar	NA	NA	NA	NA	NA	NA	S	NA	M	NA	NA
Average Grass Height S=≥7” M=5-<7” U=<5”	S 9”	S 13”	S 9”	S 10”	S 10”	S 8”	U 4.9”	S 8”	S 8”	S 8”	S 9”
Average Perennial Grass Canopy Cover S=≥10% M=5-<10% U=<5%	S 50%	S 66.5%	S 39.5%	S 37%	S 60.5%	S 37%	S 10.5%	S 55.5%	S 24%	S 30%	S 15.5%
Average Forb Canopy Cover S=≥5% M=3-<5% U=<3%	U 2%	U 1.5%	U 1%	S 6.5%	U 0%	M 3%	U 1%	U 0%	M 3%	S 5.5%	S 5%
Preferred Forb Abundance and Diversity S=Forbs common with at least a few pref. species common M=Forbs common, but only 1 or 2 pref. species present U=Forbs rare to sparse	U	S	U	S	U	S	M	U	M	S	S
Overall Site Evaluation	**U**	**U**	**U**	**U**	**U**	**U**	**M**	**U**	**M**	**U**	**U**
Pasture Evaluation**	**U**	**U**		**U**	**U**	**U**	**U**		**U**		

1 Each parameter is rated as Suitable (S), Marginal (M), or Unsuitable (U) as defined in the 2010 HAF (Stiver, Rinkes, & Naugle, 2010)

* These sites burned in 2012 after the assessments were completed. However because these sites had already burned in 2007 in the Murphy Complex Fire the data collected is still applicable as sagebrush is still lacking and the seedings are similar to the pre-fire conditions of 2012.

** Sage-grouse assessments were not completed in the Bull Horn, North End Field, North Kerbs, and School Bus Pastures but, based on the data collected for the interpreting indicators of rangeland health assessments in these pastures, they do not provide suitable habitat for sage-grouse.

! South Kerbs burned in 2012 after the HAF data was collected and sagebrush was removed from the site. The rating for sagebrush cover, height, and growth form were adjusted accordingly in this table.

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Late Brood Rearing Habitat
Without sagebrush cover, the allotment is generally unsuitable as late brood rearing habitat. The potential for late brood rearing habitat is also minimal because none of the pastures contain any known wet meadows or riparian habitats that would provide late season succulent forbs. However, there are agricultural fields east of the allotment in the Castleford and Roseworth areas where sage-grouse could find late season succulent forage.

Winter Habitat
The general lack of sagebrush in the Devil Creek Balanced Rock Allotment makes it unsuitable as winter habitat for sage-grouse.

Pygmy Rabbit (*Brachylagus idahoensis*)
Pygmy rabbits are sagebrush obligates that are usually found in areas with tall dense stands of big sagebrush and deep soils (Green & Flinders, 1980) (Heady & Laundré, 2005). Pygmy rabbits usually excavate burrow systems with multiple entrances. Burrow entrances are often at the base of sagebrush (Green & 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 & Flinders, 1980). Grasses and forbs make up more of the diet in the late spring into early summer.

Pygmy rabbits (*Brachylagus idahoensis*) have been found within 1 mile of the allotment to the west and within 5 miles to the east, and may have occurred within the allotment in the past. No surveys have been conducted within the allotment. However, since pygmy rabbits are sagebrush obligates, elimination of almost all the sagebrush within the allotment makes it unlikely that they occur in the current grassland habitat.

Sagebrush Sparrow (*Artemisioispiza nevadensis*)
Sagebrush sparrows are sagebrush obligates that are typically common in shrub steppe habitats during the spring and summer (Martin & Carlson, 1998). Sagebrush sparrows nest in shrubs, in bunchgrasses, or occasionally on the ground at the base of a shrub (Martin & 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 & Carlson, 1998). Sagebrush sparrows feed primarily on the ground under shrubs eating seeds, insects, spiders, fruits, and succulent vegetation (Martin & Carlson, 1998).

Sagebrush sparrows were historically present throughout the allotment when there was abundant intact sagebrush-steppe habitat. Now that wildfires have removed almost all sagebrush, sagebrush sparrows would likely only occur within the ~400 acres of remaining habitat.

Ferruginous Hawk (*Buteo regalis*)
Ferruginous hawks typically inhabit flat and rolling terrain in grasslands and shrub steppe regions (Bechard & 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 & Schmutz, 1995). Locally, ferruginous hawks that nest on the ground are rarely successful (Jim Klott, pers. Communication). Ferruginous hawks prey primarily on mammals, including ground squirrels (*Urocitellus* spp.), black-tailed jackrabbits (*Lepus californicus*), mountain cottontails (*Sylvilagus nuttalli*), and gophers (*Thomomys talpoides*) (Bechard & Schmutz, 1995).

Ferruginous hawks are known to nest in junipers in the allotment. Two known nesting territories are located within the Big Bend Pasture in two separate stringers of junipers. Healthy native shrub and

bunchgrass communities and a natural range of habitat variation provide better habitat for ferruginous hawks than seeded grasslands, however, ferruginous hawks are expected to forage within all pastures of the allotment.

Loggerhead Shrike (Lanius ludovicianus)
Loggerhead shrikes are associated with open grasslands and shrub-steppe habitats. In southern Idaho, loggerhead shrikes are present in the spring and summer and typically nest in big sagebrush, antelope bitterbrush and greasewood (Woods & Cade, 1996) (Yosef, 1996). In the Jarbidge Field Office, loggerhead shrike nests have also been found in western juniper (*Juniperus occidentalis*). 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.

Within the allotment, loggerhead shrikes are expected to use the intact sagebrush patches and seeded areas that contain isolated clumps of sagebrush or other shrubs.

Piute Ground Squirrel (Urocitellus mollis)
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 & Sherman, 2003). The diet of Piute ground squirrels is dominated by herbaceous vegetation including grasses and forbs, seeds, and animal matter (Rickart, 1987) (Yensen & Sherman, 2003). Piute ground squirrels excavate deep and shallow burrow systems (Reynolds & Wakkinen, 1987).

Although Piute ground squirrels have been observed in the allotment, the BLM does not have distribution data on ground squirrels within the allotment. Piute ground squirrels may occupy the larger patches of sagebrush within the Big Bend and Big Field pastures but are likely absent from most of the allotment.

Grasshopper Sparrow (Ammodramus savannarum)
In the western United States, grasshopper sparrows are found in grasslands and prairies that have some shrubs, but avoid areas of extensive shrub cover (Vickery, 1996). They feed on insects (especially grasshoppers) and seeds and forage exclusively on the ground (Vickery, 1996). Grasshopper sparrows build their nests on the ground under a domed canopy of grasses (Vickery, 1996). In southern Idaho, grasshopper sparrows are typically present in the spring and summer (Vickery, 1996).

Grasshopper sparrows would be expected to use the seeded perennial grasslands within the allotment. Available habitat for grasshopper sparrows has increased dramatically in recent years due to more frequent wildfires and the post-fire seeding treatments which have converted hundreds of thousands of acres from sagebrush steppe to perennial grasslands.

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

Evaluation Finding – All Pastures (Balanced Rock, North End Field, North Kerbs, School Bus, Bull Horn, South Kerbs, North Winter, South Winter, Corral Field, Big Field, and Big Bend) are:
___ Meeting the Standard
___ Not meeting the Standard, but making significant progress towards meeting
_X_ Not meeting the Standard

Rationale for Evaluation Finding
The Devil Creek Balanced Rock Allotment is not providing habitat suitable for the maintenance of viable populations of special status species. Habitat for many species of BLM Sensitive wildlife species should occur within the allotment. However, landscape level changes in plant communities have greatly reduced the extent of shrub steppe habitat. No pastures within the allotment are meeting Standard 8.

Table 13: Overall Habitat Suitability for BLM Sensitive Wildlife Species by Pasture

Habitat Type	Balanced Rock	North End Field	North Kerbs	School Bus	Bull Horn	South Kerbs	North Winter	South Winter	Corral Field	Big Field	Big Bend
Canyon-land	S	NA	NA	NA	NA	NA	NA	NA	NA	S	S
Shrub Steppe	U	U	U	U	U	U	U	U	U	U	U
Grassland	S	S	S	S	S	S	S	S	S	S	S

S = suitable, M = marginal, U = unsuitable
Suitable: all habitat components required for the reproduction and survival of species associated with that habitat type are intact and species would be expected to reproduce and survive at expected rates.
Marginal: Some habitat components are missing or are at lower than expected abundances for the site but the species associated with that habitat type may still use the site but would be expected to have lower reproductive success and higher mortality than in suitable habitats.
Unsuitable: Some habitat components necessary for the successful reproduction and or survival of the species associated with that habitat type are absent and those species are not expected to use that area.

As shown in Table 13, cliff habitat occurs in the Big Bend and Big Field Pastures and adjacent to the Balanced Rock Pasture. Multiple special status species utilize the cliffs on and adjacent to the allotment for roosting and nesting. These habitats are generally unaffected by most land management actions and remain in their natural state. The conditions of habitats adjacent to these cliffs, where cliff dependent species forage, are going to influence whether otherwise suitable cliff habitat is used by special status species.

Large fires, such as the Clover Fire in 2005, the Murphy Complex Fire of 2007, the Long Butte Fire of 2010, and the Kinyon Road Fire of 2012, have eliminated the majority of sagebrush in the allotment. The only remaining sagebrush occurs in small isolated patches in the Big Bend, Big Field, and Corral Field Pastures.

Sagebrush dependent species (loggerhead shrike, pygmy rabbit, sage-grouse, sagebrush sparrow, and sage thrasher) have lost most of their habitat within the allotment to wildfire. Drill seeding and repeated wildfires have contributed to reduced perennial forb abundance and diversity in many areas. The combined reduction in forbs and sagebrush has decreased habitat complexity within all pastures. As a result, the abundance and diversity of insects, birds, and small mammals, that many special status species and associated wildlife rely on as food, are limited on the allotment. Where sagebrush has been reseeded, recovery of the sagebrush community needed for sage-grouse is expected to take one (Wambolt & Payne, 1986) to several (Baker, 2006), (Baker, 2011) decades assuming the absence of additional fire. Where sagebrush was not reseeded, natural recovery is expected to take much longer as the seed source for sagebrush has been greatly reduced on this allotment. The recovery of forb abundance and diversity is also expected to take decades but may not recover without seeding.

Following the fires the BLM aerial seeded sagebrush in strips; however, following the Kinyon Road Fire in 2012 the BLM did not reseed sagebrush in the allotment. Areas burned in the Kinyon Road Fire that were not reseeded to sagebrush include the north one third of the Big Field Pasture, the north half of the Corral Field Pasture, the south half of the School Bus Pasture, the south two thirds of the Bull Horn Pasture, and the entire North Winter, South Kerbs, and South Winter Pastures.

Eleven sage-grouse habitat suitability assessments were conducted in seven of the pastures. Based on these assessments, the allotment was rated as unsuitable for sage-grouse, primarily due to a lack of sagebrush and reduced forb abundance and diversity. In addition:

- Sage-grouse rely on sagebrush for cover to escape predators and conceal nests (Connelly et al. 2011). They also feed on sagebrush almost exclusively in the winter (Connelly et al. 2011). Without sufficient sagebrush, sage-grouse experience increased predation and decreased nest success because individual birds and their nests are more visible to predators (Gregg et al. 1994). Insufficient forage during the winter and early spring can affect survival rates or reduce body condition that often lead to decreased reproductive success and smaller clutch sizes the following spring (Barnett & Crawford, 1994). Sage-grouse would be expected to move to habitats with adequate sagebrush rather than attempt to nest or winter in the seeded grasslands in the allotment.

- Sage-grouse eat forbs in the spring because they are more digestible and have higher protein content than sagebrush (Connelly et al. 2011). Consumption of forbs improves hen sage-grouse body condition, which is believed to improve clutch size and increase the possibility of re-nesting, resulting in greater reproductive success (Barnett & Crawford, 1994; Gregg et al. 1994). Most pastures in the allotment contain limited plant diversity and a reduced amount of forbs that are needed by sage-grouse to obtain adequate nutrition. Sage-grouse in areas with few forbs would have a poorer body condition than sage-grouse using areas with abundant forbs (Barnett & Crawford, 1994; Gregg et al. 1994).

- The loss of sagebrush and the reduction in forbs over much of this allotment make it unsuitable for sage-grouse. Sage-grouse that do attempt to nest within the allotment are expected to have lower reproductive success than sage-grouse nesting in suitable habitats. Brood rearing and winter habitat is also essentially absent from the allotment.

Sagebrush sparrows were historically present in the allotment but wildfire has eliminated the necessary shrub cover across most of the allotment. Sagebrush sparrows would be expected to use the remaining patches of sagebrush (approximately 400 acres) but, without sagebrush, the majority of the allotment lacks suitable nesting or foraging habitat. Generally, the allotment is expected to be unsuitable for sagebrush sparrows until a sagebrush component is established again.

The complexity and diversity of the habitats on this allotment have been greatly reduced by fire. With less complex and diverse habitats, fewer species and lower abundances of potential prey items are also expected. Ferruginous hawks prey primarily on small mammals (Bechard & Schmutz, 1995). The conversion from sagebrush-steppe to seeded grassland has reduced their prey base. Consequently, hawks would have to forage over larger areas and for longer periods of time to capture sufficient prey than they would in an intact and healthy shrub steppe habitat.

Loggerhead shrikes were historically present in the allotment but wildfire has eliminated the necessary shrub cover in most of the allotment. Loggerhead shrikes would be expected to use the remaining patches of sagebrush (approximately 400 acres) and the adjacent grasslands. The loss of shrubs and the reduction in forbs has likely resulted in a less diverse and abundant prey base and reduced perches from which to hunt compared to a healthy and vigorous shrub steppe community. Currently the allotment supports few shrikes and increases in shrub habitat will likely take decades.

Wildfire has removed the sagebrush component that is essential to the maintenance of pygmy rabbits. The lack of sagebrush within this allotment makes it unsuitable for pygmy rabbits and they are not expected to occupy the allotment at this time.

Wildfire has converted shrub-steppe habitats in the allotment to perennial grasslands that provide a less stable and desirable environment for Piute ground squirrels (Steenhof et al. 2006), (Yensen et al. 1992); (Van Horne et al. 1997). Cheatgrass is common in several pastures and reduces habitat quality for ground squirrels (Steenhof et al. 2006).

Grassland habitats are the most common habitat within the allotment and are much more abundant than expected due to recent wildfires. Grassland dependent species populations would likely increase in balance with the available habitat. In the absence of large fires, grassland habitat may slowly shift back to shrub steppe and reduce habitat for grasshopper sparrows. However, this change would take multiple decades and, based on recent fire occurrences, is unlikely.

Habitat for grassland dependent species will likely remain abundant within the allotment. Because the majority of the grasslands found across all pastures are a result of wildfires followed by seeding, components of native and naturally occurring grasslands (forb and grass species diversity) may be lacking and could result in reduced use by or lower reproductive success from associated general wildlife species. However the grassland habitat is suitable for special status species associated with grasslands like the grasshopper sparrow and long-billed curlew.

The seeded perennial grasslands within the allotment provide adequate habitat for grasshopper sparrows. In fact, in Alberta, Canada grasshopper sparrows were more common in crested wheatgrass seedings than in native grassland (Dechant, et al., 2003). The necessary cover, forage base, and nesting habitat for grasshopper sparrows are expected to be maintained on the allotment.

Although canyonland habitat and grassland habitat are suitable for special status species, the allotment should be dominated by shrub steppe habitat but it's not. The allotment has repeatedly experienced wildfires and only about 481 acres of it still contains sagebrush habitat. Forb abundance and diversity is also reduced and both forbs and sagebrush are essential to the maintenance and survival of sage-grouse populations. Without adequate amounts of these necessary components, this allotment does not provide suitable habitat for sage-grouse and other shrub steppe obligate species.

The loss of most sagebrush also greatly reduces the available nesting habitats for species like Brewer's sparrows, sagebrush sparrows, and loggerhead shrikes, resulting in reduced abundance of those species within the allotment. The loss of sagebrush and decline in forbs has reduced the complexity of the habitat. As a result, the number of prey species available for both raptors and insectivorous birds is expected to remain low within the allotment.

Based on the above information, the allotment is not providing suitable habitats for special status species due to the loss of sagebrush habitat and the reduction in forbs across the allotment. This is in large part due to recent wildfires, especially repeated wildfires. The allotment is not meeting Standard 8.

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APPENDIX A: OVERVIEW OF DEVIL CREEK BALANCED ROCK EMERGENCY STABILIZATION AND REHABILITATION

Summary of Most Recent and Widespread Fire Events in 1995 and from 2005 to 2013

A display of various fire-specific seed mixes and a breakdown of aerial and mechanical post-fire treatment acres are available in Tables A-1 and A-2 and in the project file. Acres and other information may vary and are based on available data and their numerous different sources. Fires between 1996 and 2004 are not discussed due to their small extent.

