Rangeland Health Assessment
Hammett #1 Allotment (01033)
North and Berry Ranch Pastures

Table of Contents

General Allotment Information 1
Livestock Grazing Management 2
Idaho Standards for Rangeland Health 3
Standard 1: Watershed 4
Standard 2: Riparian Areas and Wetlands/Standard 3: Stream Channel and Floodplains ... 7
Standard 4: Native Plant Communities 13
Standard 5: Rangeland Seeding 24
Standard 6: Exotic Plant Communities 24
Standard 7: Water Quality 24
Standard 8: Threatened and Endangered Species 25
Appendices and Maps 30
Appendix 1. Indicators of Rangeland Health 30
Maps 35

General Allotment Information

The Hammett #1 Allotment North Pasture is located 4-12 miles north of Hammett, Idaho (Map 1). King Hill Creek defines the northeastern boundary of the allotment and King Hill Canyon defines the southern boundary. The western border is east of Little Canyon Creek and borders the creek south of the confluence with Deer Creek. Approximately 85% of North Pasture is in the King Hill Wilderness Study Area. There are 23,388 acres in the North Pasture, 93% are BLM-administered lands (Table 1).

Table 1. Land ownership acres by pasture, Hammett #1 Allotment, Elmore County, Idaho.

Pasture	BLM	Private	State	Total
1 - North	21,820	48	1,520	23,388
3 – Berry Ranch	53	231	0	284
Total	**21,873**	**279**	**1,520**	**23,672**

The allotment is located within the U.S. Department of Agriculture Major Land Resource Area B-10, the Central Rocky and Blue Mountain Foothills (USDA 2006). Major landforms include plateaus, side slopes, toe slopes, and river plains composed of several soil associations and complexes. Three main ecological sites comprise nearly 80% of the pasture. Ecological sites are named by their general soil type and precipitation (inches); actual precipitation at nearby Anderson Dam and Glenns Ferry varied (Figure 1). Shallow Stony Loam 8-16" (43%) is characterized by low sagebrush with bluebunch wheatgrass. Loamy 12-16" (25%) is characterized by Wyoming big sagebrush, with Idaho fescue and bluebunch wheatgrass. South Slope Fractured 12-16" (12%) is characterized by mountain big sagebrush with bluebunch wheatgrass The remaining 20% is made up of the rock outcrops and rubbleland which have no associated ecological site descriptions (USDA-NRCS 2006).

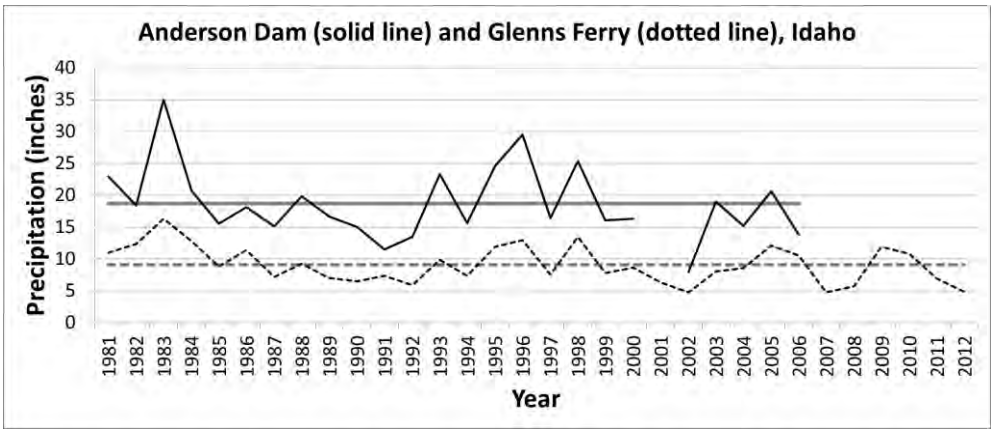


Figure 1. Annual and mean precipitation at Anderson Dam and Glenns Ferry, Idaho (Source: National Climate Data Center).

BLM fire records from 1957 through 2013 show three wildfires have occurred during that period. The Coyote Point (1963), Boise (1977), and Blair (2011) fires burned a total of 4,857 acres (21% of the allotment), including 190 acres of the Boise fire which re-burned in the Blair fire (Map 1).

Livestock Grazing Management

Livestock use is permitted through three authorizations one of which includes both spring and fall use (Table 2). The total permitted livestock use is 3,736 animal unit months (AUMs), not including the sheep trailing AUMs. The sheep authorization is a crossing permit for one band of sheep (1,000 to 2,000 head) to trail through the allotment.

Table 2. Authorized use summary, North Pasture, Hammett #1 Allotment, Elmore County, Idaho.

Authorization Number	Livestock		Season of Use		% BLM Land	AUM Preference		
	Kind	Number	Begin	End		Active	Suspended	Permitted
1101651	Cattle	609	04/01	06/30	100	1,822	0	3,640
	Cattle	906	10/01	11/30	100	1,817		
1102221*	Cattle	32	04/10	07/09	100	96	0	95
1101883	Sheep	2,000	8 day maximum		100	105	0	105
Totals						**3,840**	**0**	**3,840**

*This authorization was transferred to 1102221 from 1101784 in 2009

Based on actual use reports submitted by the authorized livestock operator or annual authorizations, annual use ranged from 735 to 3,639 animal unit months (AUMs) between 1997 and 2013 (Table 3). Actual use for authorization 1101784 is not included because no use occurred under this permit from 1997 to 2007. Sheep trailing (1101883) is also not included in the actual use table.

Table 3. Actual use by permit between 1997 and 2013, North Pasture, Hammett #1 Allotment, Elmore County, Idaho.

Grazing Year	Authorization Number	Use Period		AUMs per	
		On Date	Off Date	Use Period	Year
1997	1101651	05/08	06/27	807	1,359

Grazing Year	Authorization Number	Use Period		AUMs per	
		On Date	Off Date	Use Period	Year
		10/04	11/30	552	
1998	1101651	05/03	06/25	1,303	1,988
		10/22	11/29	685	
1999	1101651	04/29	06/30	1,305	1,621
		11/02	11/30	316	
2000	1101651	04/17	06/15	1,243	1,314
		11/02	11/28	71	
2001	1101651	04/07	06/20	1,681	1,697
		11/23	11/30	16	
2002	1101651	04/09	06/27	1,305	1,343
		10/20	11/02	18	
2003	1101651	04/20	06/28	1,170	1,232
		10/01	11/09	62	
2004	1101651	04/15	06/25	1,582	2,110
		10/11	11/20	528	
2005	1101651	04/01	06/30	1,822	3,639
		10/01	11/30	1,817	
2006	1101651	04/01	06/30	1,822	3,639
		10/01	11/30	1,817	
2007	1101651	04/24	06/30	1,256	1,595
		10/10	11/28	339	
2008	1101651	05/14	05/30	295	2,120
		10/01	11/28	1,776	
	1102221	05/10	05/13	49	
2009	1101651	05/07	06/30	1,666	2,490
		10/20	11/20	723	
	1102221	05/07	05/19	101	
2010	1101651	05/10	06/30	857	1,268
		10/15	10/20	315	
	1102221	04/10	07/09	96*	
2011	1101651	05/02	06/30	886	1,079
		10/24	11/04	211	
	1102221	04/10	07/09	Non-Use	
2012	1101651	05/09	06/30	505	735
		10/20	11/26	230	
	1102221	04/10	07/09	Non-Use	
2013	1101651	05/20	07/05	378	815
		10/19	11/15	312	
	1102221	05/15	06/01	125	

*AUM's based on annual billing, no actual use on file.

Idaho Standards for Rangeland Health

In 2004, BLM staff conducted 35 rangeland health field assessments in the North Pasture in accordance with *Interagency Technical Reference 1734-6, Interpreting Indicators of Rangeland Health ver. 3* (Map 1). The Elmore County Soil Survey (USDA-SCS, 1991) was used to identify ecological site descriptions, based on mapped soils and landforms, which were verified with field visits. Resource conditions in the allotment were assessed according to the 1997 Idaho Standards for Rangeland Health. The following subsections of this document discuss resource conditions as they relate to each of the applicable standards.

Rangeland health field assessments used a variety of indicators to help determine rangeland health. However, no single indicator provided sufficient information to determine rangeland health and only those indicators appropriate to a particular site were used. Therefore, not all indicators were given equal weight from in different locations. For example, indicators #1-Rills and #6-Wind-scoured Blowouts/Deposition would not occur on a site with flat terrain and a gravelly soil surface. These indicators would be rated "none to slight" by default; but, would not be given the same weight as more applicable indicators for that site, e.g. #4-Bare Ground and #10-Plant Community Composition Relative to Infiltration and Runoff, when determining overall attribute ratings for the site. In rangeland health field assessments, "none to slight" and "slight to moderate" categories reflected the normal range of variability expected for the ecological site. However, "moderate", "moderate to extreme", and "extreme" categories reflected a significant departure from expected conditions for the ecological site.

Standard 1: Watershed

Rangeland Health Field Assessments, indicating the state of the rangeland in 2004, and long-term monitoring of the plant community and other watershed health indicators from 1988/1990 to 2010/2011 were used to assess the state and trend of watershed conditions. Together, these data sets indicate that, although conditions improved over the two decades for basal cover of persistent vegetation, the native plant community declined, and problems persisted in many locations through 2004 with erosion and soil degradation.

Rangeland Health Field Assessment

Twelve of the 17 rangeland health indicators (1-11 and 14) relate to soil stability and hydrologic function (Table 4). The number in the range of departure columns represents the number of assessments with the indicator rating in that category. For example, the indicator for the ability of the soil surface to resist erosion (#8) rated in the "none to slight" range of departure from expected conditions for the ecological site at four sites, etc.

Table 4. Watershed indicators of rangeland health, North Pasture, Hammett #1 Allotment, Elmore County, Idaho.

Indicators of Soil/Site Stability and Hydrologic Functioning	Range of Departure				
	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
1-Rills			1	1	33
2-Water Flow Patterns		1	11	19	4
3-Pedestals/Terracettes		1	11	17	6
4-Bare Ground			11	15	9
5-Gullies					35
6-Wind Scoured blowouts/depositions					35
7-Litter Movement		1	3	7	24
8-Soil Surface Resistance to Erosion		1	7	23	4
9-Soil Surface Loss or Degradation			9	21	5
10-Plant Community Composition and Distribution Relative to Infiltration and Runoff		2	16	13	4
11-Compaction Layer					35
14-Litter Amount		1	8	18	8
Total Indicator Units = 420 (12 indicators x 35 locations)	**0**	**7**	**77**	**134**	**202**

Field assessments identified that 20% of the indicators were beyond the normal range of variability expected for the ecological sites [84 of 420 indicator units were "moderate to extreme" or "moderate" (Table 4, Appendix 1, Map 1)]. Only gullies (#5), wind scoured blowouts/depositions (#6), and compaction layer (#11) were not greater than expected at any location.

The ratings for plant community composition and distribution relative to infiltration and runoff (#10) reflect substantial departure from expected conditions at over half of the assessment locations. This indicator is a measure of the plant community's ability to capture and cycle water and reduce runoff. Low densities of mid- and large-stature perennial bunchgrasses (e.g., bluebunch wheatgrass and Idaho fescue) and presence of invasive exotic annual species (i.e., medusahead and cheatgrass) were the primary factors in these ratings. The indicators for water flow patterns (#2), pedestals and terracettes (#3), bare ground (#4), soil surface resistance to erosion (#8), soil surface loss or degradation (#9), and litter amount (#14) also commonly rated beyond the normal range of variability. Historic and active erosion in the form of numerous Sandberg bluegrass pedestals, accentuated water flow paths, and associated soil degradation and/or loss were the primary factors in these ratings.