Coonskin Fire 2013

The Coonskin Fire was caused by lighting in the central Jarbidge Field Office on July 31, 2013. The fire burned 4,378 acres of public land and affected the southern part of Corral Field and small portions of Big Bend and Big Field Pastures within the allotment. Previous to the fire, this area was occupied primarily by older crested wheatgrass seedings and a Snake River wheatgrass seeding that was implemented following the 2007 Murphy Complex Fire.

The fire also burned some sagebrush islands that were remnants missed by past fires. The sagebrush islands consisted of Wyoming big sagebrush with Sandberg bluegrass, squirreltail, Thurber's needlegrass, Indian ricegrass, and bluebunch wheatgrass in the understory. Pre-fire, nearly the entire burned area in the Corral Field Pasture was dominated by cheatgrass. The burned area also contains 3,519 acres of slickspot peppergrass potential habitat although no occupied habitat occurs within the fire perimeter.

Kinyon Road Fire 2012

The lighting caused fire ignited in the central Jarbidge Field Office on July 7, 2012, and affected a total of 172,335 acres that have burned two or more times in the last 20 years. The burned area within the fire perimeter also contains 104,636 acres of potential habitat for slickspot peppergrass.

A total of 23 grazing allotments were affected, including the allotment that was burned across all or parts of every pasture except Big Bend. As a result of past fire history and post-fire rehabilitation, pre-burn vegetation consisted primarily of mixed native/non-native and older crested wheatgrass seedings with a few remnant Wyoming big sagebrush stands. The fire burned quickly with lowest severity in the seeding areas and highest in the remaining sagebrush stands.

Balanced Road Fire 2012

This fire was human caused with the start occurring on private land on June 3, 2012, and affected a total of 6,241 acres of public land. The entire fire area, with the exception of the area north of the Balanced Rock Road (currently a wildlife tract), has burned one or more times in the last 40 years with the 2005 Clover Fire, 2007 Murphy Complex Fires, and 2010 Long Butte Fire affecting all or parts of the currently burned area south of the Balanced Rock Road. As a result of past fire history and post-fire rehabilitation, pre-burn vegetation consisted primarily of mixed native/non-native and crested wheatgrass seedings.
In the allotment, the fire burned Balanced Rock, Bull Horn, North End Field, North Kerbs Field, and School Bus Pastures. The burn perimeter contains 887 acres of potential habitat for slickspot peppergrass, which was listed as threatened under the Endangered Species Act (ESA) in 2009.

Long Butte Fire 2010

The Long Butte Fire was the result of a lightning strike south of the Saylor Creek Air Force Range on August 21, 2010, and burned through 26 livestock grazing allotments, including nine pastures in the allotment. Portions of the Long Butte Fire re-burned areas that were most recently affected by the 2005 Clover and 2007 Murphy Complex Fires within these pastures removed remaining native shrub and burned through existing seedings established in the past although considerable patches remain unburned.

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Additionally, the acreage successfully seeded as the result of previous ESR projects substantially reduced the need for ground seeding treatments following this fire in all but Corral Field.

Elk Mountain/Murphy Complex Fires 2007

The Murphy Complex, which originally consisted of the Rowland, Elk Mountain, Smith Crossing, and Buck Flat Fires, ignited on July 16, 2007, as a result of lightning. The fire burned a total of 593,549 across portions of 3 BLM field offices; parts of the Humboldt Toiyabe Forest, state managed lands, as well as portions of private lands. All pastures of the allotment were affected as part of the Elk Mountain fire although the eastern halves of the Balanced Rock and Big Field Pastures remained unburned. Post-fire rehabilitation included aerial seeding of sagebrush and chemical weed treatments across most pastures of the allotment and a minor amount of drill seeding in in Big Bend.

Clover Fire 2005

Lightning started the Clover Fire on July 20, 2005 and burned a total of 192,846 acres of rangeland across the Jarbidge FO. In the allotment, all pastures except the southernmost Big Field and Big Bend Pastures were affected. Post-fire rehabilitation efforts included chemical weed treatments, and aerial sagebrush and mechanical grass and forb seeding with the latter resulting in one of the last major drill seeding effort (~14,500 acres) in the allotment to date.

Blue Gulch 1995

The Blue Gulch Fire started on July 29, 1995 and burned ~17,200 total acres over several days. In the allotment, the fire affected portions of South Kerbs, North and South Winter, Corral Field, Big Bend, and the exclosure. Most acres were burned in Big Field although some larger unburned islands remained within the pasture. Approximately 80 to 85 percent of the burn area was drill and aerially seeded during the fall and winter of 1995/96.

Table A-1: Most Recent or Widespread Fire Events With Seed Species Mix Treatments[1]

Fire Name and Year	Drill - Species Seed Mix	Aerial - Species Seed Mix
2013 Coonskin	Anatone bluebunch wheatgrass, Vavilov Siberian wheatgrass, Mountain Home Sandberg bluegrass, squirreltail, Eski sanfoin, western yarrow, Ladak alfalfa	Wyoming big sagebrush
2012 Kinyon Road	Ladak alfalfa, Appar blue flax, Eski Sanfoin, western yarrow, blue penstemon, Munroe globemallow, Anatone bluebunch wheatgrass, 'Secar' Snake River wheatgrass, squirreltail, Indian ricegrass, sand dropseed, Sherman big bluegrass, Nordan crested wheatgrass	Wyoming big sagebrush
2012 Balanced Road	None	None
2010 Long Butte	Great Basin wildrye, bluebunch wheatgrass, Indian ricegrass, squirreltail, Vavilov Siberian crested wheatgrass, Snake River wheatgrass, Munroe globemallow, Appar blue flax, and Ladak alfalfa	Wyoming big sagebrush
2007 Elk Mountain/Murphy Complex	Bluebunch wheatgrass, fourwing saltbrush, Secar Snake River wheatgrass **Seedling Planting:** Antelope bitterbrush, Wyoming big sagebrush	Wyoming big sage perennial forb and grass mixes
2005 Clover	Vavilov Siberian wheatgrass, Sandberg bluegrass, Secar Snake River wheatgrass, squirreltail, Indian ricegrass, needle & thread, Magnar Basin Wildrye, Wyoming big sagebrush, fourwing saltbush, Ladak alfalfa, Appar blue flax, Eski sainfoin; **Seedling Planting:** Antelope bitterbrush, Wyoming big sagebrush	Wyoming big sagebrush
1995 Blue Gulch	Hycrest crested wheatgrass (with Ladak alfalfa added in greenstrips)	Wyoming big sage, Ladak alfalfa, yellow sweetclover

[1]: Seed mixes are for the ESR project as a whole, which may have included several allotments. All species listed were not necessarily seeded in the DCBR allotment.

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Table A-2: Summary of Post-Fire Seeding Treatments for the Allotment from 1994 to 2013*

Fire Name and Rehab Year	Seeding Type	Pasture Name												Total Acres
		Balanced Rock	North End Field	North Kerbs	School Bus	Bull Horn	South Kerbs	North Winter	South Winter	Corral Field	Big Field	Big Bend	Excluded Canyon	
1994 Balanced Rock	Aerial	10												**10**
	Drill	10												**10**
1995 Blue Gulch	Aerial						1,132	100	2,073	20	13,771	1,044	1,300	**19,439**
	Drill						560	97	943	24	7,125	626	726	**10,101**
1995 Deadman Gulch	Aerial	32	1,317											**1,350**
	Drill	26	1,382											**1,408**
2000 Grass	Aerial											1,181		**1,181**
	Drill											653		**653**
2000 Kinyon	Aerial										716			**716**
2002 Devil Skin	Aerial										209	40		**248**
2002 Horse Skin	Aerial						1		104	646				**750**
	Drill								104	1				**105**
2003 Devil Skin	Aerial										209	40		**248**
	Drill										200	40		**240**
2003 Horse Skin	Aerial						0		134	646				**780**
	Drill								74	512				**586**
2005 Clover	Aerial	40												**40**
	Drill	1,947	2,905	2,047	1,627	1,715	1,638	953	572	1,044	32			**14,481**
2006 Clover	Aerial	1,990	2,905	2,046	1,627	1,715	1,638	953	572	1,044	32			**14,524**
2007 Murphy	Drill											896		**896**
2008 Murphy Sagebrush	Aerial	25	3,171	2,225	1,893	1,936	810	797	1,305	1,249	325	6,291		**20,028**
2010 Long Butte	Drill								0	503				**503**
2010 Murphy	Aerial									1,002	0	3,080		**4,082**
2011 Long Butte Sage	Aerial			1,314	1,339	1,769	1,403	561	1,664	744	92			**8,885**
2012 Kinyon Road	Drill								0	1,221**	3			**1,225**
2013 Coonskin	Aerial								0	1,182	0			**1,183**
	Total Acres	**4,081**	**11,681**	**7,632**	**6,486**	**7,134**	**7,181**	**3,462**	**7,546**	**9,838**	**22,714**	**13,890**	**2,026**	**103,671**

*Data based on best available information available at time of analysis. Acres may vary from primary ES&R reports due to funding and seed availability. Fire events, acreage, seeded/non-seeded (aerial/drill seeded) information, and baseline information is from the Idaho BLM State GIS Corporate database. When multiple years of vegetation treatments over the same area result in areas of overlap across the JFO allotments, a Union operation was used versus an Intersect, so areas that had not been treated could be identified and a more accurate acreage calculation of the total area treated versus untreated could be determined. Blank cells are null values for that particular attribute. When there is a ("0") in a cell for BLM acres burned, then the fire event was either on private or state land or there was no burn but the area was seeded.

**1,221 acres are likely a minimum since field observations identified additional acres drill seeded that do not show up in GIS database

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APPENDIX B: COMMON AND SCIENTIFIC NAMES OF PLANTS PRESENT IN THE DEVIL CREEK BALANCED ROCK ALLOTMENT

Table B-1: Plants in the DCBR Allotment

Common Name	Scientific Name
Perennial Grasses	
basin wildrye	*Leymus cinereus*
bluebunch wheatgrass	*Pseudoroegneria spicata*
Sandberg bluegrass	*Poa secunda*
crested wheatgrass*	*Agropyron cristatum*
Idaho fescue	*Festuca idahoensis*
intermediate wheatgrass	*Thinopyrum intermedium*
thickspike wheatgrass	*Elymus lanceolatus*
Thurber's needlegrass	*Achnatherum thurberianum*
Indian ricegrass	*Achnatherum hymenoides*
needle and thread	*Hesperostipa comata*
‘Secar’ Snake River wheatgrass	*Elymus wawawaiensis*
squirreltail	*Elymus elymoides*
western wheatgrass	*Pascopyrum smithii*
Annual Grasses	
cheatgrass	*Bromus tectorum*
small fescue	*Vulpia microstachys*
sixweeks fescue	*Vulpia octoflora*
Perennial Forbs	
alfalfa*	*Medicago sativa*
Anderson's larkspur	*Delphinium andersonii*
beardtongue	*Penstemon* ssp.
clasping pepperweed	*Lepidium perfoliatum*
common dandelion	*Taraxacum officinale*
common yarrow	*Achillea millefolium*
Cous biscuitroot	*Lomatium cous*
desert biscuitroot	*Lomatium foeniculaceum*
freckled milkvetch	*Astragalus lentiginosus*
hoary tansyaster	*Machaeranthera canescens*
lambstongue ragwort	*Senecio integerrimus*
largeflower hawksbeard	*Crepis occidentalis*
lava aster	*Ionactis alpina*
Lewis flax	*Linum lewisii*
littleflower penstemon	*Penstemon procerus*
longleaf phlox	*Phlox longifolia*
low pussytoes	*Antennaria dimorpha*
meadow deathcamas	*Zigadenus venenosus*
mourning milkvetch	*Astragalus atratus*
Nevada onion	*Allium nevadense*
northwestern Indian paintbrush	*Castilleja angustifolia*
oblongleaf bluebells	*Mertensia oblongifolia*
rush skeleton plant	*Lygodesmia juncea*
rush skeleton weed*	*Chondrilla juncea*
Russian knapweed, hardheads	*Acroptilon repens*

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Common Name	Scientific Name
sagebrush mariposa lily	*Calochortus macrocarpus*
sagebrush phlox	*Phlox aculeata*
sainfoin*	*Onobrychis viciifolia*
shaggy fleabane	*Erigeron pumilus*
spiny phlox	*Phlox hoodii*
tapertip hawksbeard	*Crepis acuminata*
tapertip onion	*Allium acuminatum*
woollypod milkvetch	*Astragalus purshii*
Annual Forbs	
annual agoseris	*Agoseris heterophylla*
clasping pepperweed*	*Lepidium perfoliatum*
curveseed butterwort, bur buttercup*	*Ceratocephala testiculata*
desert madwort*	*Alyssum desertorum*
diffuse knapweed*	*Centaurea diffusa*
granite prickly phlox	*Linanthus pungens*
groundsmoke	*Gayophytum* ssp.
maiden blue eyed Mary	*Collinsia parviflora*
Menzies' fiddleneck	*Amsinckia menziesii*
nodding chickweed	*Cerastium nutans*
pale agoseris	*Agoseris glauca*
prickly lettuce*	*Lactuca serriola*
redstem stork's bill*	*Erodium cicutarium*
rosy gilia	*Gilia sinuata*
Russian thistle*	*Salsola kali*
showy townsend daisy	*Townsendia florifer*
slender phlox	*Microsteris gracilis*
Spring draba*	*Draba verna*
strict forget-me-not	*Myosotis stricta*
tall annual willowherb	*Epilobium brachycarpum*
tall tumble mustard	*Sisymbrium altissimum*
tiny trumpet	*Collomia linearis*
western tansymustard	*Descurainia pinnata*
yellow salsify	*Tragopogon dubius*
Shrubs	
broom snakeweed	*Gutierrezia sarothrae*
rubber rabbitbrush	*Ericameria nauseosa*
Wyoming big sagebrush	*Artemisia tridentata ssp. wyomingensis*
yellow rabbitbrush	*Chrysothmnus viscidiflorus*
Trees	
western juniper	*Juniperus occidentalis*

*Introduced species, non-native (exotic)

Nomenclature reference: USDA, NRCS PLANTS database as of January 2012. This list does not include all plants that can be found in the allotment and is not exhaustive.

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APPENDIX C: INDICATOR RATINGS FOR RANGELAND HEALTH ASSESSMENTS

Table C-1: 2014 Indicator Ratings[2] for Devil Creek Balanced Rock IIRH Assessments

ESD		Loamy 8-12”					
Indicator	**Indicator Type[1]**	**RH01 Balanced Rock 20140610**	**RH02 North End Field 20140604**	**RH03 North Kerbs 20140610**	**RH04 School Bus 20140610**	**RH05 Bull Horn 20140610**	**RH06-HAF2 South Kerbs 20140610**
1. Rills	S, H	s-m	n-s	n-s	n-s	n-s	n-s
2. Water Flow Patterns	S, H	n-s	s-m	n-s	n-s	n-s	n-s
3. Pedestals/Terracettes	S, H	s-m	s-m	n-s	s-m	n-s	s-m
4. Bare Ground	S, H	n-s	m	s-m	n-s	s-m	m
5. Gullies	S, H	n-s	n-s	n-s	n-s	n-s	n-s
6. Wind Scoured, Blowouts and/or Depositions	S	n-s	s-m	m	m	n-s	s-m
7. Litter Movement	S	n-s	n-s	n-s	n-s	n-s	n-s
8. Soil Surface Resistance to Erosion	S, H, B	n-s	m	m	m	s-m	s-m
9. Soil Surface Loss or Degradation	S, H, B	n-s	m	s-m	m	s-m	s-m
10. Plant Community Composition & Distribution Relative to Infiltration & Runoff	H	n-s	s-m	s-m	s-m	s-m	s-m
11. Compaction Layer	S, H, B	n-s	s-m	s-m	s-m	n-s	s-m
12. Functional/Structural Groups	B	m	s-m	s-m	s-m	s-m	s-m
13. Plant Mortality/Decadence	B	n-s	s-m	n-s	n-s	n-s	n-s
14. Litter Amount	H, B	n-s	m-e	n-s	n-s	n-s	n-s
15. Annual Production	B	n-s	n-s	n-s	n-s	n-s	n-s
16. Invasive Plants	B	s-m	s-m	s-m	m	m	m
17. Reproductive Capability of Perennial Plants	B	m	n-s	n-s	s-m	n-s	s-m

[1]S = Soil/Site Stability Indicator, H = Hydrologic Function Indicator, B = Biotic Integrity Indicator
[2]Departures from reference condition; n-s = none-to-slight, s-m = slight-to-moderate, m = moderate, m-e = moderate-to-extreme, e = extreme

Table C-2: 2014 Attribute ratings for IIRH Assessments for the Allotment

Attribute	Attribute Rating					
Soil/Site Stability (S)	n-s	m	s-m	s-m	s-m	s-m
Hydrologic Function (H)	n-s	m	s-m	s-m	s-m	s-m
Biotic Integrity (B)	s-m	m	s-m	s-m	s-m	s-m

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Table C-3: 2014 Indicator Ratings[2] for IIRH Assessments for the Allotment

ESD		Loamy 8-12”					
Indicator	**Indicator Type[1]**	**RH07 North Winter 20140604**	**RH08-HAF1 South Winter 201400429 & 20140610**	**RH09 Corral Field 20140604**	**RH10A-HAF2 Big Field 20140429**	**RH11A-HAF2 Big Bend 20140428**	**RH11B-HAF3 Big Bend 20140428**
1. Rills	S, H	n-s	n-s	n-s	n-s	n-s	n-s
2. Water Flow Patterns	S, H	n-s	n-s	n-s	n-s	n-s	n-s
3. Pedestals/Terracettes	S, H	s-m	s-m	n-s	n-s	n-s	s-m
4. Bare Ground	S, H	m	m	m	n-s	n-s	m
5. Gullies	S, H	n-s	n-s	n-s	n-s	n-s	n-s
6. Wind Scoured, Blowouts and/or Depositions	S	m	n-s	s-m	n-s	n-s	n-s
7. Litter Movement	S	n-s	n-s	n-s	n-s	n-s	n-s
8. Soil Surface Resistance to Erosion	S, H, B	m	s-m	m	s-m	s-m	m
9. Soil Surface Loss or Degradation	S, H, B	s-m	s-m	m	n-s	n-s	s-m
10. Plant Community Composition & Distribution Relative to Infiltration & Runoff	H	s-m	s-m	m	s-m	s-m	m
11. Compaction Layer	S, H, B	n-s	n-s	n-s	n-s	n-s	s-m
12. Functional/Structural Groups	B	s-m	m	m-e	s-m	m-e	m-e
13. Plant Mortality/Decadence	B	n-s	n-s	n-s	n-s	n-s	s-m
14. Litter Amount	H, B	s-m	s-m	m	s-m	m	s-m
15. Annual Production	B	n-s	n-s	n-s	n-s	n-s	n-s
16. Invasive Plants	B	m	m	m-e	m	m-e	m-e
17. Reproductive Capability of Perennial Plants	B	s-m	n-s	n-s	n-s	n-s	n-s

[1]S = Soil/Site Stability Indicator, H = Hydrologic Function Indicator, B = Biotic Integrity Indicator
[2]Departures from reference conditions; n-s = none-to-slight, s-m = slight-to-moderate, m = moderate, m-e = moderate-to-extreme, e = extreme

Table C-4: 2014 Attribute Ratings for IIRH Assessments for the Allotment

Attribute	Attribute Rating					
Soil/Site Stability (S)	m	s-m	m	n-s	n-s	s-m
Hydrologic Function (H)	s-m	s-m	m	s-m	s-m	m
Biotic Integrity (B)	s-m	m	m-e	s-m	m-e	m-e

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APPENDIX D: ADDITIONAL MONITORING DATA

Table D-1.1 to 1.4: Summary of Step-Point and Line-Point Intercept Transect Results from IIRH, HAF, & Post-Fire Grazing Monitoring

Vegetation Class	Species	Balanced Rock				North End Field					North Kerbs		School Bus			Bull Horn		
		2014 RH01 20140610		2013 HAF 1 20130523		2014 RH02 (South) 20140604		2014 RHPP02 (North) 20140610		2013 Resume Grazing 20131022	2014 RH03 20140610		2014 RH04 20140610	2013 Resume Grazing 20131022		2014 RH05 20140610		2013 Resume Grazing 20130808
													Same Site					
		Layers																
		Top[1]	All[2]	Top	All	Top	All	Top	All	Top Only	Top	All	Top	All	Top	Top	All	Top Only
Perennial Grasses	Squirreltail	-	-	4	4	-	-	2	2	3	1	1	-	-	-	1	1	-
	Sandberg bluegrass	5	17	11	27	13	14	28	39	21	12	17	27	40	33	15	28	8
	Crested wheatgrass	-	-	-	-	-	-	17	18	-	-	-	12	12	26	32	34	15
	Thurbers needlegrass	-	-	-	-	-	-	1	1	-	-	-	-	-	3	-	-	-
	Bluebunch wheatgrass[3]	70	70	11	19	12	12	-	-	28	36	38	13	13	4	4	4	9
Annual Grasses	Cheatgrass	3	3	8	10	-	-	12	13	3	-	-	-	-	-	3	4	7
Annual Forbs	Saltlover	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
	Russian thistle	1	1	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-
Other Cover	Bare Ground	9	-	3	-	44	-	14		24	28	-	22	-	23	23	-	41
	Biological Soil Crust	1	11	5	7	8	10	4	7	1	3	11	2	9	-	3	4	-
	Non-persistent litter	10	64	14	52	8	9	17	55	12	7	29	17	42	8	17	46	16
	Persistent Litter	1	1	-	-	-	-	1	1	-	-	-	2	2	-	2	2	1
	Gravel	-	-	1	3	-	-	-	-	-	4	6	1	2	-	-	-	1
	Rock	-	-	13	17	1	1	-	-	-	3	4	1	1	-	-	-	1

[1]:"Top layer" ignores anything except the first cover item (e.g. vegetation, gravel, litter, biological soil crust etc.) encountered at the transect point from the top down.
[2]:"All layers" includes the presence of a cover item, no matter where it is in the top down hierarchy, e.g. litter underneath shrub as well as litter without anything above it on top of biological soil crust. "All layers" therefore add up to more than 100 percent since multiple cover items may be present at one given sample point.
[3]: Recorded bluebunch wheatgrass may include the seeded cultivar 'Secar' Snake River wheatgrass.

Table D-1.2 to 1.4: Summary of Step-Point and Line-Point Intercept Transect Results from IIRH, HAF, & Post-Fire Grazing Monitoring

Vegetation Class	Species	South Kerbs					North Winter			South Winter				
		2014 RH06 Post-fire 20140430		2012 HAF 2 Pre-fire 20120605		2013 Resume Grazing DBSK-1t 20131022	2014 RH07 20140604		2013 Resume Grazing DBNW-1t 20130820	2014 RH08 Post-fire 20140429		2012 HAF 1 Pre-fire 20120605		2013 Resume Grazing DBSW-1t 20130820
		Same Site								Same Site				
		Layers												
		Top[1]	All[2]	Top	All	Top Only	Top	All	Top Only	Top	All	Top	All	Top Only
Perennial Grasses	Squirreltail	-	-	1	1	-	1	1	-	4	4	4	4	-
	Sandberg bluegrass	21	28	7	11	24	18	22	13	25	28	19	21	20
	Crested wheatgrass	-	-	-	-	9	-	-	24	13	13	35	35	24
	Thurbers needlegrass	-	-	1	1	-	-	-	-	-	-	1	1	-
	Bluebunch wheatgrass[3]	24	24	54	54	28	14	15	-	-	-	-	-	-
Annual Grasses	Cheatgrass#	-	-	6	7	-	4	5	1	1	1	6	7	-
Annual Forbs	Western tumble mustard	-	-	-	-	-	1	1	-	-	-	-	-	-
	Tall tumble mustard	-	-	-	-	-	1	1	-	-	-	-	-	-
Shrubs	Wyoming big sagebrush	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Cover	Bare Ground	35	-	11	-	28	41	-	36	40	-	14	-	39
	Biological Soil Crust	7	13	0	2	-	11	17	-	5	7	2	16	-
	Non-persistent litter	8	30	6	45	9	8	23	25	10	23	3	28	17
	Persistent Litter	3	3	-	-	-	-	-	-	-	-	-	-	-
	Gravel	-	-	-	-	-	-	-	-	2	2	0	1	-
	Rock	-	-	-	-	-	-	-	-	-	-	-	-	-

[1]:"Top layer" ignores anything except the first cover item (e.g. vegetation, gravel, litter, biological soil crust etc.) encountered at the transect point from the top down.

[2]:"All layers" includes the presence of a cover item, no matter where it is in the top down hierarchy, e.g. litter underneath shrub as well as litter without anything above it on top of biological soil crust. "All layers" therefore add up to more than 100 percent since multiple cover items may be present at one given sample point.

[3]: Recorded bluebunch wheatgrass may include the seeded cultivar 'Secar' Snake River wheatgrass.

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Table D-1.3 to 1.4: Summary of Step-Point and Line-Point Intercept Transect Results from IIRH, HAF, & Post-Fire Grazing Monitoring

Vegetation Class	Species	Corral Field						Big Field							
		2014 RH09 (North) 20140604		2014 RHPP09 (South) 20140604		2013 HAF 1 20130522		2014 RH10A (South) 20140603		2012 HAF 2 20120606		2014 RHPP10 (North) 20140603		2012 HAF 1 20120606	
								Same Site							
		Layers													
		Top[1]	All[2]	Top	All	Top	All	Top	All	Top	All	Top	All	Top	All
Perennial Grasses	Squirreltail	4	4	2	2	4	4	-	-	-	-	-	-	2	3
	Sandberg bluegrass	16	21	11	11	7	12	19	26	16	22	19	23	6	8
	Crested wheatgrass	3	3	-	-	11	13	20	20	31	34	8	8	-	-
	Indian ricegrass	-	-	-	-	-	-	-	-	-	-	1	1	-	-
	Bluebunch wheatgrass[3]	4	4	-	-	8	8	-	-	-	-	-	-	-	-
Annual Grasses	Cheatgrass#	4	6	10	10	35	46	1	1	1	1	-	-	2	2
Annual Forbs	Tall tumble mustard	3	4	3	3	-	-	-	-	-	-	1	1	-	-
	Curveseed Butterwort	2	2	-	-	-	-	1	1	-	-	1	1	-	-
	Saltlover	3	5	-	-	-	-	-	-	-	-			-	-
	Russian thistle	4	5	-	-	-	-	-	-	-	-	4	4	-	-
Shrubs	Wyoming big sagebrush	-	-	-	-	-	-	-	-	-	-	-	-	24	24
Other Cover	Bare Ground	47	-	47	-	6	-	15	-	7	-	59	-	27	-
	Biological Soil Crust	-	-	3	3	-	-	5	20	5	6	-	-	26	46
	Non-persistent litter	7	17	24	31	8	76	43	65	10	58	7	11	5	17
	Persistent Litter	2	2	-	-	-	-	1	1	-	-	-	-	-	-
	Gravel	-	-	-		-	-	-	-	-	-	-	-	-	-
	Rock	-	-	0	1	-	-	-	-	-	-	-	-	-	-

[1]:"Top layer" ignores anything except the first cover item (e.g. vegetation, gravel, litter, biological soil crust etc.) encountered at the transect point from the top down.

[2]:"All layers" includes the presence of a cover item, no matter where it is in the top down hierarchy, e.g. litter underneath shrub as well as litter without anything above it on top of biological soil crust. "All layers" therefore add up to more than 100 percent since multiple cover items may be present at one given sample point.

[3]: Recorded bluebunch wheatgrass may include the seeded cultivar 'Secar' Snake River wheatgrass.

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Table D-1.4: Summary of Step-Point and Line-Point Intercept Transect Results from IIRH, HAF, & Post-Fire Grazing Monitoring

Vegetation Class	Species	Big Field			Big Bend									
		2013 Resume Grazing DBBF-4 20130813	2006 ESI RA-34 20060619		2014 RH11A (South) 20140603		2012 HAF 2 20120607		2014 RH11B (North) 20140603		2012 HAF 3 20120607		2012 HAF 1 (unburned) 20120607	
					Same Site - Comparable				Same Site - Comparable					
		Layers												
		Top Only	Top[1]	All[2]	Top	All	Top	All	Top	All	Top	All	Top	All
Perennial Grasses	Squirreltail	-	3	7	3	5	-	-	0	1	3	3	4	5
	Sandberg bluegrass	11	22	29	19	32	12	15	16	17	8	9	7	11
	Crested wheatgrass	25	3	3	1	1	1	1	-	-	-	-	-	-
	Thurber's needlegrass	-	-	-	11	11	6	6	1	1	5	5	5	8
	Thickspike wheatgrass	-	-	-	-	-	2	2	-	-	-	-	-	-
	Western wheatgrass	-	-	-	-	-	5	6	-	-	-	-	-	-
	Bluebunch wheatgrass[3]	-	-	-	3	3	-	-	0	1	-	-	1	1
	Basin wild rye	-	-	-	-	-	1	3	-	-	-	-		
Annual Grasses	Cheatgrass#	1	1	1	20	24	18	22	21	21	35	40	1	4
Annual Forbs	Tall tumble mustard	-	-	-	3	3	-	-	-	-	-	-	-	-
Shrubs	Wyoming big sagebrush	-	14	15	-	-	-	-	-	-	-	-	30	30
	Rabbitbrush	-	-	-	-	-	-	-	-	-	-	-	1	1
Other Cover	Bare Ground	40	18	-	17	-	6	-	29	-	6	-	14	-
	Biological Soil Crust		6	15	5	15	5	5	-	-	-	1	16	41
	Non-persistent litter	8	22	56	15	57	14	76	19	41	17	63	5	35
	Persistent Litter	-	-	-	-	-	-	-	-	-	-	-	-	-
	Gravel	1	-	-	-	-	-	-	-	-	-	-	-	-
	Rock	13	-	-	-	-	1	2	-	-	-	-	-	-

[1]:"Top layer" ignores anything except the first cover item (e.g. vegetation, gravel, litter, biological soil crust etc.) encountered at the transect point from the top down.

[2]:"All layers" includes the presence of a cover item, no matter where it is in the top down hierarchy, e.g. litter underneath shrub as well as litter without anything above it on top of biological soil crust. "All layers" therefore add up to more than 100 percent since multiple cover items may be present at one given sample point.

[3]: Recorded bluebunch wheatgrass may include the seeded cultivar 'Secar' Snake River wheatgrass.

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APPENDIX E: WILDLIFE

Tables E-1 and E-2 display Special Status Species that occur within the Jarbidge Field Office with their habitat requirements and a description of whether that habitat category occurs on the allotment .

Habitat conditions for those species whose habitats do occur within the allotment will be descibed and assessed under that habitat category in the Rangeland Health Assessment and Evaluation. Habitats and the associated special status species that do not occur on the allotment will not be discussed further.

Table E-1: Type 1–ESA Listed Species: Endangered (E), Threatened (T), and Critical Habitat (CH)

Species Name	ESA Status	Habitat Requirements	Habitat Category	Existing/Potential Habitat
Fish				
Bull Trout (*Salvelinus confluentus*)	T, CH	Require cold, clean, streams and rivers with complex cover and clean gravel substrate for spawning (USDI USFWS, 1999)	Aquatic	No stream or river habitat occurs on the allotment.
Birds				
Yellow-billed Cuckoo (*Coccyzus americanus*)	P	Migratory riparian obligate species. Rare visitor and local breeder that occur in scattered drainages primarily in the southern portion of the state. In Idaho, they are reported to occur most frequently and consistently in larger blocks of cottonwood forests with thick understory shrubs (IDFG, 2005)	Riparian	No riparian habitats occur within the allotment.
Invertebrates				
Bliss Rapids Snail (*Taylorconcha serpenticola*)	T	Primarily found in cold water springs and spring-fed tributaries of the Snake River on cobble boulder substrates.	Aquatic	No stream, river, or spring habitat occurs on the allotment.
Bruneau Hot Springs Snail (*Pyrgulopsis bruneauensis*)	E	It occurs in small geothermal spring runs and seeps on basalt bedrock along an approximately 5-mile reach of the Bruneau River and in Hot Creek. Substrates are usually gravel and silt but can also be found in mud, sand, and algal film. Requires constant spring water temperatures (USDI USFWS, 2007).	Aquatic/ hot springs	Allotment does not contain either Bruneau River or Hot Creek.
Snake River Physa (*Haitia [Physa] natricina*)	E	A fresh water mollusk occurring in a limited reach of the middle Snake River. Two remaining colonies are believed to exist in the Hagerman and King Hill reaches and 1 colony may persist immediately downstream from Minidoka Dam (IDFG, 2005).	Aquatic/ Snake River	Allotment does not contain the Snake River.