Long-term Vegetation Monitoring

Point cover data and repeat photographs were used to identify changes in basal cover of persistent vegetation, extent of bare ground, and overall conditions of watershed protecting features such as native perennial bunchgrasses which reflected the capacity of an area to retain moisture, control runoff, and provide soil protection (also see Standard 4: Native Plant Communities). Eight point-cover transects were surveyed in 1988/1990 and 2010/ 2011. Ten photo plots were surveyed in 1987/1989/1990, 2004, and 2010/2011.

Basal cover of persistent vegetation (stems of perennial grasses, perennial forbs, and shrubs) and bare ground were quantified at eight locations (03S10E10, 03S10E11A, 03S10E11B, 03S10E13A, 03S10E13B, 03S10E25, 03S10E30, and 03S10E19) in 1988/1990 and 2010/2011 using the point cover method. Persistent vegetation cover increased significantly at seven locations (Figure 2). Persistent vegetation was a minor component (<8%) at three locations (03S10E11A, 03S10E13A, 03S10E25).

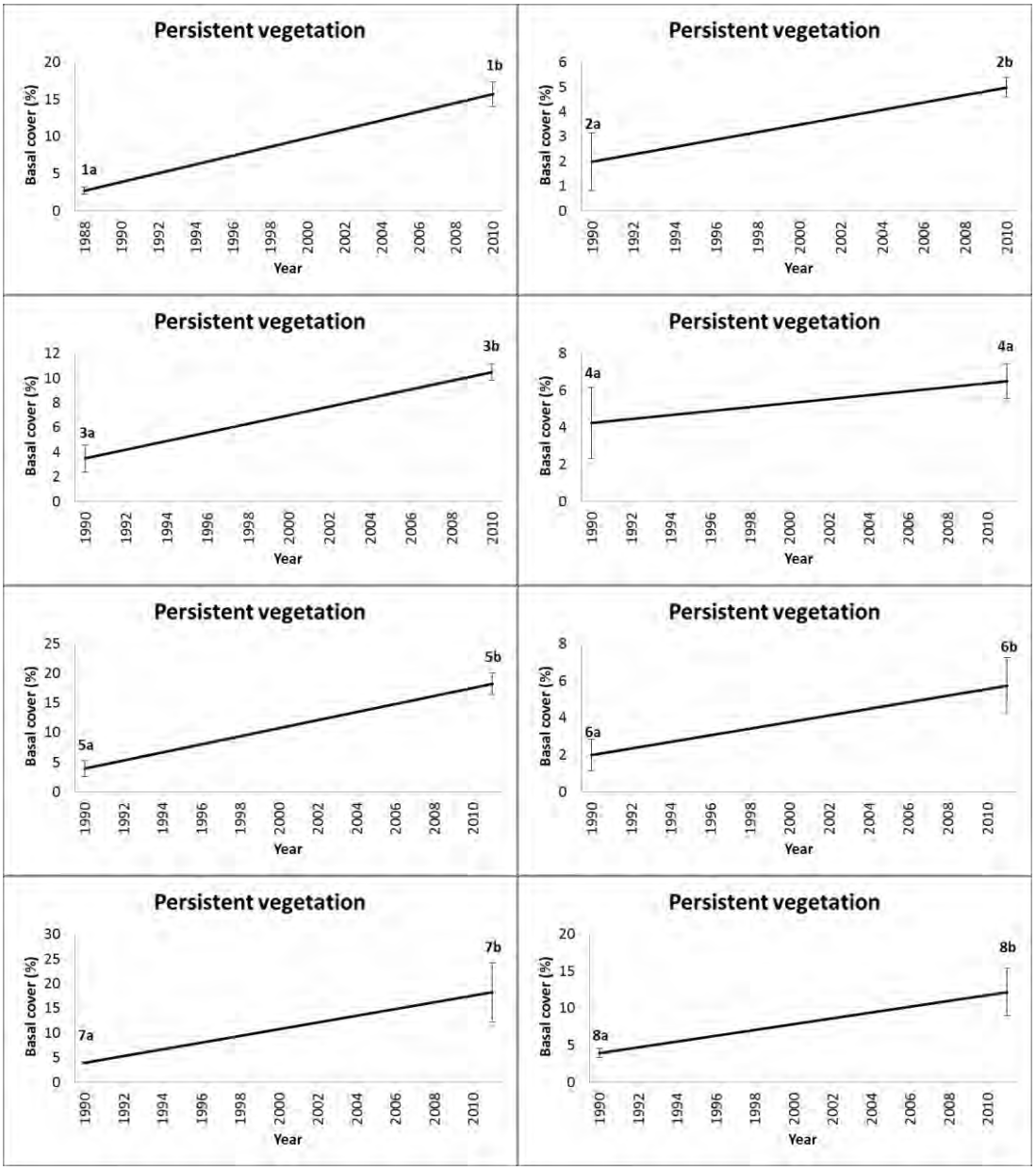


Figure 2. Basal cover of persistent vegetation in the North Pasture, Hammett #1 Allotment, Elmore County, Idaho, in 03S10E10 (1), 03S10E11A (2), 03S10E11B (3), 03S10E13A (4), 03S10E13B (5), 03S10E25 (6), 03S10E30 (7), and 03S10E19 (8). Note different scales for basal cover. Different letters above error bars indicate significant differences (P<0.1).

Bare ground did not change significantly in six locations (static trend) and decreased at 03S10E11A and 03S10E30 (Figure 3).

Photo point comparisons between 2004 and 2010/2011 depicted a decrease in erosional features (e.g., pedestalling) and minor improvements in overall plant community conditions. Erosional features mentioned in the rangeland health field assessments, such as pedestalled perennial grasses, were apparent in some of the landscape photos. More robust perennial grasses and forbs were better able to capture and cycle nutrients and water by 2010/2011. Sandberg bluegrass

plants no longer appeared pedestalled. These watershed trends would be expected to provide increasing protection against erosion and excessive runoff had it not been for the general decline of large bunchgrasses and the invasion by exotic annual grasses (also see Standard 4: Native Plant Communities).

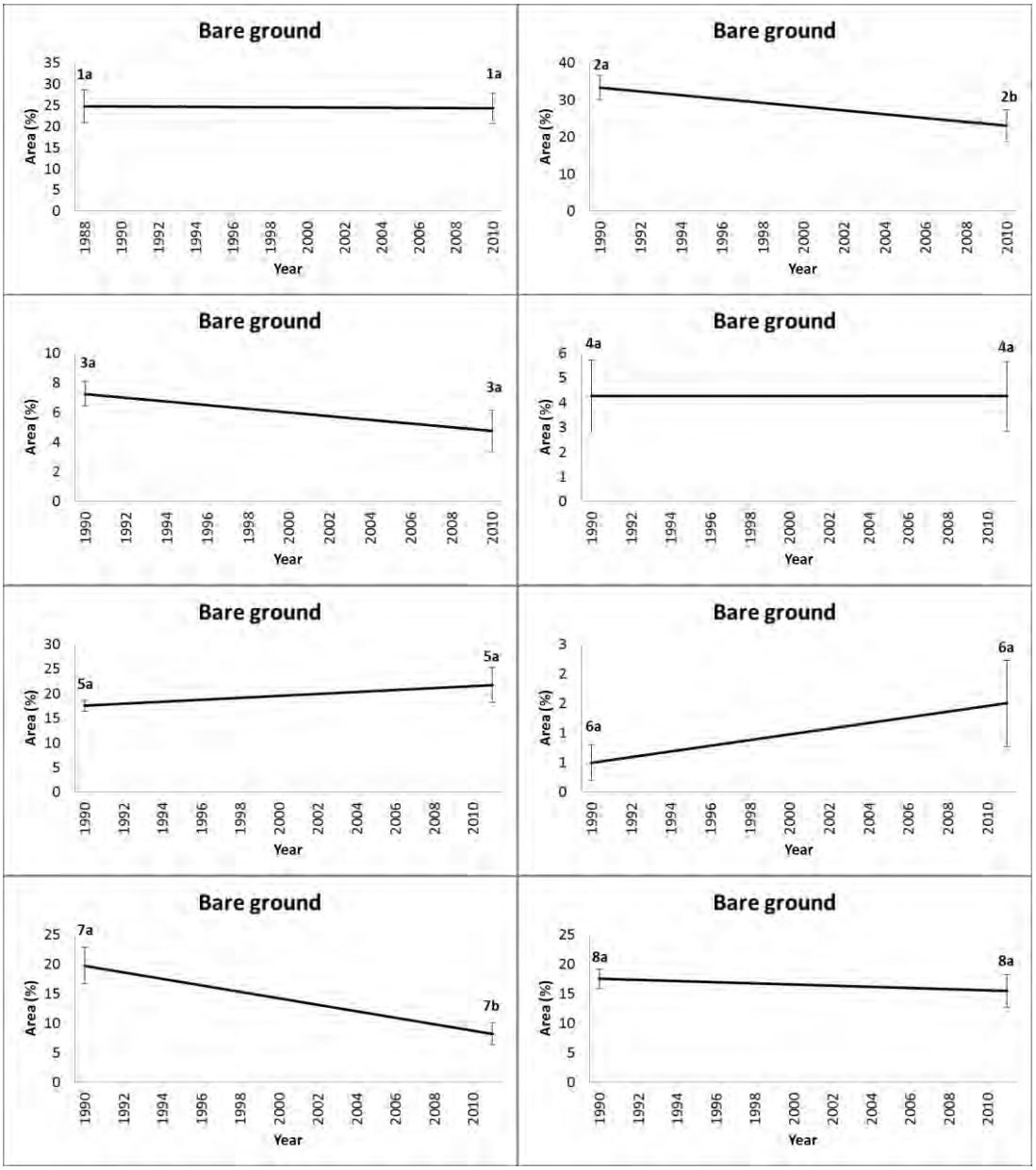


Figure 3. Bare ground in the Hammett #1 Allotment, North Pasture, Elmore County, Idaho, in 03S10E10 (1), 03S10E11A (2), 03S10E11B (3), 03S10E13A (4), 03S10E13B (5), 03S10E25 (6), 03S10E30 (7), and 03S10E19 (8). Note different scales for basal cover. Different letters above error bars indicate significant differences ($P<0.1$).

Standard 2: Riparian Areas and Wetlands/Standard 3: Stream Channel and Floodplains
Perennial stream segments were examined and rated for functioning condition. Ephemeral (flowing naturally only in direct response to precipitation) and intermittent (naturally has a

period of zero flow for at least one week during most years) streams are examined to determine if flow regimes validate delineations on National Wetlands Inventory maps (1996). Such streams are rated for functioning condition if obligate hydric vegetation is present. Obligate hydric vegetation are plant species that are dependent on available water, either as standing surface water or saturated soil, and do not persist in environments where substrates become seasonally dry.

Evaluations of Standards 2 and 3 are based on field inventories and examinations of streams and springs from 2010 through 2013. To assess stream and spring health, interagency technical references (TR-1737-15, 1998 and TR-1737-16, 1999) were applied which uses five general categories to rate the biological (plant life) and hydrological (physical) functioning condition of streams (lotic) or wetlands (lentic). Categories include: proper functioning condition (PFC); functioning-at-risk (FAR) with an upward trend; FAR with static trend; FAR with downward trend; and non-functioning (NF). Streams are reported by stream segment identification number, and springs are reported by name. Refer to Map 2 for riparian area locations.

Elements of Standards 2 (e.g., vegetation that provides stream shading) and 3 (e.g., streambank stability and channel form) directly affect water quality (e.g., water temperature, sedimentation); therefore, Standards 2, 3, and 7 (Water Quality) and presence of redband trout were summarized in one table. Functioning condition ratings of stratified stream segments are discussed in the Stream Conditions section. Water quality assessments for each stream are discussed in the Standard 7: Water Quality section. Fish are discussed in the Standard 8: Threatened and Endangered Species Fish section.

Stream Conditions

Approximately 21.1 miles of stream were in PFC and 4.4 miles were in FAR (Table 5, Map 2). With one exception in FAR trend, functioning condition ratings were the same for Standards 2 and 3 on any discretely stratified stream segment.

King Hill Creek

Approximately 8.2 miles of King Hill Creek was rated in PFC. King Hill Creek is administered by the BLM Shoshone Field Office. King Hill Creek is not accessible to livestock from the Hammett #1 Allotment, but has been included here for sake of completeness. Extremely rocky steep terrain, and a narrow boulder-strewn canyon floor, restricts livestock access to, or movement within, the stream corridor. King Hill Creek supports pristine assemblages of quaking aspen, alder, and redosier dogwood, together with willows and other woody shrubs. The very coarse stream and floodplain substrates and dense deep-rooted vegetation promote robust streambank and channel stability.

Table 5. Stream name, segment ID, segment length, and functioning condition rating summaries for all stream segments, North Pasture, Hammett #1 Allotment, Elmore County, Idaho.

Stream Name	Segment ID	Flow Regime[1]	PFC[2] Miles	FAR[2] Miles	Total miles	H2O quality met?	Redband trout present? [3]
King Hill Creek	KING-010.3	P	2.1		8.2	Yes[4]	Y
	KING-012.5	P	6.1				
West Fork King Hill	WKING-000.0	P	1.0		9.2	No[5]	Y
	WKING-001.0	P		1.2			
	WKING-002.2	P	0.6				
	WKING-004.0	P	3.8				
	WKING-007.8	P		0.3			
	WKING-008.1	P	0.3				
	WKING-009.3[6]	P		2.0			
East Fork King Hill	EKING 000.0	I	0.6		0.6	No[5]	S
North Fork King Hill	NKING 000.0	I	2.6		2.6		
Little Canyon Creek	LCANY-014.6	P		0.5	3.8	No[7]	S, Y
	LCANY-015.1	P	3.1				
	LCANY-011.2	P	0.2				
Deer Creek	DEER-000.0	I	0.2		1.1		N
	DEER-000.2	I		0.4			
	DEER-000.6	I	0.5				
Total Miles			**21.1**	**4.4**	**25.5**		
Percentage of Total			**83%**	**17%**	**100%**		

[1] P = perennial flow regime I = intermittent flow regime
[2] PFC = proper functioning condition, FAR = functional-at-risk condition
[3] Y = yes, N = no, S = seasonal occupation only
[4] Not 303(d) listed. IDEQ has not assessed this waterbody
[5] IDEQ TMDL shade target for water temperature, 303(d) listed
[6] stream segment with downward trend
[7] IDEQ TMDL target for sediment, 303(d) listed

West Fork King Hill Creek (PFC segments)

Approximately 5.7 miles in four segments of West Fork King Hill Creek were in PFC (Table 5, Map 2). These segments are located in narrow rocky canyons which are inaccessible to livestock due to terrain features and very dense woody vegetation. The near pristine condition of these stream segments provides high quality reference reaches which show the potential of this stream to support species-rich and robust mid- to late-seral riparian plant communities which represent the potential natural vegetation (PNV). Riparian vegetation was composed of cottonwood, quaking aspen, mountain alder, rocky mountain maple, peach-leaf willow, chokecherry, and many others.

Deep-rooted woody vegetation provided excellent streambank stability. Stream channels had abundant woody debris to dissipate energy and capture sediments. In addition, the extremely rocky substrates and dense riparian vegetation promote streambank and channel stability. Active bank erosion was less than 10% in these reaches.

West Fork King Hill Creek (FAR segments)

WKING-001.0 (1.2 miles) and WKING-007.8 (0.3 mile) were rated in FAR condition with static trend and WKING-009.3 (2.0 miles) was rated in FAR with downward trend (Table 5, Map 2). Each of these segments occurs in finer soil types and in landscapes which are less confined (e.g., gentler stream gradient and valley slopes). Woody vegetation, which includes Geyer's, coyote, and peach-leaf willows, and quaking aspen, were not present at potential densities. Plant species assemblages representative of PNV, which are found in PFC reaches of this stream, are nearly absent, particularly along WKING-009.3.

Willows, when present, were hedged and unhealthy, and age classes were mostly old and decadent as no successful willow or quaking aspen recruitment was occurring. Young willow and quaking aspen shoots were clipped at the ground level. Understory species were mostly composed of upland plants including sagebrush, cheatgrass, bulbous bluegrass, and weedy species including Scotch thistle, annual sunflower, common mullein, and stinging nettle, rather than rushes and sedges which should occupy these sites.

The segments had high width/depth ratios, poor pool/riffle ratios, shallow pool depth, and high sediment levels. Inadequate deep-rooted hydric vegetation was present to protect sensitive streambanks from flooding flows. Mechanical damage to streambanks from bank trampling and hoof shearing was common along these reaches.

In addition to functioning condition assessments, three Designated Monitoring Areas (DMAs) were established in West Fork King Hill Creek in the fall of 2008 using protocols described in *Monitoring Stream Channels and Riparian Vegetation-Multiple Indicators* (Interagency Technical Bulletin, Version 5.0, April 2008). Two DMAs were established in WKING-009.3 (DMA 1 and 2), and one was established in WKING-007.8 (DMA 3).

Transect data for DMAs 1, 2, and 3 support the functioning condition assessment findings. Data show the dominant greenline plant species were not obligate or facultative wetland/riparian species. For example, 65% of the plant community on the greenline was upland vegetation types consisting of Wyoming big sagebrush, Kentucky bluegrass, and invasive annual and biennial grasses (i.e., cheatgrass and bulbous bluegrass). Younger age classes of willows were absent, indicating regeneration/recruitment of these species was not occurring in these reaches. Utilization of riparian vegetation was very heavy; the median stubble height recorded at each of three DMAs in September 2008, was 1.5 inches, 1.4 inches, and 1.4 inches, respectively.

Bank alteration (hoof shearing/pugging) levels were high (46%) at DMAs 1 and 2, and (54%) at DMA 3. The stream channels had high width/depth ratios, poor pool/riffle ratios, shallow pool depths, and very high fine sediment levels. At DMAs 1 and 2, streambanks were 48% stable, and 62% stable, respectively. At DMA 3, streambanks were 44% stable. These segments are at very high risk of catastrophic erosion should a significant flood event occur.

East and West Fork King Hill Creeks

EKING-000.0 (0.6 mile) and NKING-000.0 (2.6 miles) were rated in PFC (Table 5, Map 2). Each segment had good populations of willows, were heavily rock armored, valley controlled, and vertically and laterally stable.

Little Canyon Creek (PFC segment)
LCANY-015.1 (3.1 miles) and LCANY-011.2 (0.2 miles) were rated in PFC (Table 5, Map 2). These segments had dense and vigorous PNV plant communities composed mostly of mature age classes of cottonwood, quaking aspen, Geyer's, coyote, and Pacific willows, redosier dogwood, golden currant, elderberry, chokecherry, western juniper, Wood's rose, and many others. Few sedges or rushes were present here due to dense shading and coarse stream substrates.

The stream flows through a narrow and very rocky box-canyon. Stream channel morphology was rock and valley controlled. Streambanks were nearly 100% stable throughout these segments.

Little Canyon Creek (FAR segment)
LCANY-014.6 (0.5 mile) was in FAR condition for Standard 2, with a minor upward trend (Table 5, Map 2). Woody vegetation was represented mostly by old and decadent Geyer's willows; however, coyote willows, Baltic rush, Nebraska sedge, bulrush, and spike rush were actively regenerating along portions of this segment without actively eroding streambanks. The dominant herbaceous plant was Kentucky bluegrass, which provided only minimal protection for streambanks composed of finer substrates. In the upper and lowermost portions of this segment, vertical streambanks were present on the west streambank. Vegetation along these banks consisted of xeric upland plant species including cheatgrass, bulbous bluegrass, and Wyoming big sagebrush perched above the wetted zone.

This segment was in FAR condition with a static trend for Standard 3. The stream channel had excessive width/depth ratios and reduced sinuosity over much of its length. Where upland plants dominated, they provided little stability or protection to the streambanks. Active streambank erosion was common throughout the segment, particularly in the upper and lower reaches where poorly vegetated vertical streambanks were scoured annually, making it difficult for vegetation to reestablish. Numerous small headcuts were present in the active channel. Excessive bank shearing was not encountered, although pugging, trampling, and trailing impacts were observed adjacent to the stream channel.

Deer Creek (PFC segments)
DEER-000.0 (0.2 miles) and DEER-000.6 (0.7 miles) were in PFC (Table 5, Map 2). These segments are located in a narrow valley, but were mostly accessible to livestock. The intermittent flow regime in the PFC segments provides little forage for livestock and very dense arroyo willows, so little grazing impacts were present.

Deep-rooted arroyo willows provided excellent streambank stability in these intermittent flow regime segments. Active bank erosion was less than 15%. The channels were vertically and laterally stable.

Deer Creek (FAR segment)
DEER-000.2 (0.4 miles) was in FAR condition (Table 5, Map 2). This reach was impacted more heavily than the PFC segments as surface water flows are present here in the spring, so livestock water and forage along this reach. Riparian vegetation was limited to infrequent arroyo willows,

and Baltic rush, which were both heavily utilized by livestock. Kentucky bluegrass and invasive exotic annual grasses were also present. Some areas near the midpoint of this reach displayed excessive bare ground and considerable livestock trailing.

Most of the stream channel was rock-armored. However, areas near the middle of the segment with finer and deeper soils had excessive streambank erosion as a result of weakened riparian vegetation, bank shearing, trampling, and trailing by livestock.

Spring Conditions

Nine springs were rated for functioning condition. One spring was in PFC, five springs were in FAR, and three springs were NF (Table 6, Map 2). Six springs were developed to provide stock water.

Table 6. Spring functioning condition ratings and stock water developments, North Pasture, Hammett #1 Allotment, Elmore County, Idaho.

Spring	Location	Functioning Condition Rating[1]			Flow Regime[2]	Developed (Y/N)
		PFC	FAR	NF		
Blackhawk	T03S R10E Sec. 10 NENE			X	P	Y
Bourbon	T03S R10E Sec 11 NWNE		X		I	Y
Whiskey	T03S R11E Sec 18 NWSW	Not Rated				
Twin Deer North	T03S R10 E Sec 21 NWNE		X		P	N
Twin Deer South	T03S R10 E Sec 21 SWNE		X		P	Y
Ground Hog	T03S R11E Sec 30 SENW	X			P	Y
Twin	T04S R10E Sec 01 NWSW			X	P	N
Muddy	T04S R10E Sec 03 NENW			X	P	Y
Bullet	T04S R10E Sec 12 SWNE		X		P	Y
Section 7	T04S R11E Sec 07 SWNW		X		I	N

[1] PFC = proper functioning condition, FAR = functional-at-risk condition, NF = non-functioning condition

[2] P = Perennial, I = Intermittent

Blackhawk Spring was in NF condition. Plant communities were limited to a few isolated arroyo willows near the spring head, Baltic rush, Kentucky bluegrass, weedy annual forbs, and invasive annual grasses along a 0.1-mile long linear wetland below the spring. Upland plants, including sagebrush, are encroaching into the limited wetland area. Bare ground (estimated 85%) and high soil compaction levels characterize the area, both along the linear wetland, and in the adjacent uplands. The spring head captures all surface flow from the spring and directs it into a stock tank, a there are no surface flows arising from the spring.