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Table E-2: Type 2 BLM Special Status Species: Includes FWS Candidate (C), Delisted within 5-years (D), Proposed (P), Experimental Population (XN), and Proposed Critical Habitat (PCH); and BLM Sensitive Species

Species Name	FWS Status	Habitat Requirements	Habitat Category	Existing Habitat
Amphibians				
Western/Boreal Toad (Western[*Anaxyrus boreas*] and Eastern [*Anaxyrus boreas boreas*] sub-groups)		Occur in a wide variety of habitats ranging from desert springs to mountain wetlands. Sometimes they move up to a few kilometers through uplands.	Riparian	No riparian habitat occurs on the allotment.
Columbia Spotted Frog (*Rana luteiventris*) – Great Basin Population	C	In southwestern Idaho, wetland habitat occupied by frog populations is generally associated with springs or small lowland and foothill streams. The largest populations occur in structurally complex wetlands with diverse pool and meadow components. Suitable sites contain shallow breeding pools and deeper–water overwintering sites (IDFG 2005).	Riparian	No riparian habitat occurs on the allotment.
Northern Leopard Frog (*Rana pipiens*)		Associated with permanent water sources during all life stages. Populations occur in a variety of wetland situations, including marshes, pond margins, and slow moving sections of streams and rivers (IDFG, 2005)	Riparian	No riparian habitat occurs on the allotment.
Birds				
Bald Eagle (*Haliaeetus leucocephalus*)		Associated with aquatic ecosystems, including lakes, rivers, coastlines, marshes, and reservoirs. Typically breeds in forested areas adjacent to large bodies of water. Exhibits high mate and breeding site fidelity (Buehler, 2000).	Riparian	No riparian habitat occurs on the allotment.
Black Tern (*Chlidonias niger*)		Associated with marshes with emergent vegetation on the edges of lakes sloughs and river or island edges (Heath, Dunn, & Agro, 2009).	Riparian	No riparian habitat occurs on the allotment.
Black-throated Sparrow *(Amphispiza bilineata)*		Typically prefers semi-open habitat with evenly spaced shrubs and trees 1-3 m high. In Idaho black-throated sparrows breed in barren and grassy hillsides with scattered sagebrush, rabbitbrush, horsebrush, saltbrush, and greasewood (Johnson, Riper, & Pearson, 2002)	Shrub Steppe	Due to repeated wildfire, only small patches of sagebrush remain and the remainder of the allotment consists of perennial grassland.
Brewer's Sparrow (*Spizella breweri*)		Most closely associated with landscapes dominated by big Sagebrush (Rotenberry, Patten, & Preston, 1999). Considered a sagebrush obligate (IDFG, 2005).	Shrub Steppe	Due to repeated wildfire, only small patches of sagebrush remain and the remainder of the allotment consists of perennial grassland.
Burrowing Owl (*Athene cunicularia*)		Open treeless areas in grasslands, shrub steppe, and desert habitats. Typically uses burrows dug by mammals (Poulin, Todd, Haug, Millsap, & Martell, 2011)	Shrub Steppe Grassland	Grassland and remaining shrub steppe habitats on the allotment.
Columbian Sharp-tailed Grouse (*Tympanuchus phasianellus columbianus*)		Shrub steppe and grassland habitats. Generally characterized by dense stands of herbaceous cover and a mixture of shrubs. Often relies on riparian areas or deciduous hardwood shrub stands during winter (Connelly, Gratson, & Reese, 1998).	Shrub Steppe Grassland	Although habitat for sharp-tailed grouse may occur on the allotment, no known occurrences of this species have been reported on this allotment. Known sharp-tailed grouse

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Species Name	FWS Status	Habitat Requirements	Habitat Category	Existing Habitat
				locations are in the southern portions of the Jarbidge Field Office.
Ferruginous Hawk (*Buteo regalis*)		Occurs in grasslands, shrub steppe and deserts and on the periphery of pinyon juniper and other forests (Bechard & Schmutz, 1995).	Shrub Steppe Grassland	Nesting habitat in BIG Bend Pasture and foraging habitat within the entire allotment.
Golden Eagle (*Aquila chrysaetos*)		Found in open country, especially in mountainous regions. Nests in cliffs or large trees (Kochert, Steenhof, Mcintyre, & Craig, 2002).	Shrub Steppe Grassland Canyonland Habitat	The entire allotment
Grasshopper Sparrow (*Ammodramus savannarum*)		Appears to prefer moderately open grasslands and prairies with patchy bare ground, occupying lusher areas with shrub cover in arid grasslands of the west (Vickery, 1996).	Grassland	The entire allotment
Greater Sage-grouse (*Centrocercus urophasianus*)	C	Sagebrush obligate. Requires intact sagebrush steppe with a healthy and diverse herbaceous understory (Connelly, Rinkes, & Braun, 2011)	Shrub Steppe	Due to repeated wildfire only small patches of sagebrush remain and the remainder of the allotment consists of perennial grassland.
Green-tailed Towhee (*Pipilo chlorurus*)		Uses shrubby habitats across a wide elevation gradient (Dobbs, Martin, & Martin, 2012).	Shrub Steppe	Remaining patches of sagebrush within the allotment.
Lewis' Woodpecker (*Melanerpes lewis*)		Open forest and woodland, often logged or burned, including oak, coniferous forest (primarily ponderosa pine), riparian woodland and orchards, less commonly in pinyon-juniper. Standing snag/hollow tree are important features (Vierling, Saab, & Tobalske, 2013).	Aspen	No forest or woodland habitat exists within the allotment.
Loggerhead Shrike (*Lanius ludovicianus*)		Open country with short vegetation: pastures with fence rows, old orchards, mowed roadsides, cemeteries, golf courses, agricultural fields, riparian areas, and open woodlands. Breeders usually settle near isolated trees or large shrubs (Yosef, 1996).	Shrub Steppe Grassland	The entire allotment
Long-billed Curlew (*Numenius americanus*)		Found in open short-grass or mixed-prairie habitat (Dugger & Dugger, 2001).	Grassland	The entire allotment
Northern Goshawk (*Accipiter gentilis*)		Mature mountain forest and riparian zone habitats. Nests in a variety of habitat types but seem to prefer mature forests with large trees on moderate slopes with open understories. They nest in coniferous, deciduous, or mixed-pine forests, depending on availability (Squires & Reynolds, 1997)	Aspen Wooded - Riparian	No mountain forest or riparian habitats occur on the allotment.
Olive-sided Flycatcher (*Contopus cooperi*)		Primarily montane and northern coniferous forests usually at mid- to high-elevation (Altman & Sallabanks, 2012).	Aspen Mountain Shrub	No forest habitats occur on the allotment.
Peregrine Falcon (*Falco peregrinus anatum*)		Will inhabit most habitats if there are cliffs available for nesting and generally open habitats for foraging (White, Clum, Cade, & Grainger Hunt, 2002).	Riparian Shrub Steppe Grassland Canyonland	Potential nesting in the cliffs along Devil Creek and Salmon Falls Creek adjacent to the allotment. Potential foraging throughout the allotment.

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Species Name	FWS Status	Habitat Requirements	Habitat Category	Existing Habitat
Sage Sparrow (*Amphispiza belli*)		Shrub steppe, mixed desert shrub/grassland communities (Martin & Carlson, 1998).	Shrub Steppe	Remaining patches of sagebrush within the allotment.
Sage Thrasher (*Oreoscoptes montanus*)		Considered a sagebrush obligate but has also been observed using greasewood and bitterbrush habitats. Abundance is positively correlated with woody cover and negatively correlated with grass cover (Reynolds, Rich, & Stephens, 1999)	Shrub Steppe	Remaining patches of sagebrush within the allotment.
Short-eared Owl (*Asio flammeus*)		Usually found in grasslands, shrublands, and other open habitats. In general, any area that is large enough, has low vegetation with some dry upland for nesting, and that supports suitable prey may be considered potential breeding habitat (Wiggins, Holt, & Leasure, 2006).	Shrub Steppe Grassland	Entire allotment.
Trumpeter Swan *(Cygnus buccinator)*		Occurs on Ponds, lakes, and marshes, breeding in areas of reeds, sedges or similar emergent vegetation, primarily on freshwater, occasionally in brackish situations, wintering on open ponds, lakes and sheltered bays and estuaries (Mitchell & Eichholz, 2010).	Riparian	No ponds, lakes, or marshes occur within the allotment.
Virginia's Warbler (*Vermivora virginiae*)		Associated with steep brushy slopes within pinyon-juniper and oak woodlands, as well as in mountain mahogany (Olson & Martin, 1999).	Woodlands	No Pinion-Juniper or Oak woodlands occur within the allotment.
Willow Flycatcher (*Empidonax trailii*)		Shrubby deciduous habitats, especially riparian areas and meadows with shrubby patches dominated by willows. The presence of water (running water, pools, or saturated soils) and willow, alder, or other deciduous riparian shrubs are essential habitat elements (Sedgwick, 2000).	Riparian	No riparian habitats occur within the allotment.
Fish				
Redband Trout (Oncorhynchus mykiss gibbsi)		Found in a range of stream habitats from desert areas in southwestern Idaho to forested mountain streams in central and northern Idaho (IDFG, 2005)	Aquatic	No aquatic habitats occur within the allotment.
Shoshone Sculpin *(Cottus greenei)*		Endemic to Snake River in Idaho. Occurs near springs and spring creeks along a 38–km (24–mile) section of the Snake River in the Hagerman Valley of south–central Idaho (IDFG, 2005)	Aquatic/ Snake River	Snake River does not occur within the allotment.
White Sturgeon (*Acipenser transmontanus*) – Snake River population above Hells Canyon Complex only		Found in the Snake river (IDFG, 2005)	Aquatic/ Snake and Salmon Rivers	The Snake River is not within the allotment.
Invertebrates				
Ashy (Columbia) Pebblesnail (*Fluminicola fuscus*)		Restricted to rivers, in swift current on stable gravel to boulder substrate in cold, unpolluted, highly oxygenated water	Aquatic	No river habitats occur within the allotment.
Bruneau Dunes Tiger Beetle (*Cicindela waynei waynei*)		Species restricted to 2 locations in northern Owyhee County in Bruneau Dunes State Park. This species primarily occurs in the sparsely vegetated margins of sand dunes (IDFG, 2005)	Sand Dune	No dune habitat occurs with the allotment.

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Species Name	FWS Status	Habitat Requirements	Habitat Category	Existing Habitat
California Floater (*Anodonta californiensis*)		Freshwater mussel. Within Idaho, populations occur in the Snake River drainage, primarily in the middle Snake River. Typically found on soft substrates and in areas with relatively slow current. Individuals can tolerate only moderate pollution levels (IDFG, 2005)	Aquatic	The Snake River is not within the allotment.
Shortface Lanx (*Fisherola nuttalli*)		Populations in parts of Snake river. Occupied habitat is characteristically in river reaches that have a swift current and are highly oxygenated, often near rapids. Substrates include boulders and gravel (IDFG, 2005)	Aquatic/ Snake Rivers	The Snake River is not within the allotment.
Mammals				
Big Brown Bat (*Eptesicus fuscus*)		Found in a wide range of habitats from deserts to deciduous and coniferous forests. Often associated with people and frequently roosts in man-made structures (Adams, 2003).	Shrub Steppe Grassland Canyonland Habitat.	The entire allotment.
Bighorn Sheep (*Ovis Canadensis spp.*)		Populations occupy rugged canyons, foothills, and mountainous terrain at elevations ranging from 1,450-10,500 feet. Key habitat features include steep, rugged "escape" terrain, grasses and forbs for forage, and a limited amount of tall vegetation. Populations in dry areas require perennial water sources, such as streams and springs, during the summer (IDFG, 2005)	Canyonland	Salmon Falls Creek provides some potential habitat adjacent to the allotment but it is not occupied at this time and is not managed as bighorn habitat by the IDFG. No other habitat occurs within the allotment.
Canyon Bat (*Parastrellus hesperus*) – formerly Western Pipistrelle		Uses deserts and lowlands, desert mountain ranges, desert scrub flats, and rocky canyons. Day and night roosts include rock crevices, under rocks, burrows and sometimes buildings or mines. May hibernate in cave, mine, or rock crevices (Adams, 2003).	Shrub Steppe Grassland Canyonland Habitat	The entire allotment.
Hoary Bat (*Lasiurus cinereus*)		Habitat includes deciduous and coniferous forests and woodlands, including areas altered by humans. Roost sites are usually in tree foliage 3-5 meters above ground at the edge of a clearing. Sometimes these bats roost in rock crevices but rarely in caves. Hibernating individuals have been found on tree trunks, tree cavities, and in squirrel's nests (Adams, 2003).	Shrub Steppe Grassland	Roosting habitat is provided in riparian trees along Salmon Falls Creek adjacent to the allotment. This bat could forage over the entire allotment.
Kit Fox (*Vulpes macrotis*)		Closely associated with desert shrub and shrub steppe habitats (IDFG, 2005)	Shrub Steppe	Remaining patches of sagebrush within the allotment.
Little Brown Bat (*Myotis lucifugus*)		Found in a wide variety of habitats but frequently associated with open water and riparian habitats in forests or woodlands (Adams, 2003).	Aspen Mountain shrub Riparian	No forest or riparian habitats occur on the allotment.
Long-eared Myotis (*Myotis evotis*)		Forested areas, especially those with broken rock outcrops; also shrubland, over meadows near tall timber, along wooded streams, over reservoirs. Often roosts in buildings, also in hollow trees, mines, caves, fissures, etc. (Adams, 2003).	Aspen Mountain shrub Shrub Steppe	Remaining patches of sagebrush within the allotment.
Long-legged Myotis (*Myotis volans*)		Found mostly in forested areas and roosts in trees, rock crevices, crevices in stream banks, and buildings (Adams, 2003).	Mountain shrub Aspen Riparian	No forested or riparian habitats occur within the allotment.

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Species Name	FWS Status	Habitat Requirements	Habitat Category	Existing Habitat
Pallid Bat (Antrozous pallidus)		Found in arid deserts and grasslands, often near rocky outcrops and water. Usually roosts in rock crevice or building, but also in caves, tree hollows, mines, etc. (Adams, 2003).	Shrub Steppe Grassland Canyonland	The entire allotment.
Piute Ground Squirrel (*Spermophilus mollis artemisae*)		Shrub steppe habitats (IDFG, 2005)	Shrub Steppe	Remaining patches of sagebrush within the allotment.
Pygmy Rabbit (*Brachylagus idahoensis*)		Sagebrush obligate. Habitat comprises dense, tall stands of big sagebrush growing on deep, friable soils that allow the rabbits to dig rather extensive burrow systems (IDFG, 2005)	Shrub Steppe	Remaining patches of sagebrush within the allotment.
Silver-haired Bat (*Lasionycteris noctivagans*)		Occurs in forested areas around water and in woody riparian corridors (Adams, 2003).	Aspen Riparian	No coniferous forest or riparian habitats occur within the allotment.
Spotted Bat (*Euderma maculatum*)		Occurs in association with xeric and riparian habitats in deep, narrow canyons where massive cliffs predominate. Individuals roost solitarily in cracks or crevices in rocky outcrops and cliffs. Dominant vegetation at Idaho sites includes sagebrush, juniper, mountain mahogany, and cottonwood (IDFG, 2005)	Shrub Steppe Grassland Canyonland	Roosting habitat is provided in Salmon Falls Creek adjacent to the allotment and this bat could forage over the entire allotment.
Townsend's Big-eared Bat (*Plecotus [Corynorhinus] townsendii*)		Distribution and abundance is highly correlated with suitable cavity forming rock formations and historic mining districts. Numerous hibernacula in lava tube caves have been identified in south central and southeast Idaho (IDFG, 2005)	Shrub Steppe Grassland Canyonland	Roosting habitat may be provided in Salmon Falls Creek adjacent to the allotment and this bat could forage over the entire allotment.
Western Small-footed Myotis (*Myotis ciliolabrum*)		Generally inhabits desert, badland, and semiarid habitats; more mesic habitats in southern part of range. Roosts in summer in rock crevices, caves, tunnels, under boulders, beneath loose bark, or in buildings. Hibernates in caves and mines. Maternity colonies often are in abandoned houses, barns, or similar structures (Adams, 2003).	Shrub Steppe Grassland Canyonland	Roosting habitat is provided in Salmon Falls Creek adjacent to the allotment and this bat could forage over the entire allotment.
Yuma Myotis (*Myotis yumanensis*)		Found in a wide variety of upland and lowland habitats, including riparian, desert scrub, moist woodlands and forests, but almost always found near open water. Nursery colonies usually are in buildings, caves and mines, and under bridges (Adams, 2003).	Riparian	No riparian habitats occur within the allotment.
Reptiles				
Great Basin Black-collared Lizard (*Crotaphytus bicinctores*)		Occur at lower elevations along the Snake River, primarily in Owyhee and Canyon counties in rocky, sparsely vegetated habitat. Typical vegetation at sites includes sagebrush, saltbush, and bunchgrasses. Scattered rocks used as basking perches are a characteristic habitat component (IDFG, 2005)	Rocky Outcrop in Shrub Steppe or Grassland	Habitat is likely limited to rocky outcrops near Devil Creek and Salmon Falls Creek adjacent to the allotment.