Bourbon Spring was rated in FAR condition with a static trend (Table 6, Map 2). Plant communities were limited to Baltic rush, Kentucky bluegrass, arroyo willow, weedy annual forbs, and invasive annual grasses. Upland plants, including sagebrush, are encroaching into the limited wetland area. Bare ground and high soil compaction was common in the potential wetland area.

Whiskey Spring was identified on the USGS 1:24,000 scale map. This site was determined to be a snowmelt concentration vegetated with chokecherry, with no indication of obligate or

facultative riparian/wetland plant species occurring at present, or historically. Examination of water rights records show that following BLM's field inspection of this site for the Snake River Water Rights Adjudication (1996), BLM did not file a claim for water rights at this location, as no surface flows were present. Therefore, the site was not rated for functioning condition.

Twin Deer North and South springs were rated in FAR condition (Table 6, Map 2). The springs were moderately trampled and pugged, but Twin Deer North was armored somewhat by rock and deep-rooted, grazing-tolerant Nebraska sedge. Moderate frost heaving and hummocking were present at Twin Deer South. Bare ground was common in the potential wetland area. Plant communities at both springs were limited to Nebraska sedge, Baltic rush, and Kentucky bluegrass. Upland plants, including sagebrush, were encroaching into the meadow areas. Spring flows at Twin Deer South were collected and routed into a stock tank. Heavy surface trampling and soil compaction occurred below the stock tank overflow.

Ground Hog Spring was rated in PFC (Table 6, Map 2). It was vegetated with at least three age classes of yellow and arroyo willows. Sedges and rushes, including Nebraska sedge, Douglas sedge, and Baltic rush were present here in densities sufficient enough to protect wetted areas from trampling, pugging, and soil compaction.

Twin and Muddy springs were rated in NF condition (Table 6, Map 2). Each spring has a perennial flow regime. The wetland soils were heavily trampled and compacted, and large unnatural areas of barren soil characterized the sites. Hummocking and frost heaving were heavy to severe. The plant communities were disturbance types, including Baltic rush, Kentucky bluegrass, and weedy annual grasses and forbs. Upland plant species, including sagebrush and invasive, exotic annual grasses and forbs were encroaching into the former meadow areas which should have been occupied by obligate hydric plant species.

Bullet Spring was rated in FAR condition with a static trend (Table 6, Map 2). This spring was developed in the early 1980s. Spring flows were fully captured at the head-box, then routed via pipeline approximately 500-feet to a single stock trough. A small exclosure (0.25 acres) was built around the spring source and head-box. A 1 acre area (including the exclosure area) below the actual spring source was once a perennial wetland before the spring was developed, but is now completely desiccated, and no longer supports wetland vegetation. Below the stock tank overflow pipe, surface water flows begin again, coursing 0.2 miles downstream, creating a 0.7 acre linear wetland. Riparian plant community composition is limited to Nebraska sedge, spike rush, Baltic rush, and Kentucky bluegrass. Upland plant species, have encroached into the associated riparian and meadow areas. Pugging levels were moderate to high.

Section 7 Spring was rated in FAR condition (Table 6, Map 2). Plant communities were limited to Baltic rush, Kentucky bluegrass, and weedy annual forbs and annual invasive grasses. Upland plants, including sagebrush, were encroaching into the limited wetland area. Bare ground, hummocking, and high soil compaction was common.

Standard 4: Native Plant Communities

Rangeland Health Field Assessments evaluated biotic integrity in 2004. Long-term monitoring was used to evaluate plant community trend in the northern half of North Pasture from

1988/1990 to 2010/2011. These data sets revealed that rangeland health indicators were outside the range of historic variability and the native plant community was declining. Large native bunchgrasses had significant downward trends or there was evidence of a possible decline, small bunchgrasses were pedestalled, and exotic annual grasses were increasing and/or ubiquitous.

Rangeland Health Assessments

All 35 rangeland health field assessments were conducted in native plant communities (Map 1). Fire history layers indicated that only one assessment location had burned prior to sampling; B-96 burned in 1963. Nine of the 17 rangeland health indicators (8, 9, and 11-17) relate to biotic integrity (Table 7). The number in the range of departure columns represents the number of assessments with the indicator rating in that category (see Standard 1 for explanation).

Table 7. Native plant community rangeland health indicators, North Pasture, Hammett #1 Allotment, Elmore County, Idaho.

Indicators of Biotic Integrity	Range of Departure				
	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
8-Soil Surface Resistance to Erosion		1	7	23	4
9-Soil Surface Loss or Degradation			9	21	5
11-Compaction Layer					35
12-Functional/Structural Groups		3	22	8	2
13-Plant Mortality/Decadence		1	8	19	7
14-Litter Amount		1	8	18	8
15-Annual Production			8	17	10
16-Invasive Plants		6	3	7	19
17-Reproductive Capability of Perennial Plants				18	17
Total Indicator Units = 315 (9 indicators x 35 locations)	**0**	**12**	**65**	**131**	**107**

Field assessments identified that seven out of the nine indicators of biotic integrity were beyond the normal range of variability expected for the ecological sites in at least two locations (77 of 315 indicator units were “extreme’, “moderate to extreme”, or “moderate”, Table 7, Appendix 1). Only compaction layer (#11) and reproductive capability of perennial plants (#17) were not greater than expected in any location. Functional and structural groups (#12) rated outside the normal range of variability for 71% of the field assessments. This indicator was a measure of the plant community’s ability to capture and cycle water, nutrients, and energy. Shifts in species composition from large- and/or mid-stature perennial grasses (e.g., bluebunch wheatgrass and Idaho fescue), having above ground biomass and root systems effective at such processes, to small stature perennial grasses (e.g., Sandberg bluegrass) or invasive, exotic annual plants (e.g., cheatgrass, medusahead, and bur buttercup) which are smaller, grow singly, and have less extensive root systems, impact all biotic and hydrologic processes. The remaining indicators commonly rated beyond the normal range are the result of pedestalled and dying Sandberg bluegrass, shrub decadence, and excess litter due to high densities of invasive, exotic annual species. Point cover surveys for RHAs documented that exotic annual grass was more extensive in the southern half. Cheatgrass, medusahead and other exotic annuals comprised 1% cover in the northern half and 13% cover in the southern half.

Long-term Vegetation Monitoring

Eight nested plot frequency transects (NPFT) were surveyed in 1988/1990 and 2010/ 2011. Ten photo plots were surveyed in 1988/1990, 2004, and 2010/2011. Together, transects and photographs revealed long-term trends in the northern half of the pasture, at 4,600-5,700 feet elevation. The lower elevation southern half of the pasture (minimum 3,600 feet) was not surveyed by NPFT. None of the trend plots burned within the sampling period and only 03S10E10 had a recorded fire (1963 Coyote Point Fire).

Results of long-term monitoring indicated: a) an overall static trend for shrubs (sagebrush, Figure 4; bitterbrush, Figure 5; and rabbitbrush, Figure 6), b) a significantly downward trend for large perennial bunchgrasses (bluebunch wheatgrass) in three out of eight locations, extirpation from one location, near extirpation in two, and a downward tendency for two others (Figure 7), c) variable trends for medium perennial bunchgrasses (needlegrass, Figure 8; Idaho fescue, Figure 9; oniongrass, Figure 10; and oatgrass, Figure 11), d) a static to increasing trend for small bunchgrasses (Sandberg bluegrass, Figure 12), and e) a static to increasing trend for exotic annual grasses (Figure 13).

NPFTs each had one to four shrub species (one in 03S10E30, two in 03S10E10, 03S10E11A 03S10E25, and 03S10E19, three in 03S10E13A and 03S10E13B, and four in 03S10E11B). Mountain big sagebrush and bitterbrush were present in five out of eight NPFTs, low sagebrush and rabbitbrush was present in half of the NPFTs, and bitter cherry was present in one NPFT. Although there were no significant changes in shrub frequencies, relative frequencies from 1988/1990 to 2010/2011 were highly variable (mountain big sagebrush, +200% to -33%; low sagebrush, -17% to -27%; bitterbrush, +100% to -33%; rabbitbrush, new in location to -19%; bitter cherry, +50%).

Bluebunch wheatgrass was the only tall-stature perennial grass encountered in seven out of eight NPFTs. Basin wildrye was only encountered in 03S10E13B, at 1% frequency. Bluebunch wheatgrass frequencies declined significantly in the NPFTs with the highest initial levels (Figure 7; relative mean frequencies decreased 76% in 03S10E11B, 26% in 03S10E13A, and 49% in 03S10E13B; absolute mean frequencies decreased 55% to 13% in 03S10E11B, 53% to 39% in 03S10E13A, and 87% to 44% in 03S10E13B). Locations with intermediate initial frequencies did not experience statistically significant declines, due to high variability, but their relative mean frequencies decreased by 41% (03S10E10) and 50% (03S10E11A). Absolute means in these locations decreased from 26% to 13% (03S10E10) and from 41% to 24% (03S10E11A). Bluebunch wheatgrass frequencies were low in three shallow-soiled low sagebrush NPFTs; absolute means decreased from 3% to 2% in 03S10E25 and 5% to extirpation in 03S10E30, and increased from 0% to 2% in 03S10E19 [note that these three locations were in the same ecological site as 03S10E10, 03S10E11A, 03S10E11B, 03S10E13A, and 03S10E13B (Shallow Stony Loam with 8-12" precipitation), but low sagebrush without big sagebrush indicated the shallowest soils, where large bunchgrasses would naturally be less frequent].