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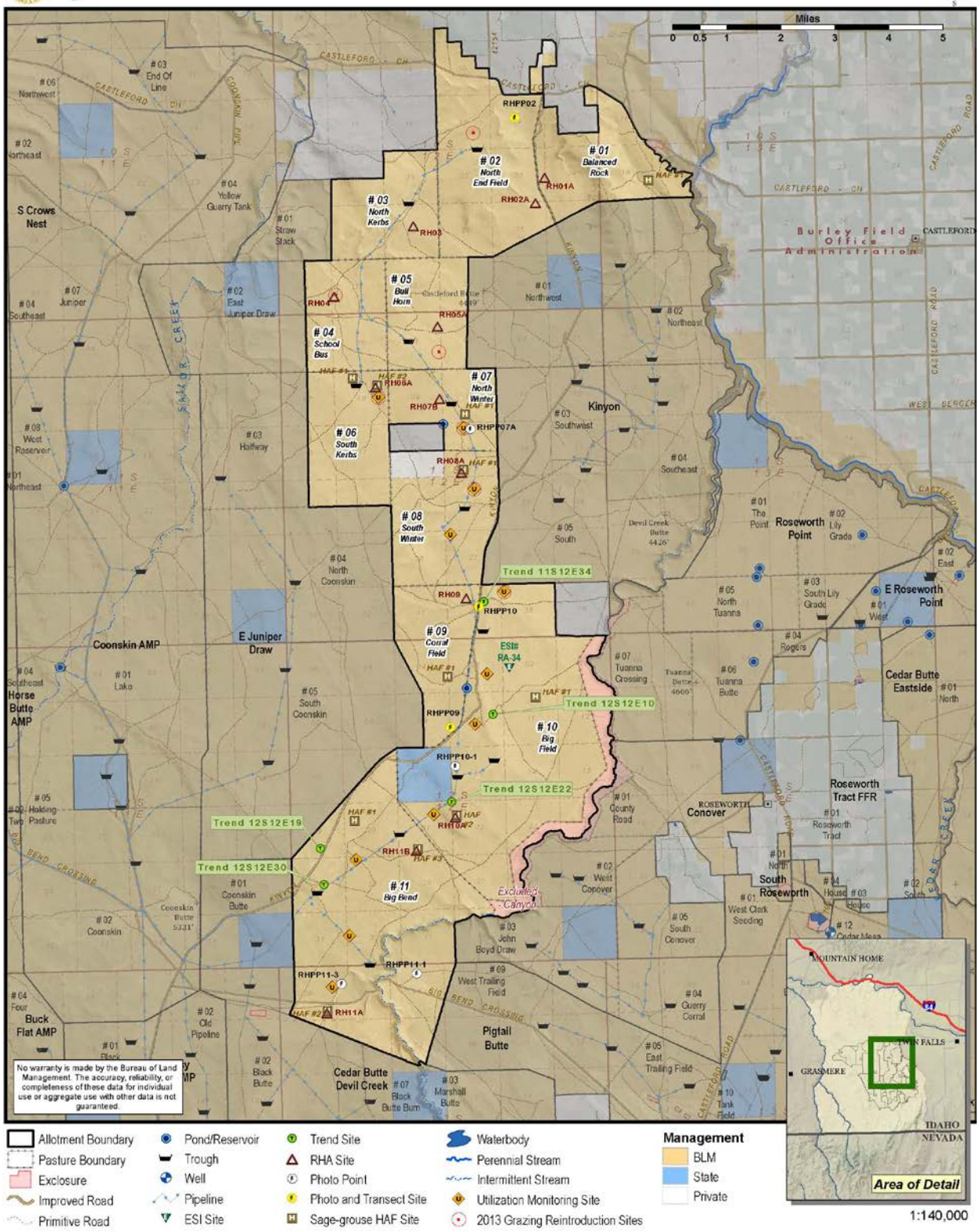
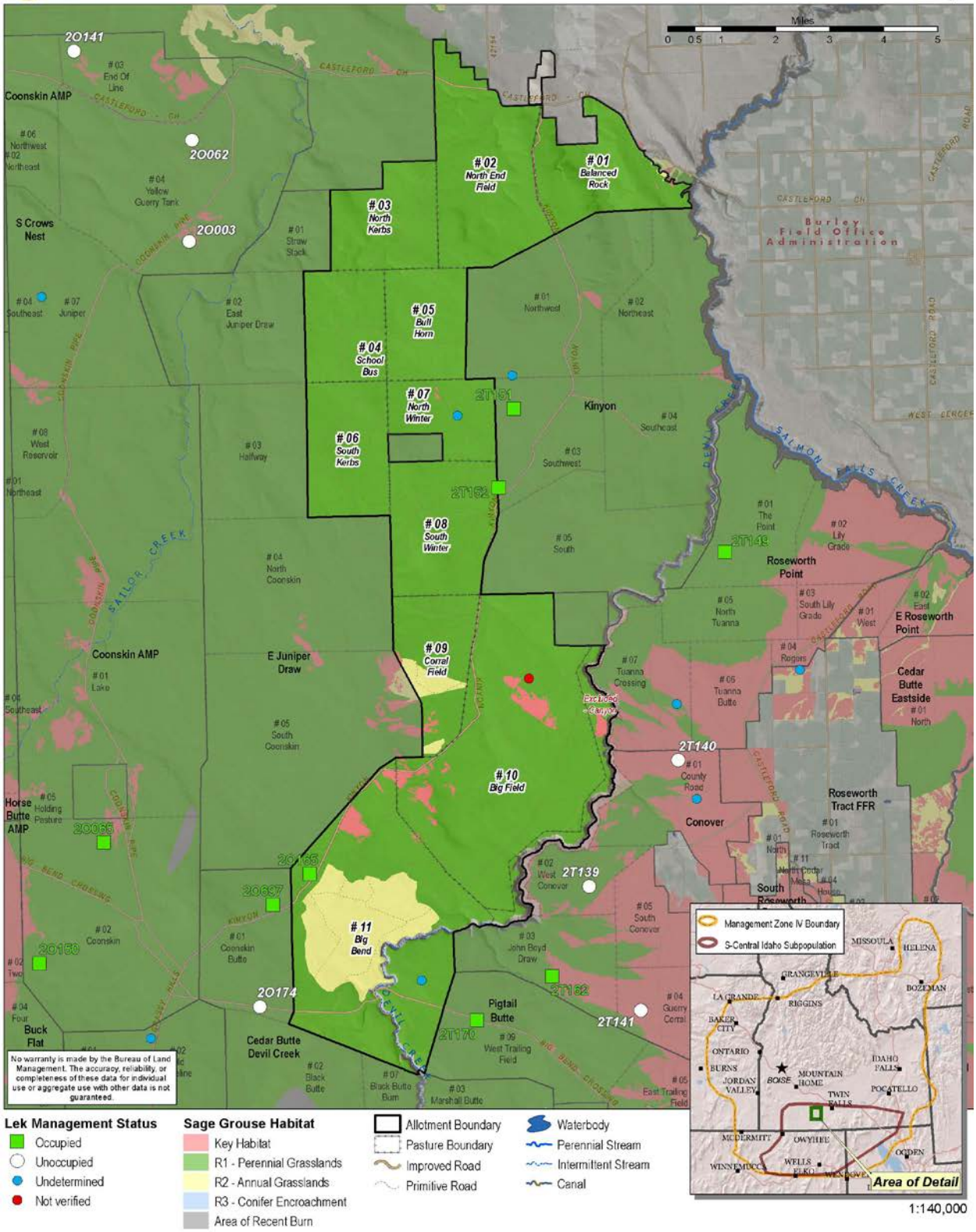
APPENDIX F: MAPS

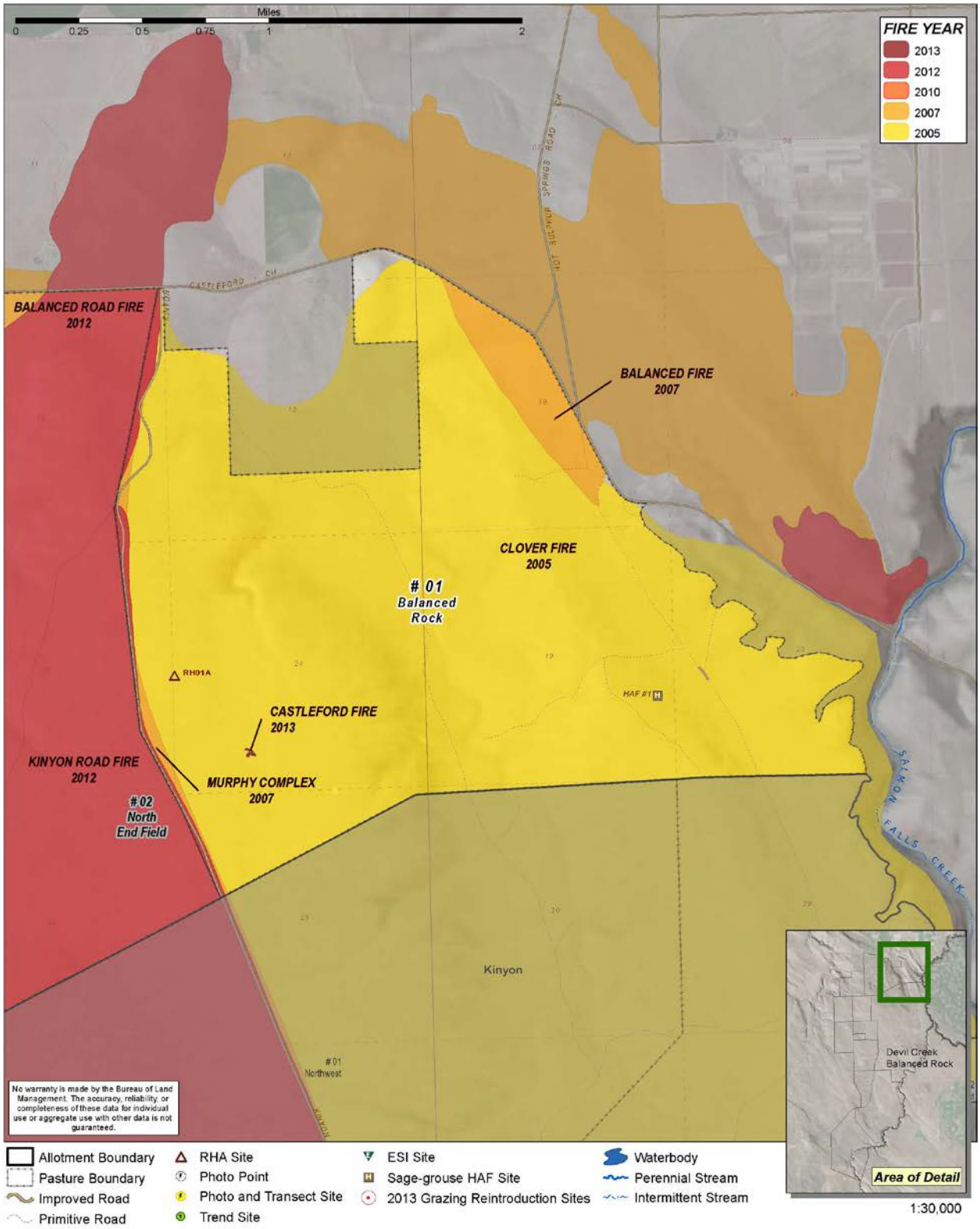
Map 1: Devil Creek Balanced Rock (#01133) Range Overview



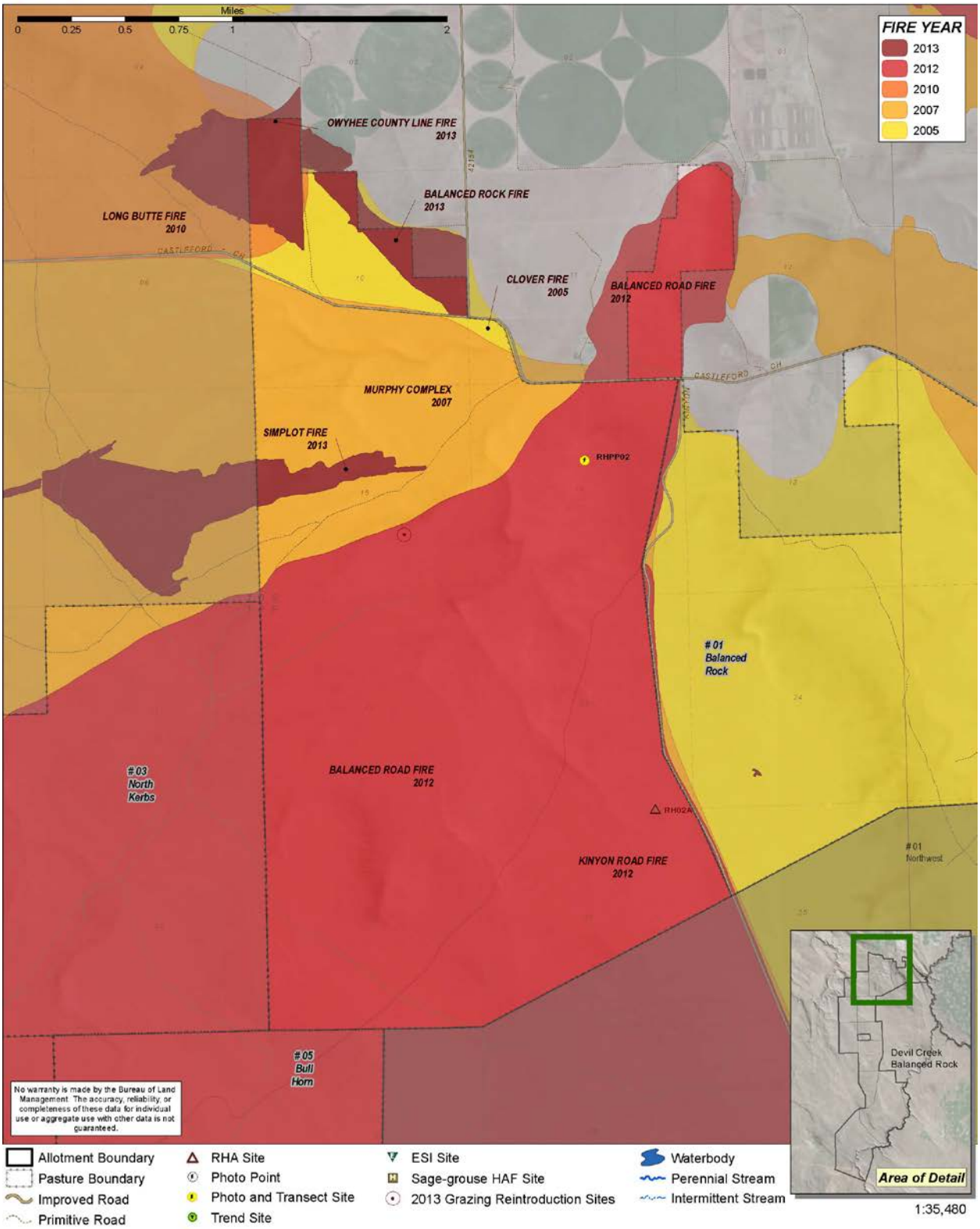
Map 2: Devil Creek Balanced Rock Allotment Sage-grouse Leks and Habitat



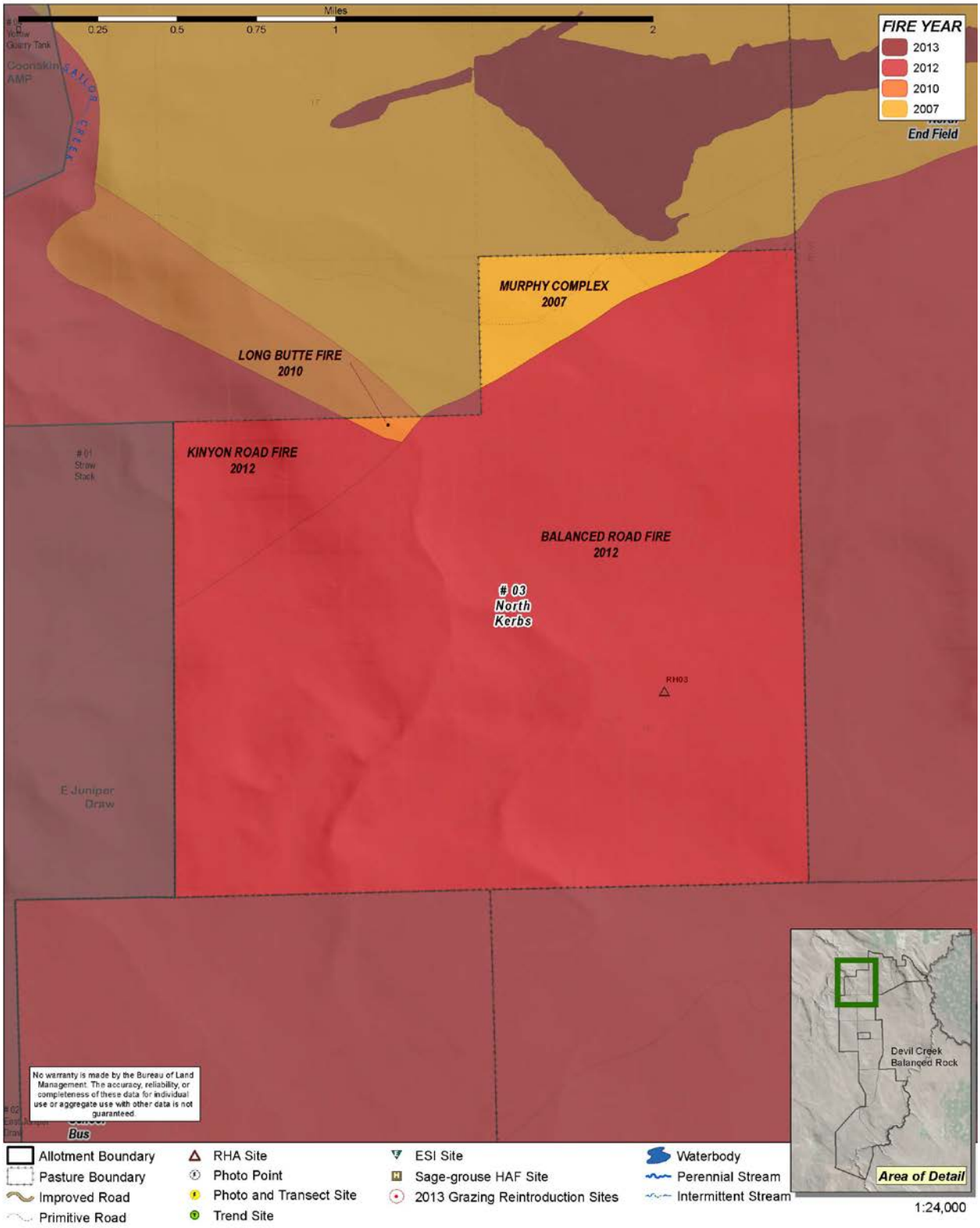
Map 3: Fire Overview, Pasture 1 (Balanced Rock Pasture)