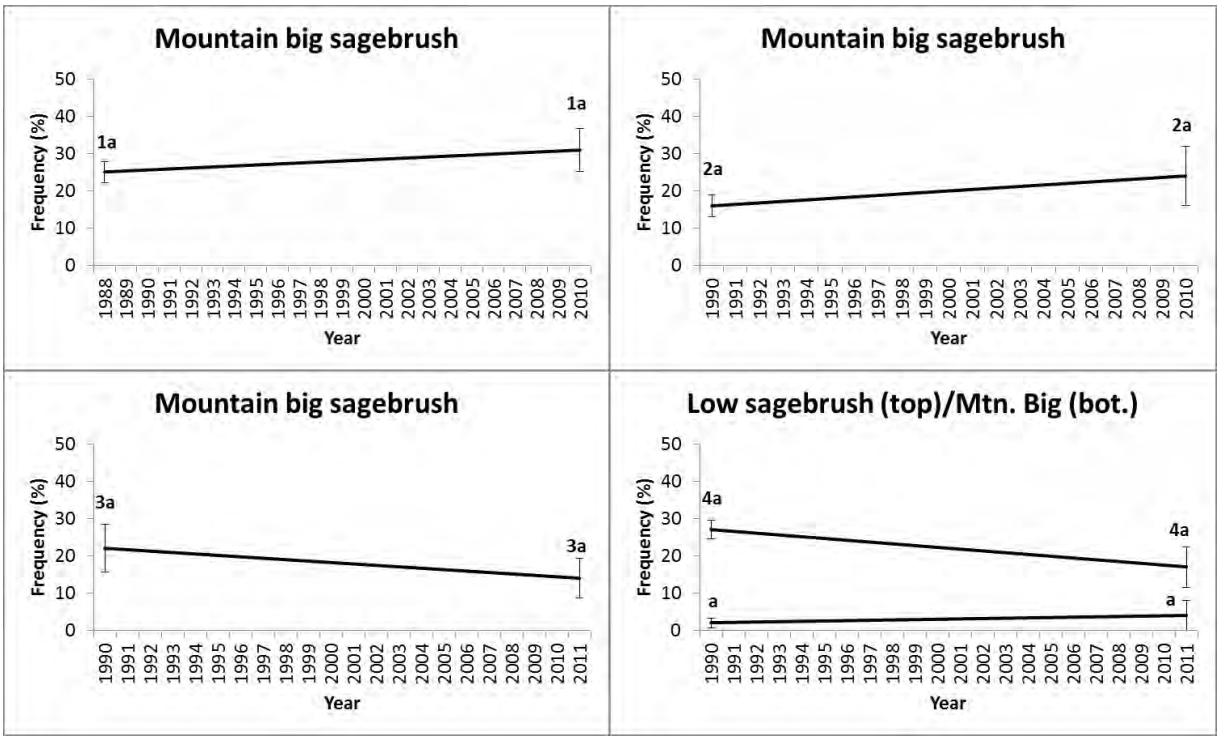
Mid-stature bunchgrasses occurred in all NPFTs, but 03S10E11A, 03S10E11B, and 03S10E30 had low frequencies. Needlegrass species were present in seven out of eight NPFTs in 1988-1990 (or six out of eight; refer to caption in Figure 8) and six NPFTs in 2010-2011 (Figure 8). Needlegrass was missing from 03S10E11A in 2010 (previously 1% frequency), and was present

at ≤5% frequency in 03S10E11B and 03S10E19 in 2011. Needlegrass frequency increased in 03S10E13A and 03S10E13B. Idaho fescue was present in three (or four) out of eight NPFTs, but had just 1% frequency in 03S10E19 by 2011. It increased significantly in 03S10E10. Oniongrass was found in three of eight NPFTs in 1990 and was extirpated from two of these by 2010-2011; its frequency was 3% in the third (Figure 10). Oatgrass was present in two NPFTs, where its 2011 frequency was 19-44% (Figure 11; it increased significantly in 03S10E30).

Sandberg bluegrass was present in all NPFTs in 1988-1990 (only 1% frequency in 03S10E11A) but was extirpated from one location (03S10E11A) by 2010-2011 (Figure 12). Only 03S10E11B had a significant change (a 91% relative increase) in frequency. In 2010/2011, Sandberg bluegrass frequency was 23-95% where it remained.

Exotic annual grasses were present in seven of eight NPFTs (Figure 13). Frequencies were ≤11% in 03S10E10, 03S10E11A, and 03S10E11B, and 27-60% in 03S10E13A, 03S10E25, 03S10E30, and 03S10E19. Because NPFTs were located only in the northern half of the North Pasture, the long-term trend for annual grasses was unknown for the southern half.

General landscape photographs from photo plots did not indicate major changes to the native plant community over two decades, but did indicate that in at least in half the locations, the understory was depleted when monitoring began. Locations with the greatest impacts to native understory vegetation were 03S10E-11A, 13A, 25, 30, and 19. Close-up photographs also indicated changes to the vegetation between 1988/1990 and 2010/2011, most notably a downward trend for native grasses between 1988/1990 and 2004 with increasing pedestalling of Sandberg bluegrass, then an upward trend and decreasing pedestalling between 2004 and 2010/20/11.



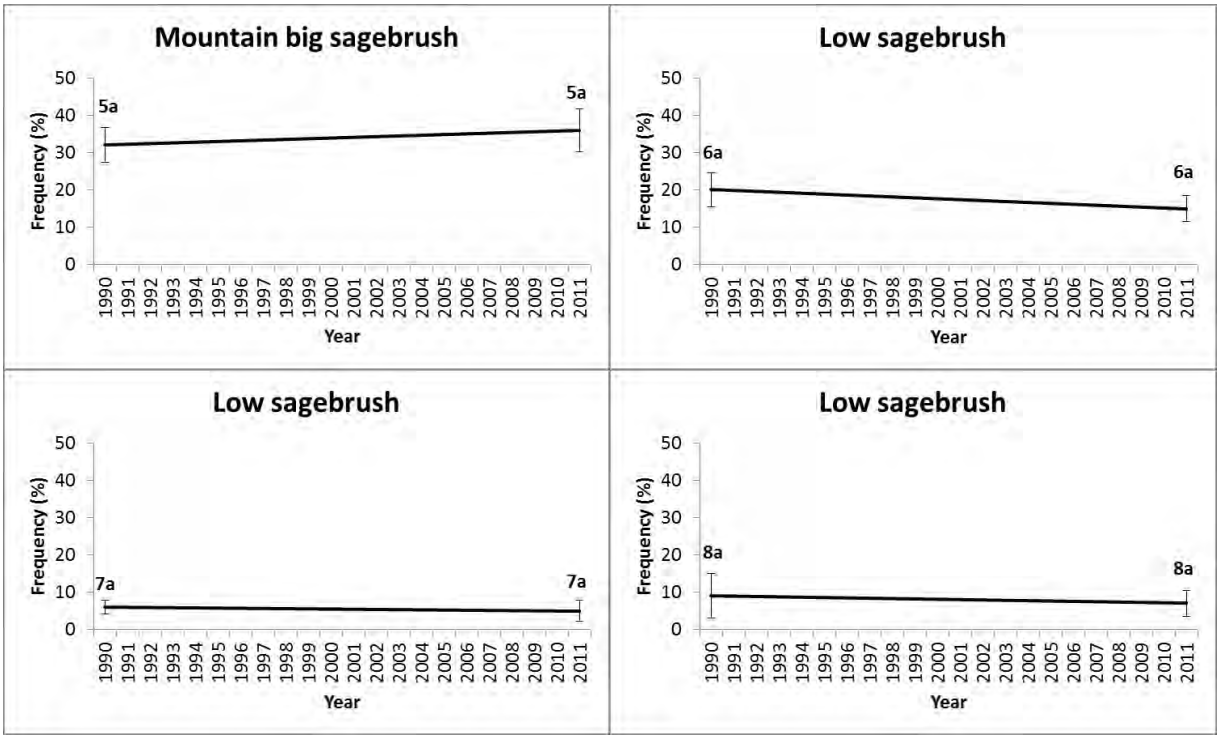


Figure 4. Sagebrush frequencies in the Hammett #1 Allotment, North Pasture, Elmore County, Idaho, in 03S10E10 (1), 03S10E11A (2), 03S10E11B (3), 03S10E13A (4), 03S10E13B (5), 03S10E25 (6), 03S10E30 (7), and 03S10E19 (8). Different letters above error bars would indicate significant differences ($P<0.1$); however, no significant differences occurred.

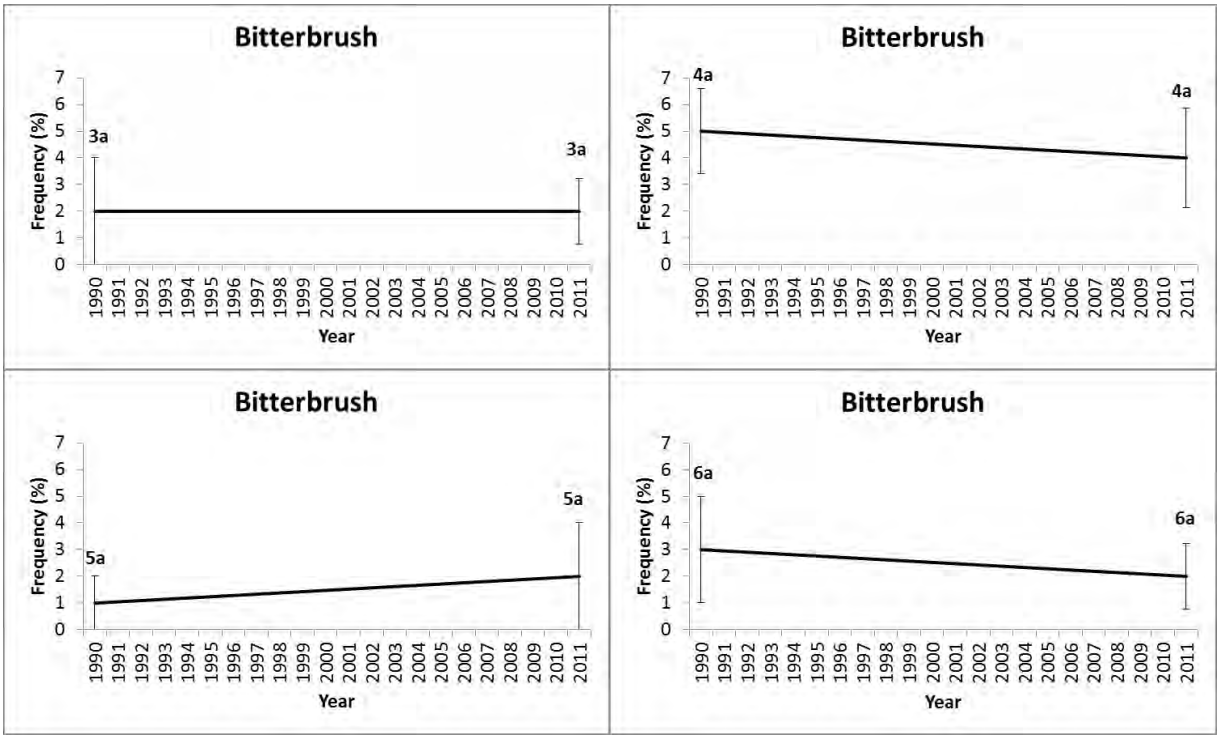


Figure 5. Bitterbrush frequencies in the Hammett #1 Allotment, North Pasture, Elmore County, Idaho, in 03S10E11B (3), 03S10E13A (4), 03S10E13B (5), and 03S10E25 (6). Bitterbrush was not encountered in

03S10E10 (1), 03S10E11A (2), 03S10E30 (7), or 03S10E19 (8). Different letters above error bars would indicate significant differences (P<0.1); however, no significant differences occurred.