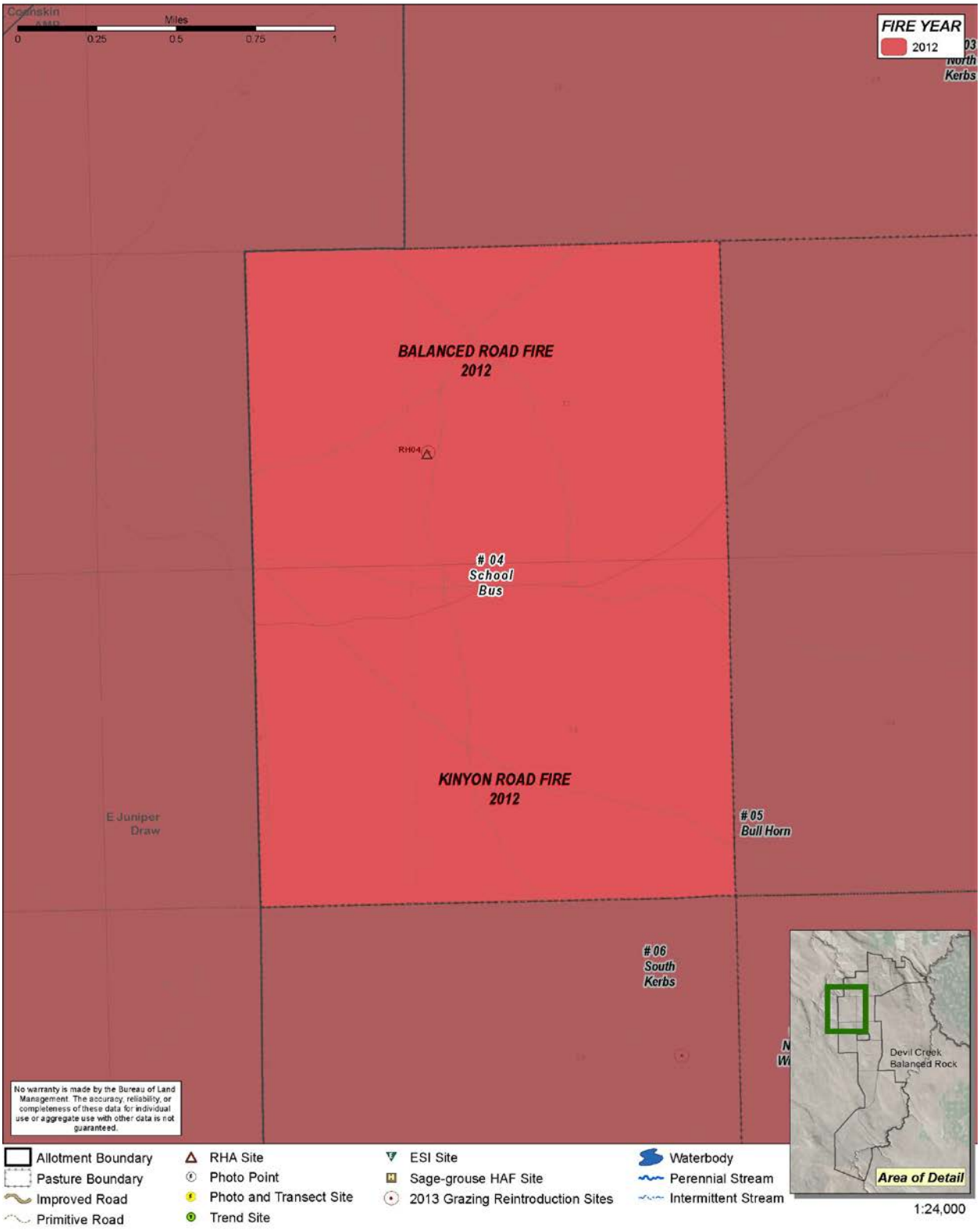
Map 4: Fire Overview, Pasture 2 (North End Field Pasture)



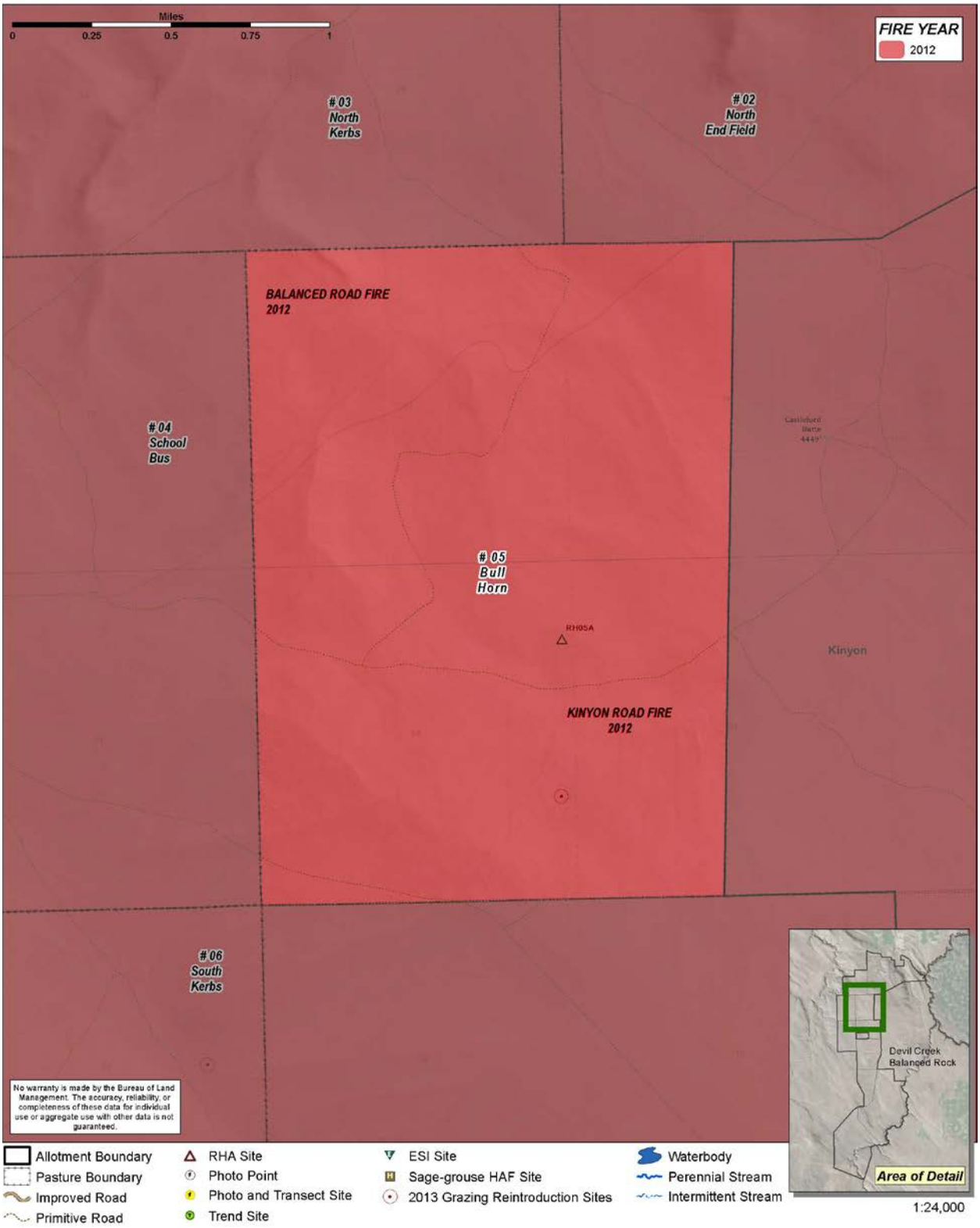
Map 5: Fire Overview, Pasture 3 (North Kerbs Pasture)



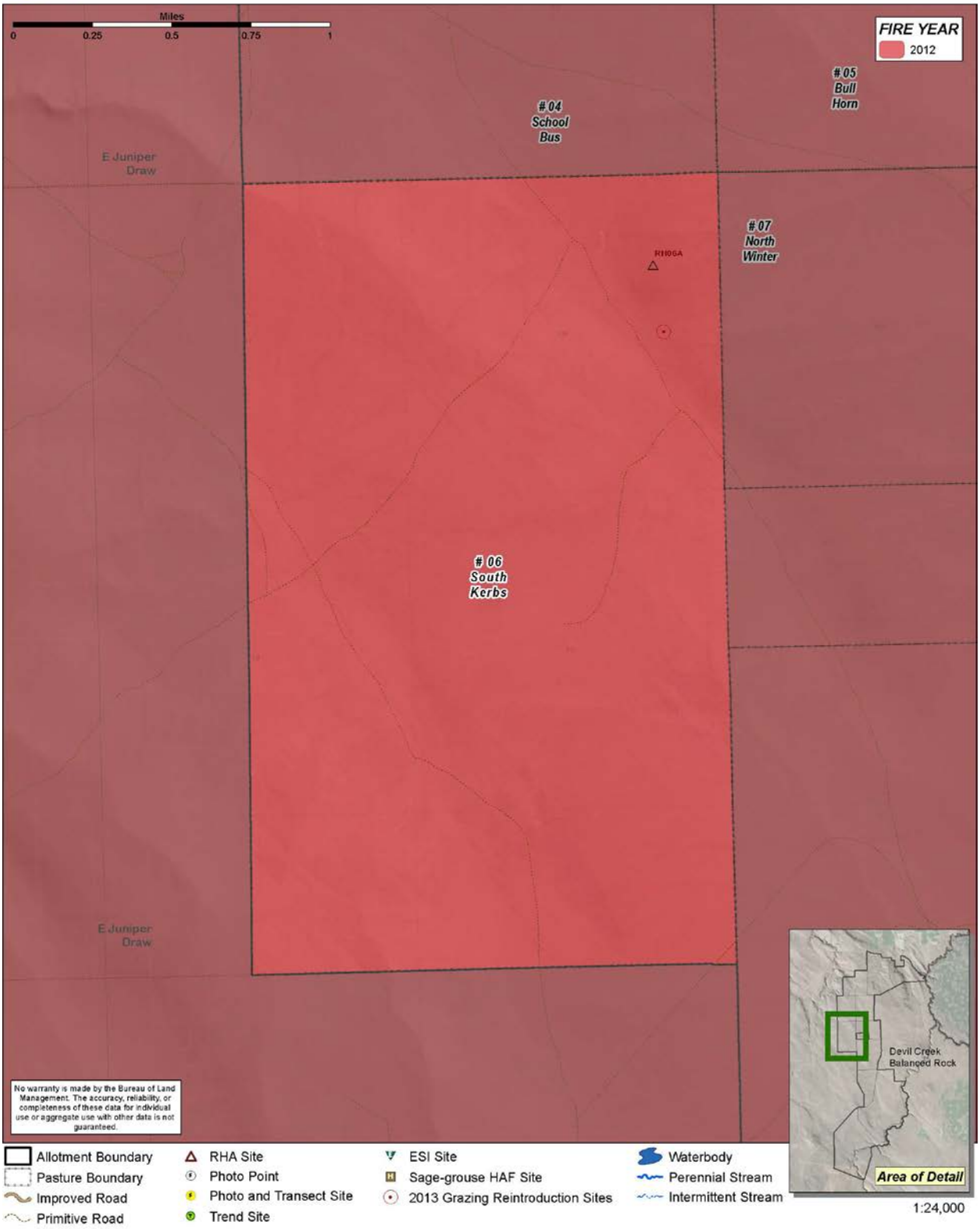
Map 6: Fire Overview, Pasture 4 (School Bus Pasture)



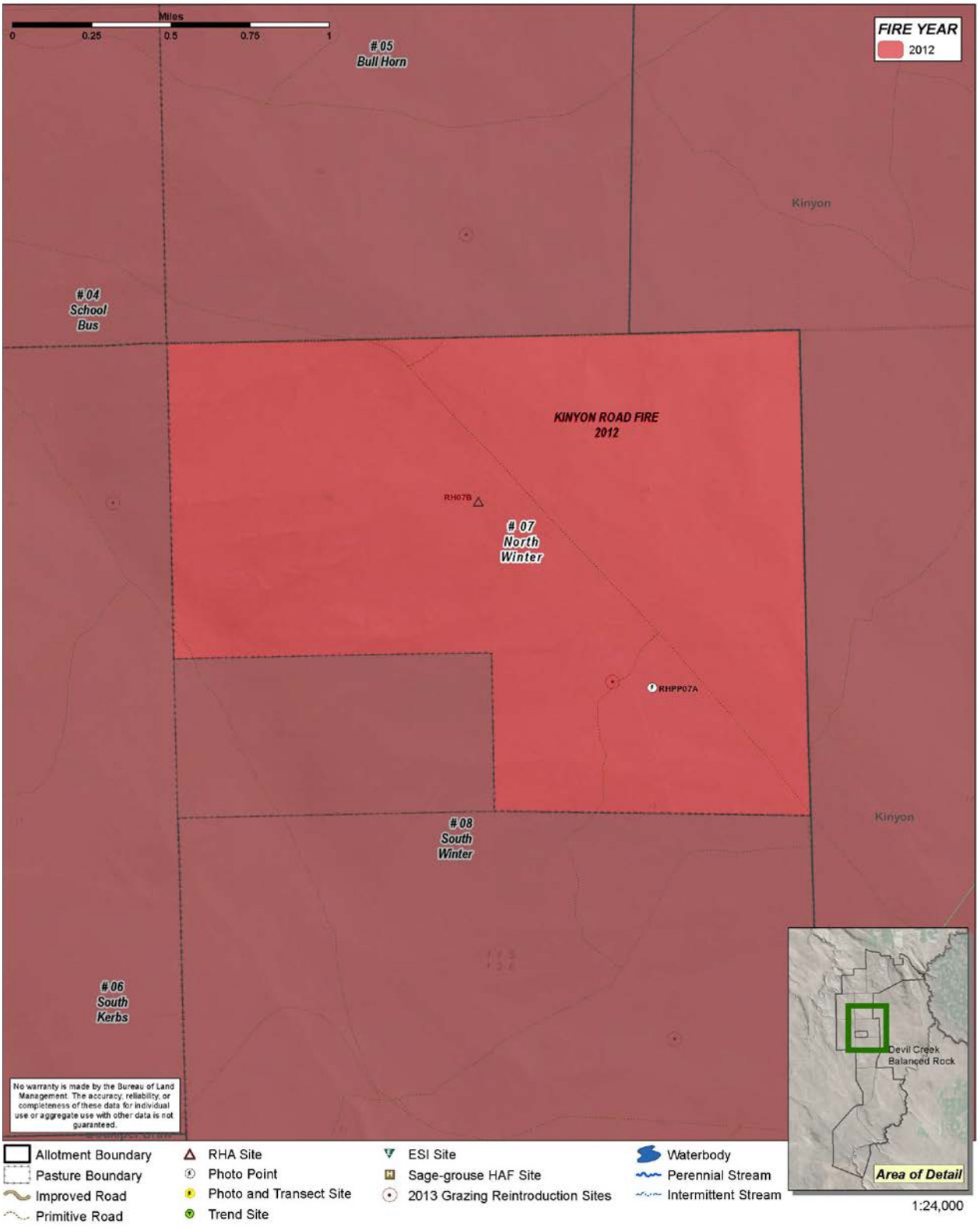
Map 7: Fire Overview, Pasture 5 (Bull Horn Pasture)