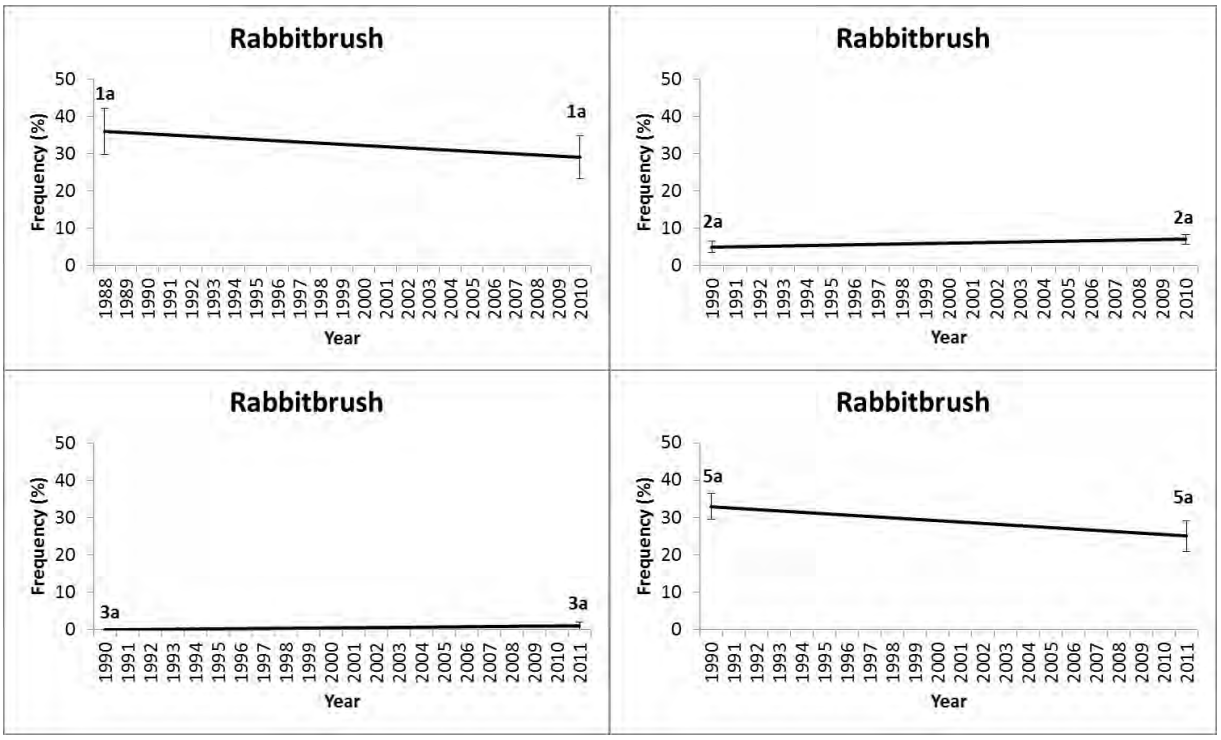


Figure 6. Rabbitbrush frequencies in the Hammett #1 Allotment, North Pasture, Elmore County, Idaho, in 03S10E10 (1), 03S10E11A (2), 03S10E11B (3), and 03S10E13B (5). Rabbitbrush was not encountered in 03S10E13A (4), 03S10E25 (6), 03S10E30 (7), or 03S10E19 (8). Different letters above error bars would indicate significant differences (P<0.1); however, no significant differences occurred.

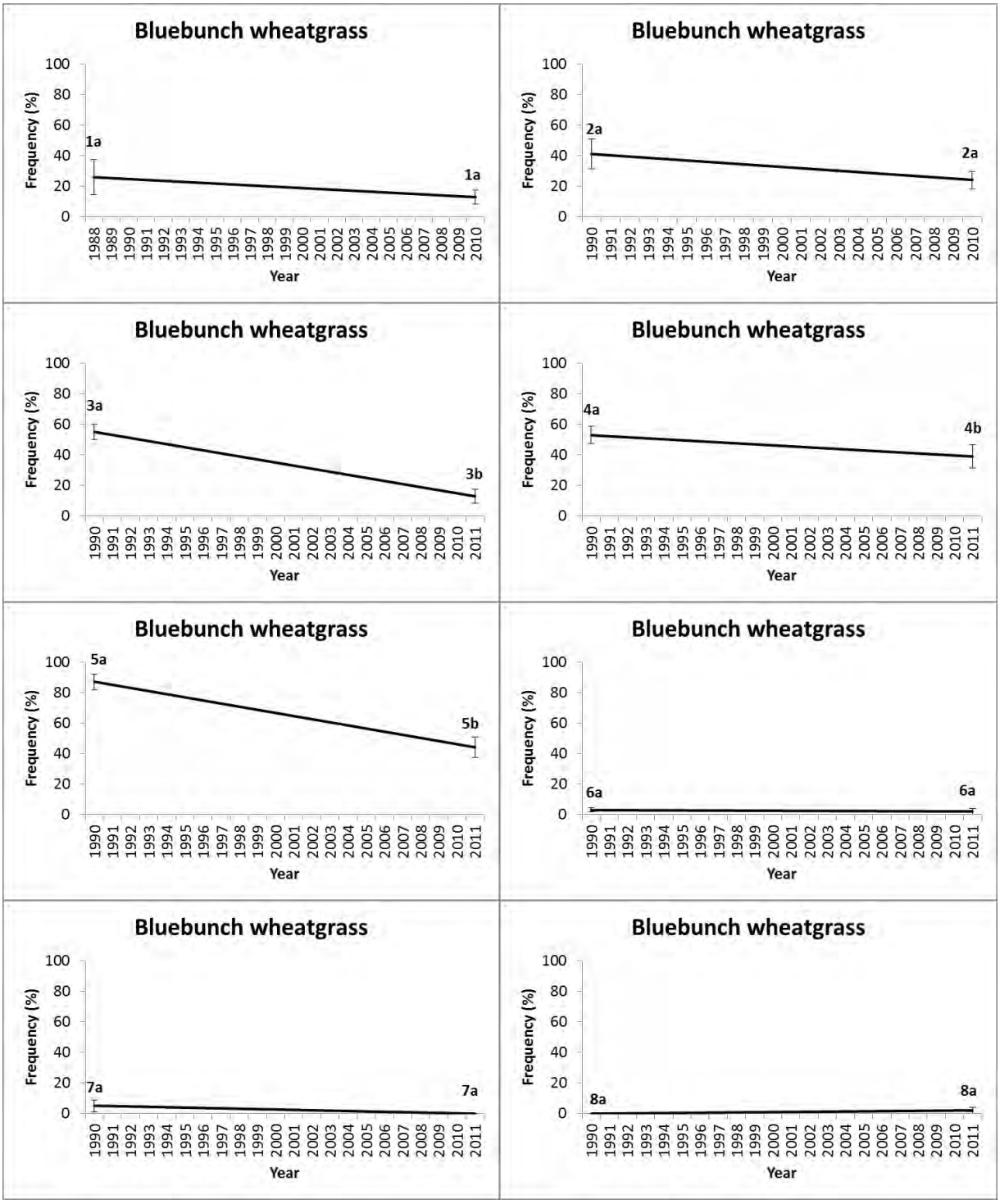


Figure 7. Bluebunch wheatgrass frequencies in the Hammett #1 Allotment, North Pasture, Elmore County, Idaho, in 03S10E10 (1), 03S10E11A (2), 03S10E11B (3), 03S10E13A (4), 03S10E13B (5), 03S10E25 (6), 03S10E30 (7), and 03S10E19 (8). Different letters above error bars indicate significant differences (P<0.1).

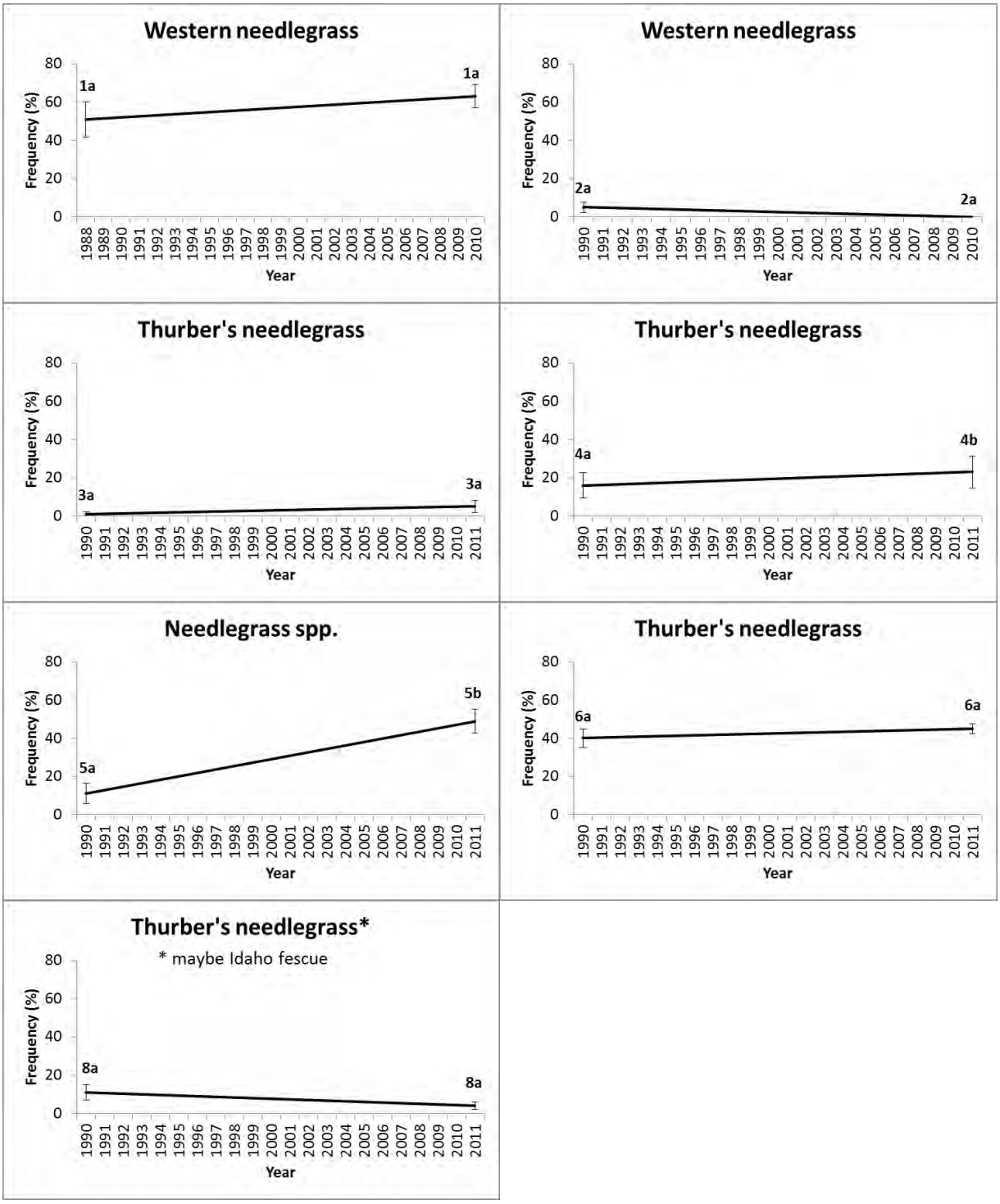


Figure 8. Needlegrass frequencies in the Hammett #1 Allotment, North Pasture, Elmore County, Idaho, in 03S10E10 (1), 03S10E11A (2), 03S10E11B (3), 03S10E13A (4), 03S10E13B (5), 03S10E25 (6), and 03S10E19 (8). Needlegrass was not encountered in 03S10E30 (7). Different letters above error bars indicate significant differences (P<0.1).