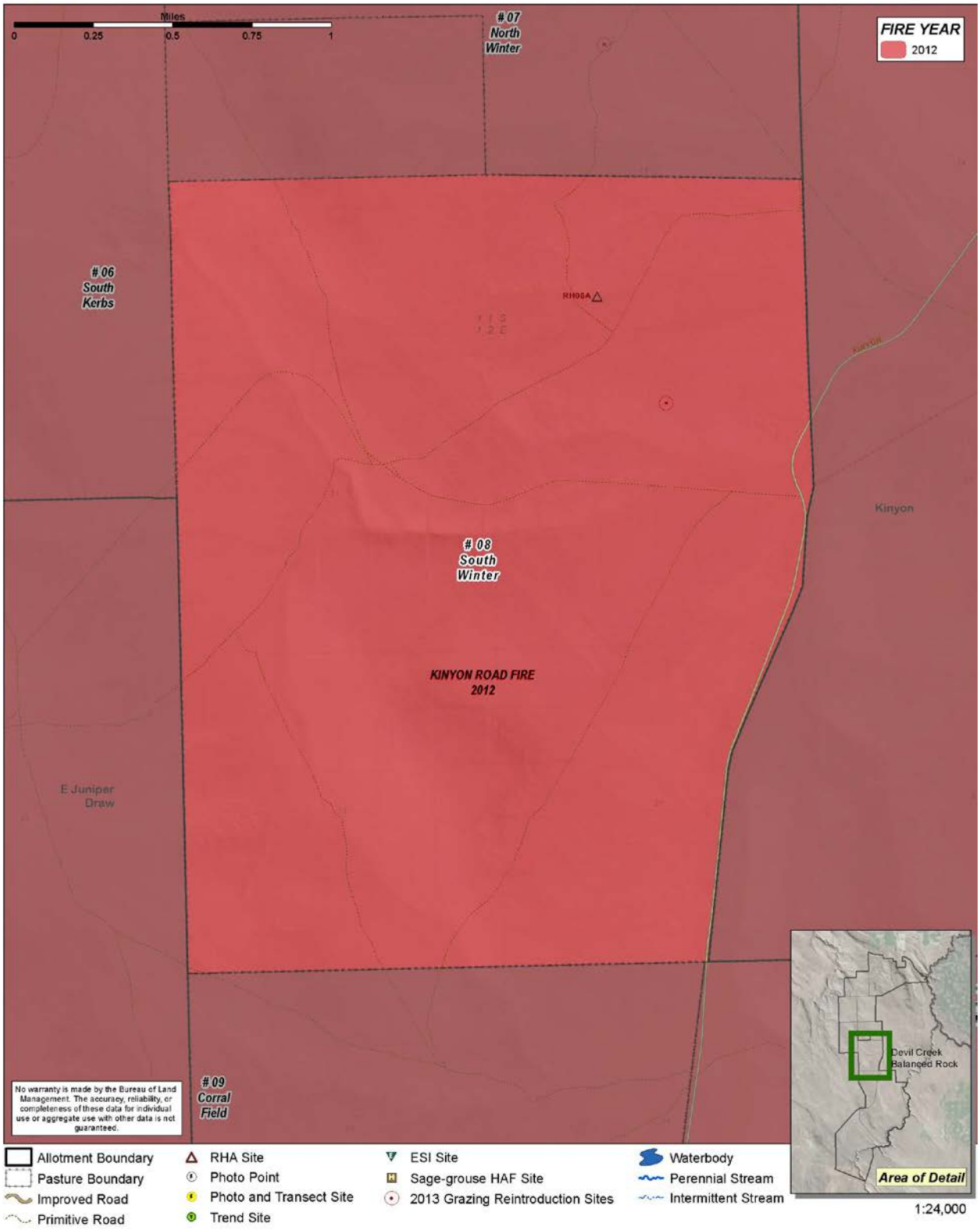
Map 8: Fire Overview, Pasture 6 (South Kerbs Pasture)



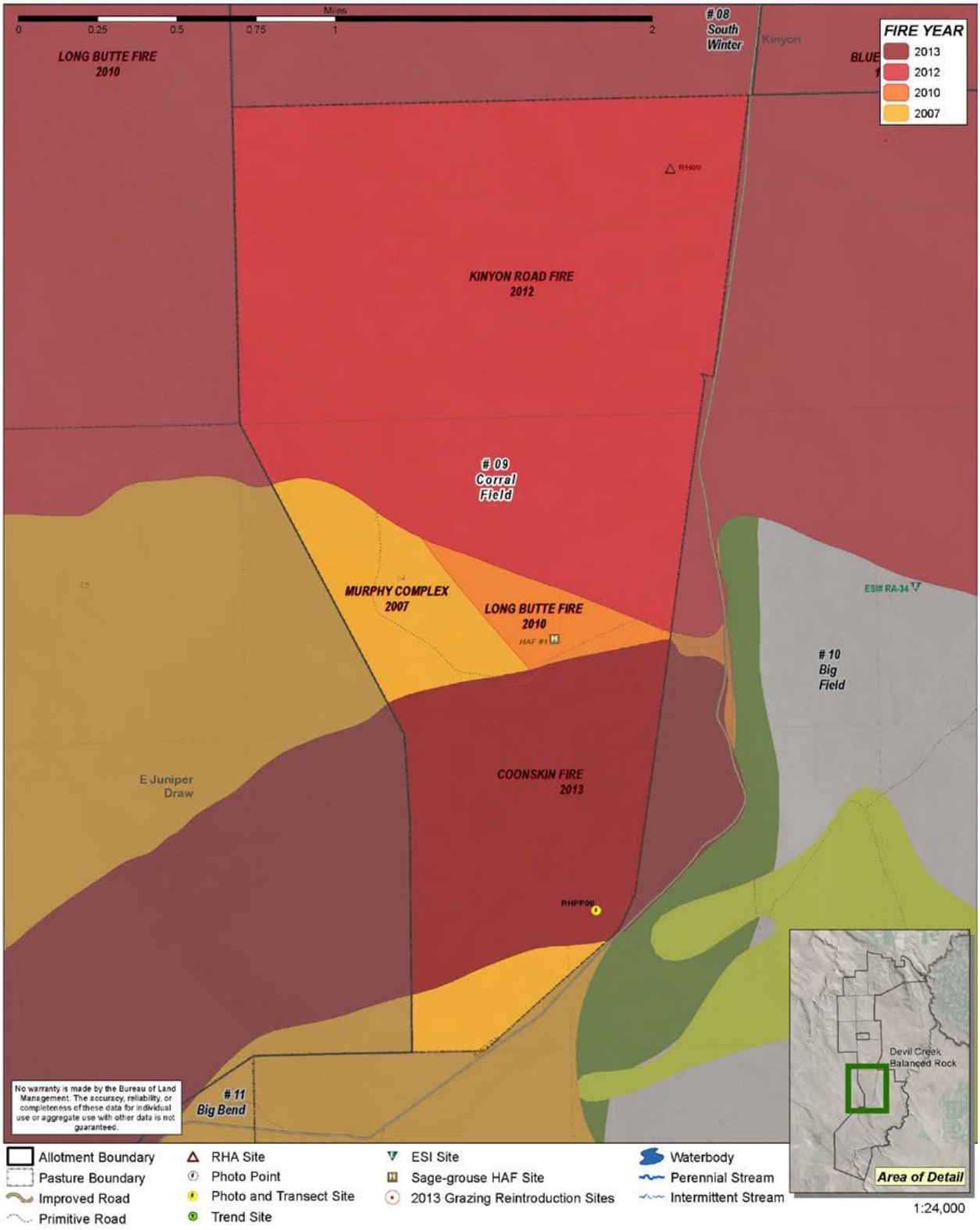
Map 9: Fire Overview, Pasture 7 (North Winter Pasture)



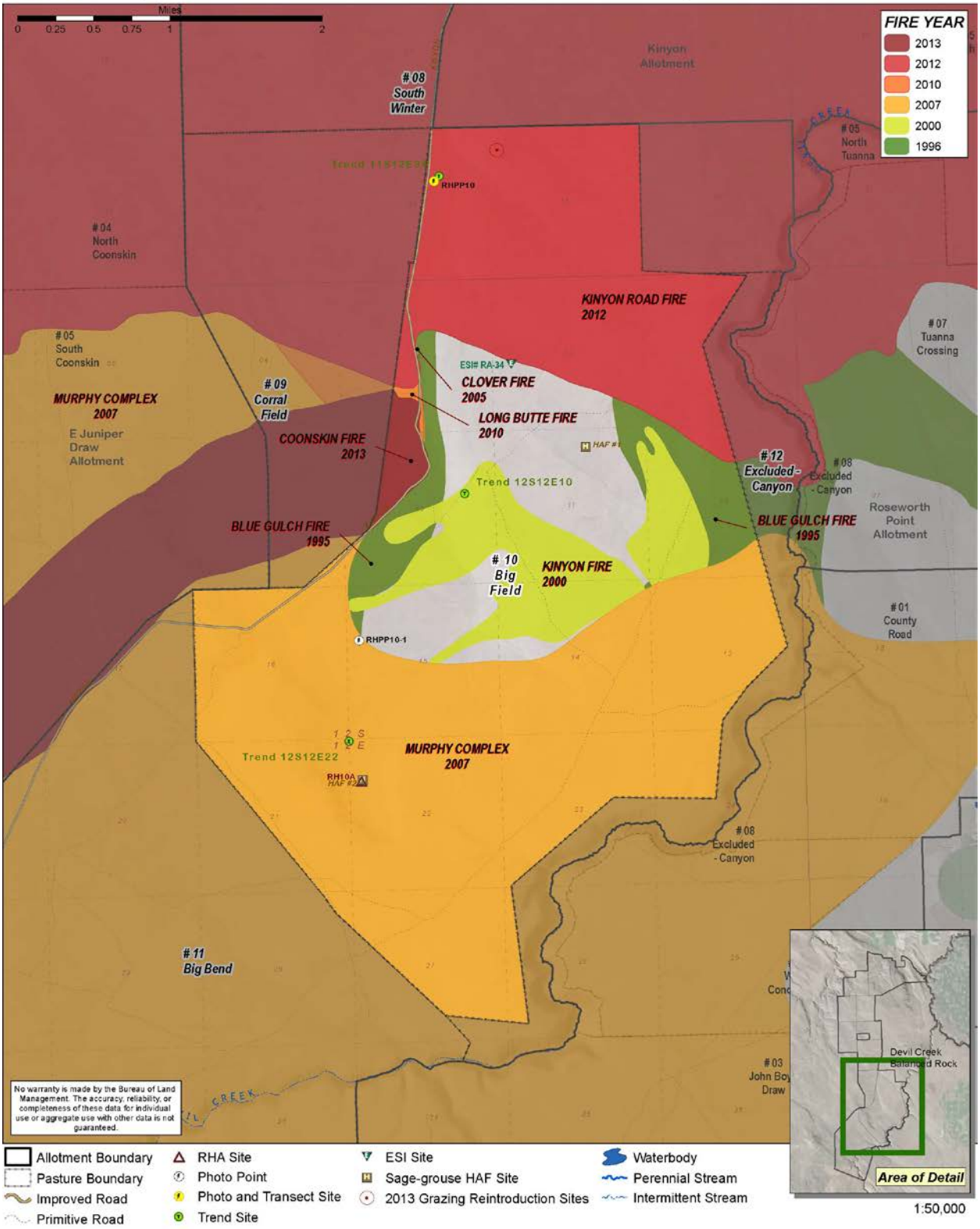
Map 10: Fire Overview, Pasture 8 (South Winter Pasture)



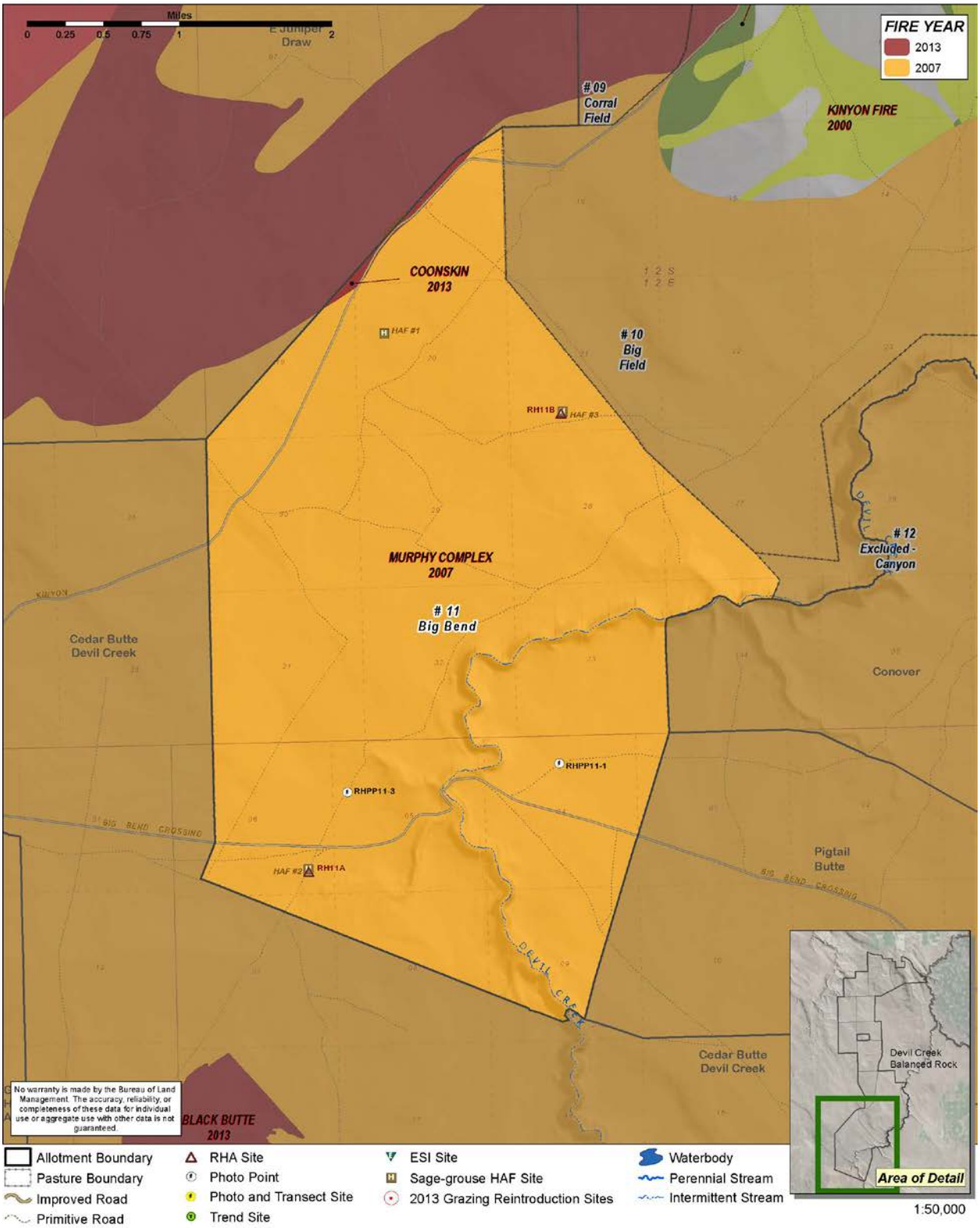
Map 11: Fire Overview, Pasture 9 (Corral Field Pasture)



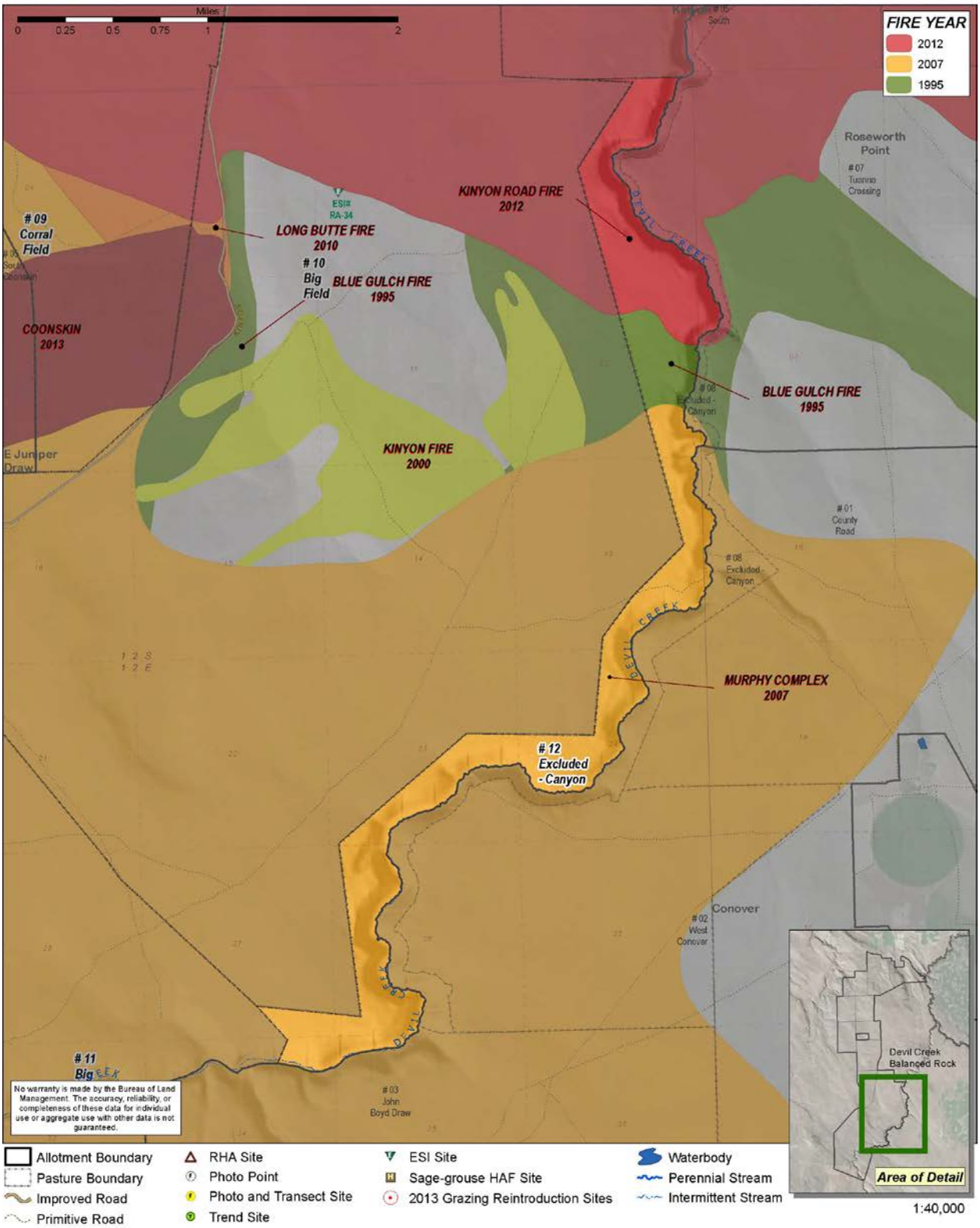
Map 12: Fire Overview, Pasture 10 (Big Field Pasture)



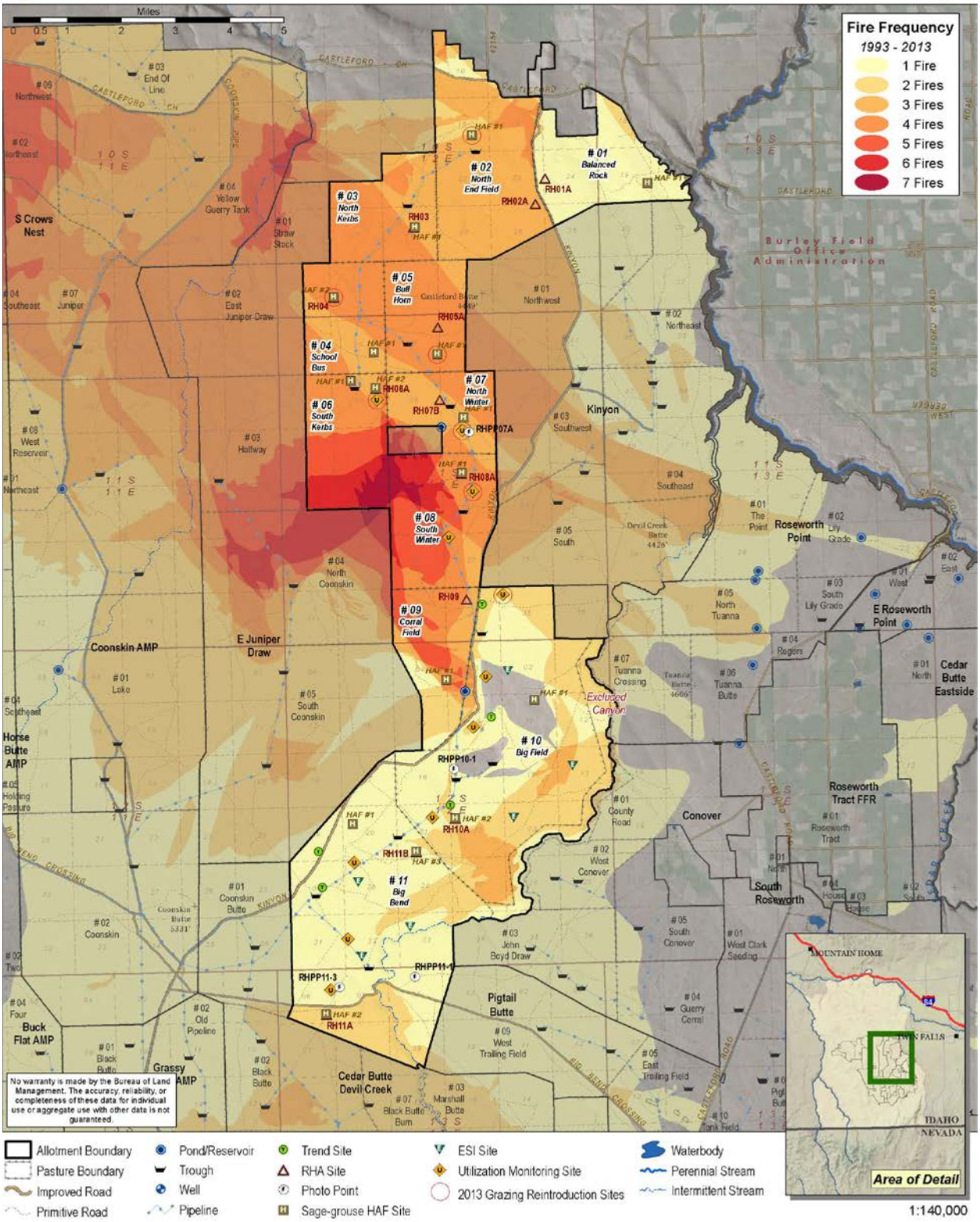
Map 13: Fire Overview, Pasture 11 (Big Bend Pasture)



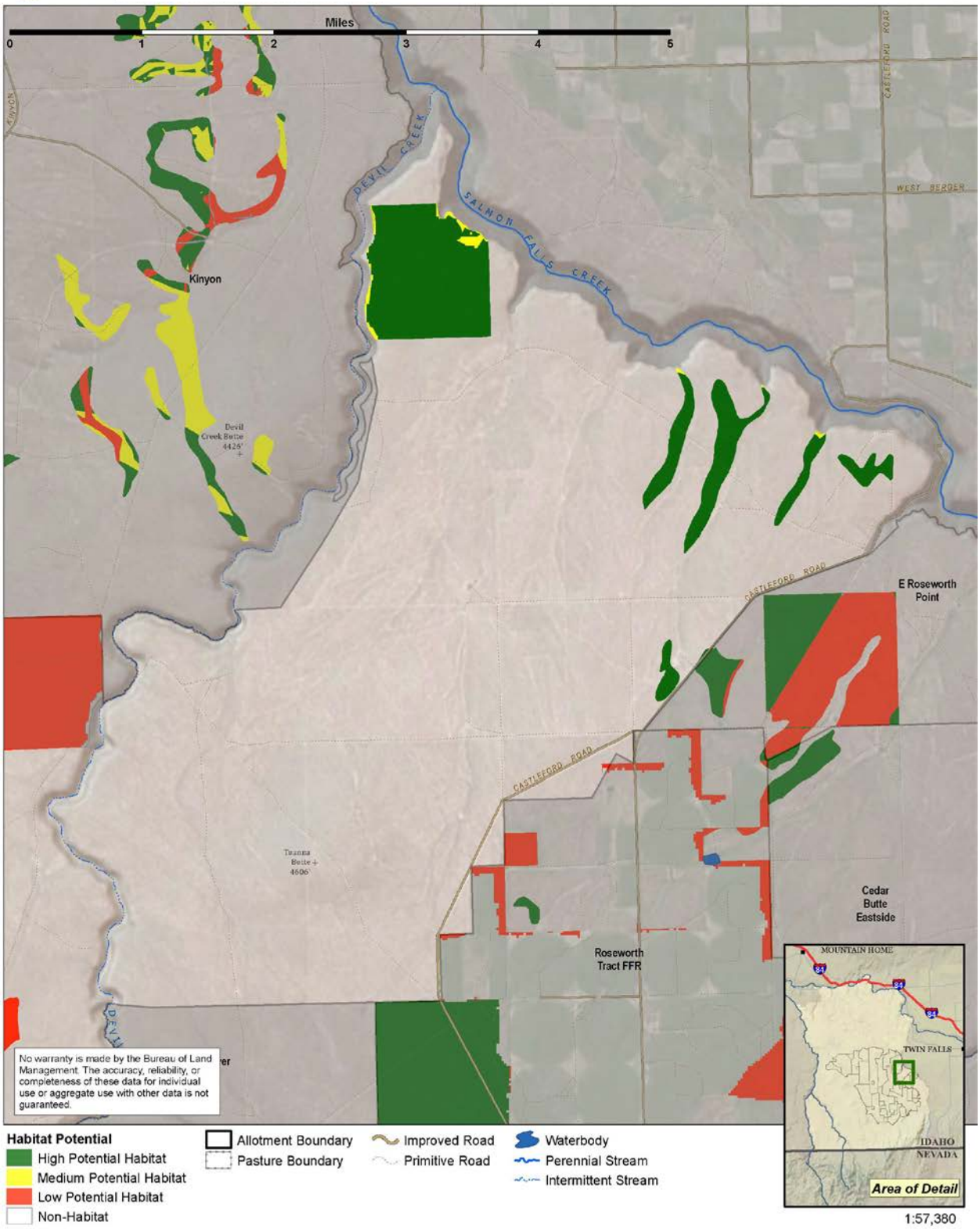
Map 14: Most Recent Fire and Exclosure Overview



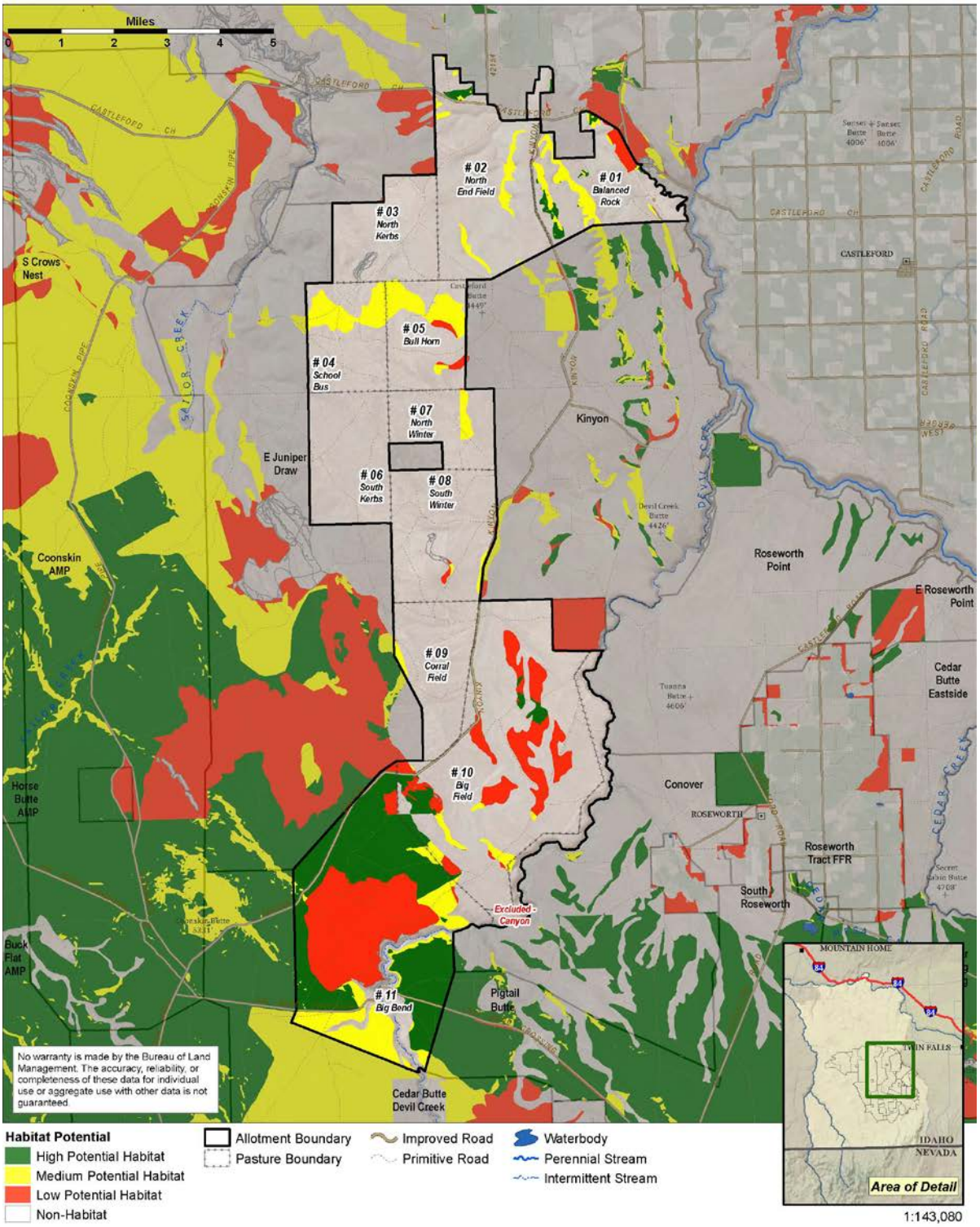
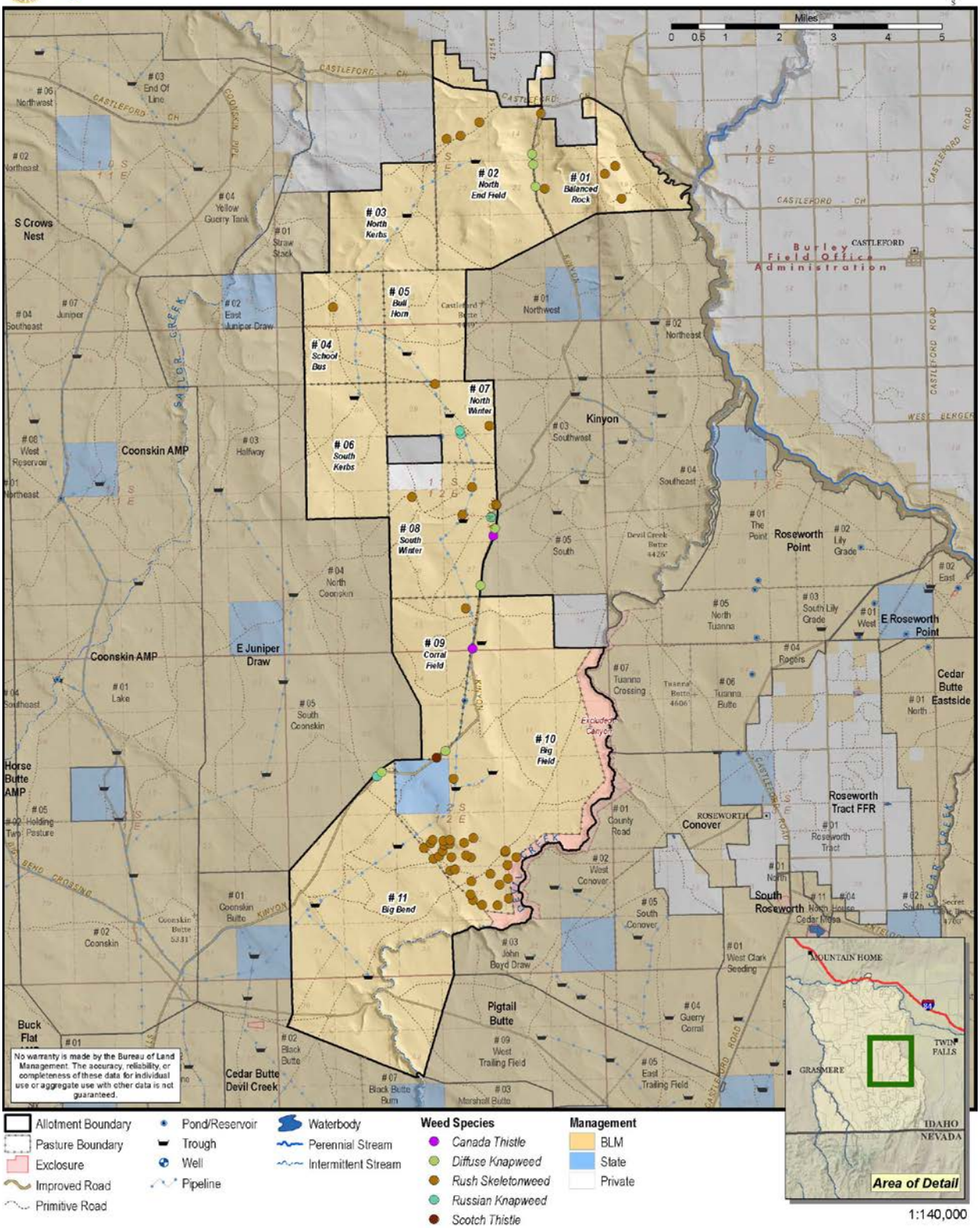
Map 15: Frequency of Range Fires on Devil Creek Balanced Rock Allotment



Map 16: Lepidium papilliferum Habitat Rating (Small Scale)



Map 17: Lepidium papilliferum Habitat Rating (Large Scale)



Map 18: Devil Creek Balanced Rock Weed Treatment Locations