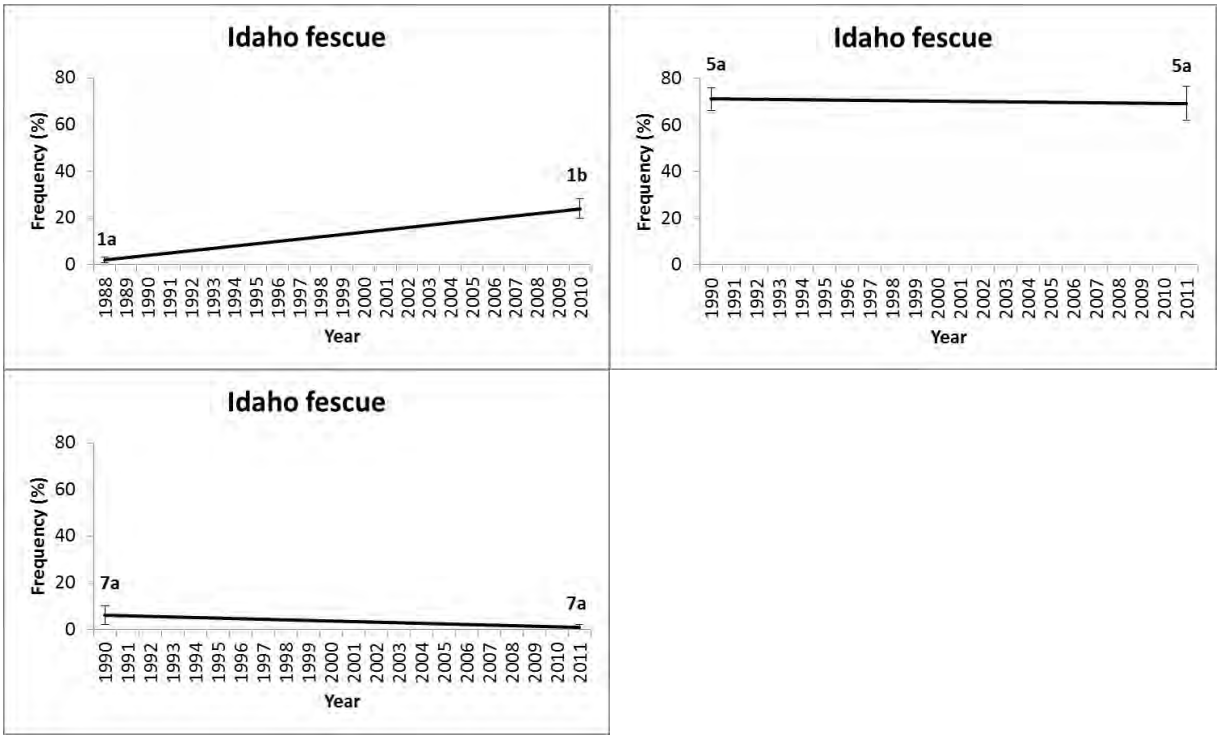


Figure 9. Idaho fescue frequencies in the Hammett #1 Allotment, North Pasture, Elmore County, Idaho, in 03S10E10 (1), 03S10E13B (5), and 03S10E30 (7). See Figure 8 for 03S10E19 (8). Idaho fescue was not encountered in 03S10E11A (2), 03S10E11B (3), 03S10E13A (4), or 03S10E25 (6). Different letters above error bars indicate significant differences (P<0.1).

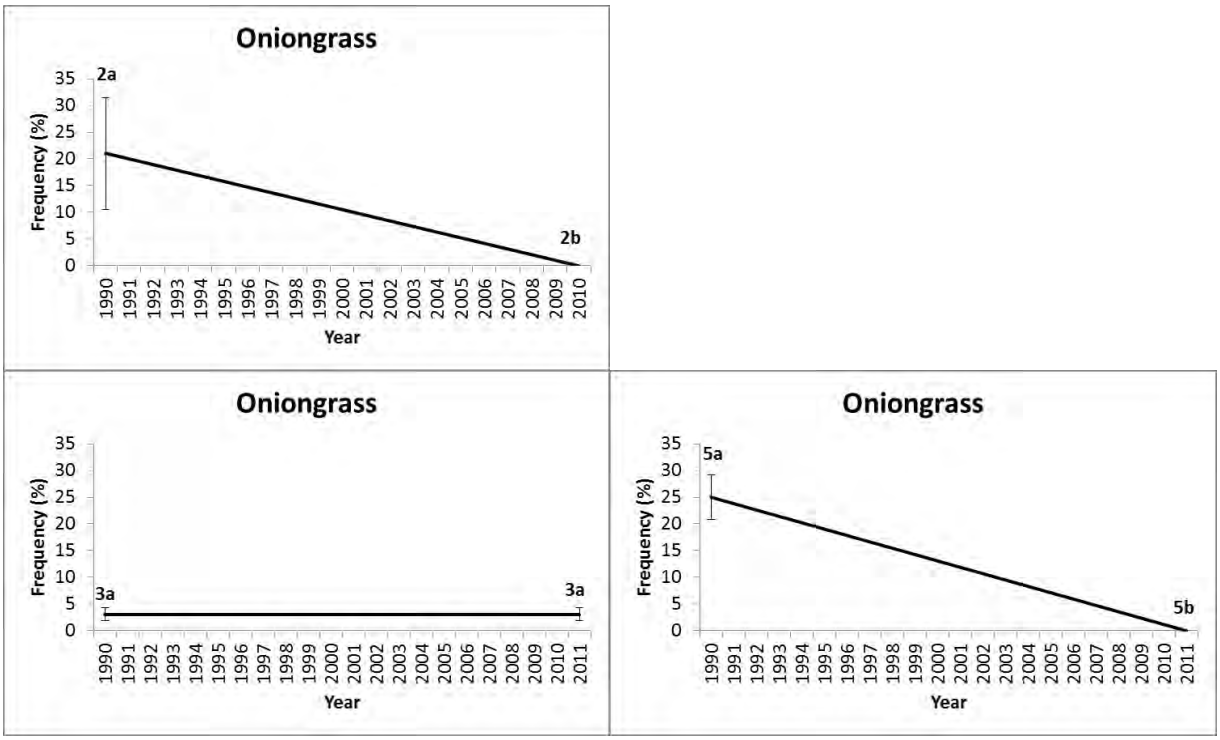


Figure 10. Oniongrass frequencies in the Hammett #1 Allotment, North Pasture, Elmore County, Idaho, in 03S10E11A (2), 03S10E11B (3), and 03S10E13B (5). Oniongrass was not encountered in 03S10E10

(1), 03S10E13A (4), 03S10E25 (6), 03S10E30 (7), or 03S10E19 (8). Different letters above error bars indicate significant differences (P<0.1).

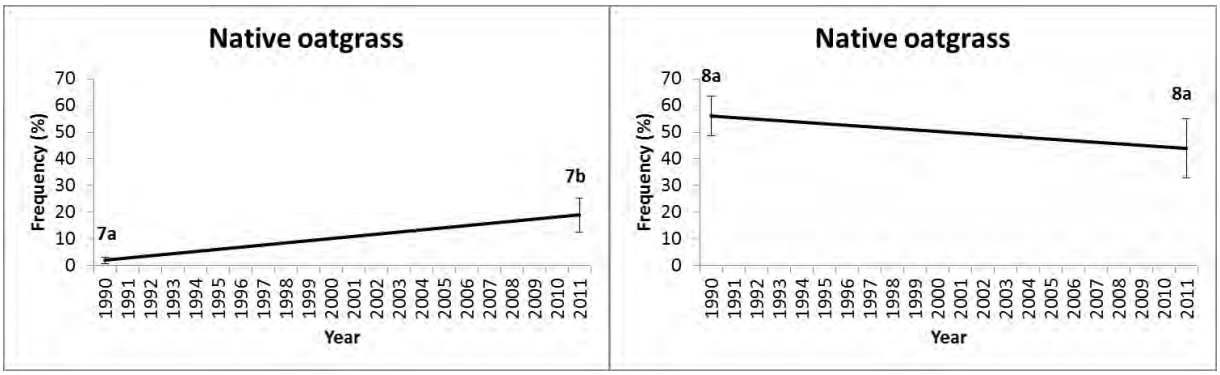
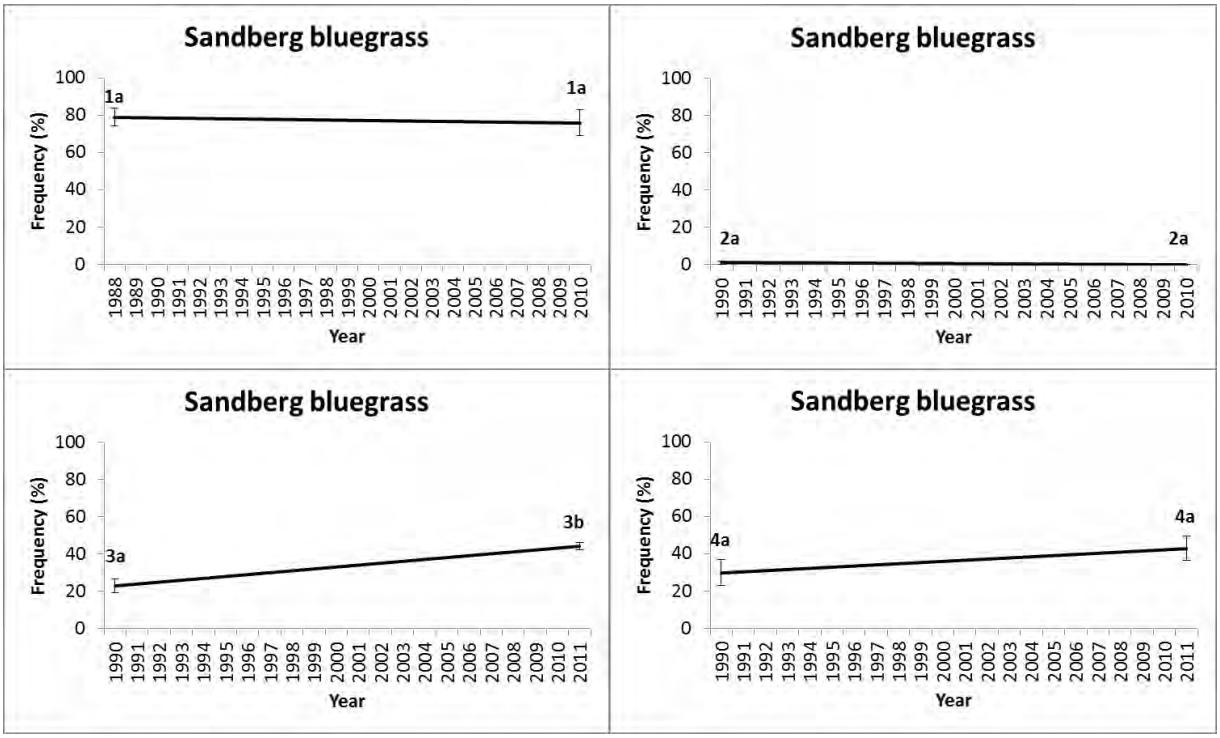


Figure 11. Native oatgrass frequencies in the Hammett #1 Allotment, North Pasture, Elmore County, Idaho, in 03S10E30 (7) and 03S10E19 (8). Oatgrass was not encountered in 03S10E10 (1), 03S10E11A (2), 03S10E11B (3), 03S10E13A (4), 03S10E13B (5), or 03S10E25 (6). Different letters above error bars indicate significant differences (P<0.1).



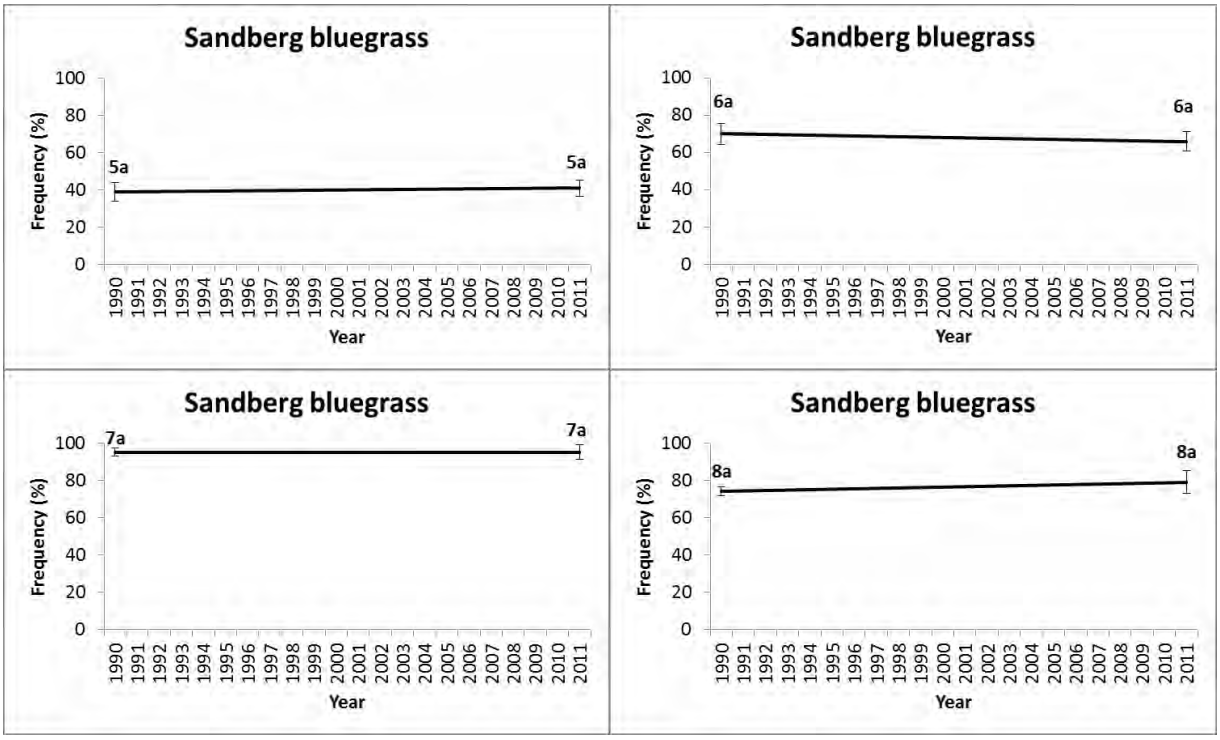
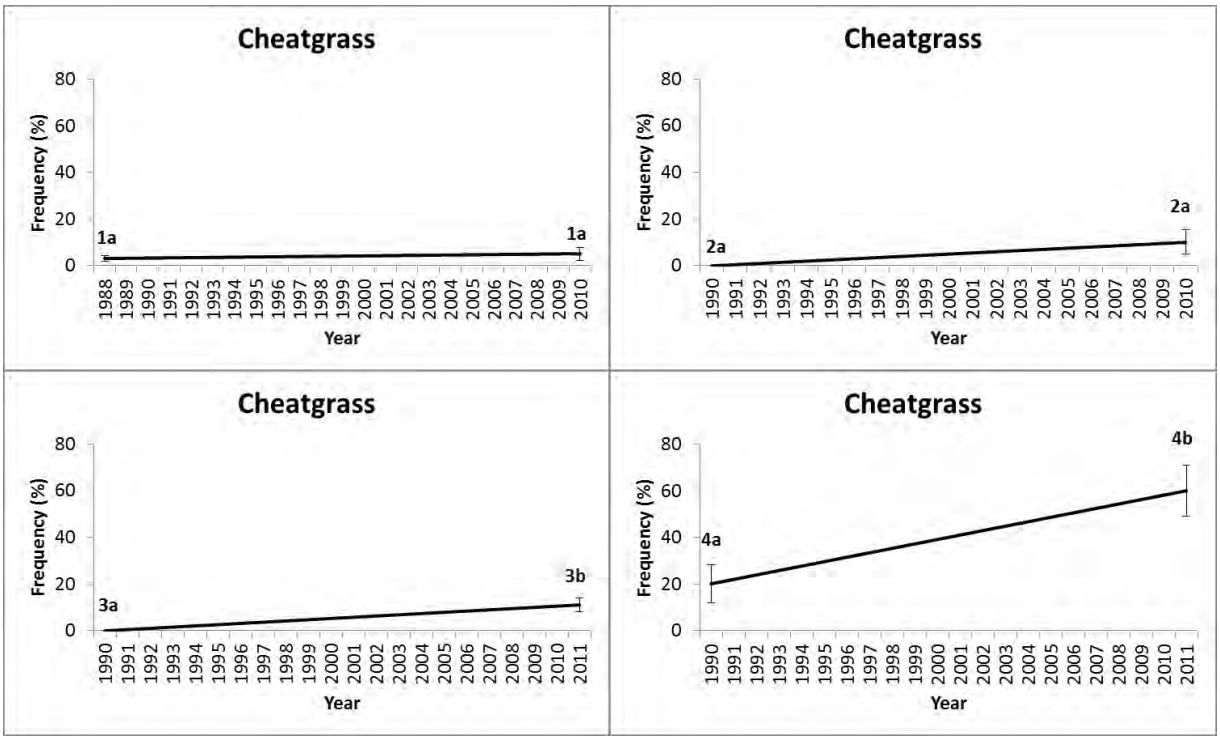


Figure 12. Sandberg bluegrass frequencies in the Hammett #1 Allotment, North Pasture, Elmore County, Idaho, in 03S10E10 (1), 03S10E11A (2), 03S10E11B (3), 03S10E13A (4), 03S10E13B (5), 03S10E25 (6), 03S10E30 (7), and 03S10E19 (8). Different letters above error bars indicate significant differences (P<0.1).



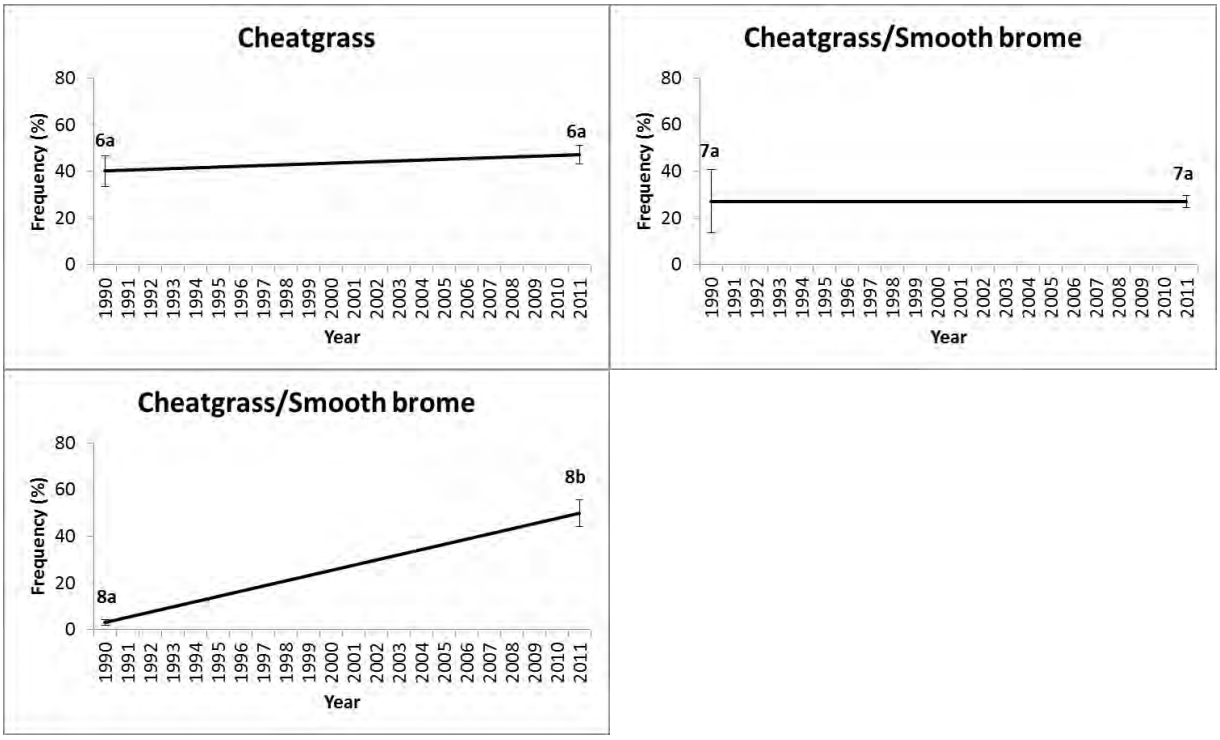


Figure 13. Exotic annual grass frequencies in the Hammett #1 Allotment, North Pasture, Elmore County, Idaho, in 03S10E10 (1), 03S10E11A (2), 03S10E11B (3), 03S10E13A (4), 03S10E25 (6), 03S10E30 (7), and 03S10E19 (8). Exotic annual grass was not encountered in 03S10E13B (5). Different letters above error bars indicate significant differences (P<0.1).

Standard 5: Rangeland Seeding
This standard does not apply to this allotment.

Standard 6: Exotic Plant Communities
This standard does not apply to this allotment.

Standard 7: Water Quality
The *King Hill/ C.J. Strike Subbasin Assessment and Total Maximum Daily Load (TMDL) (*IDEQ, 2007*)* developed sediment TMDLs for the full length of Little Canyon Creek. BLM data show the TMDL target of less than 30% fine sediment (in riffles), and streambank stability target of ≤20% active bank erosion was fully met in segment LCANY-015.1. However, LCANY-014.6 may not satisfy the 20% active bank erosion standard: although, BLM did not quantify the percentage of active erosion in these reaches. Laboratory analyses of water samples (BLM 2009) showed that all segments of Little Canyon Creek met bacterial standards for primary and secondary contact recreation. BLM sampled bacterial levels in West Fork King Hill in 2009. The one-time sampled showed the stream met bacterial level standards for secondary contact recreation on the day it was sampled. Livestock were not present when the sample was taken. IDEQ examined water quality in West Fork King Hill in 2010 -2012 and found that stream temperatures exceeded standards for cold water biota. A TMDL for stream temperature was prepared and West Fork King Hill Creek and its first order tributaries, North and East Fork King Hill creeks, were added to the 303(d) list of impaired waters (IDEQ Integrated Report 2010). IDEQ has not examined water quality in mainstem King Hill Creek.

IDEQ presumes that all intermittent streams meet minimum applicable water quality standards (temperature standards for cold water biota), as the period of time in which flows are 1-cubic – foot-per-second or greater commonly occurs only as a result of spring snowmelt, or short term summer rainfall events. Deer Creek, a first order intermittent tributary to Little Canyon Creek, meets this standard.

Standard 8: Threatened and Endangered Species

Plants

No federally listed plant species are known to occur. Botanical surveys have been conducted in portions of this allotment prior to 2004; although, the percentage of the allotment previously surveyed is unknown. In 2004, approximately 50 acres were surveyed for federally listed plant species and SSPs. One population of mourning milkvetch, a BLM Type SSP, was found. At least six other populations of this species are known to occur in the allotment.

Habitat for slickspot peppergrass (proposed for listing under the Endangered Species Act [ESA]) does occur in the southern portion of the North Pasture (348 acres). No slickspots were detected in the pasture during 2010 field assessments and given the rocky nature of most of the area it is unlikely that any slickspots actually exist there. However, current USFWS protocols require that a buffer be placed around known slickspots to provide habitat for pollinators. Slickspots occur approximately 0.25 mi to the south of the pasture. Consequently, this area is identified as slickspot peppergrass habitat. The 2010 assessments determined that shrub cover in slickspot peppergrass habitat was approximately 30% with a cheatgrass/ medusahead dominated understory and that approximately 27% of the documented plant species were introduced. The 2011 Blair Fire eliminated shrub cover in approximately 9% of the area.

Wildlife

No federally listed animal species are known to occur. Greater sage-grouse (Candidate species, BLM Type 2), a sagebrush obligate species, is the primary special status species in the allotment. Other sensitive species (BLM Type 3) and sagebrush obligates/associates likely to occur include loggerhead shrike, Brewer's sparrow, and sage sparrow. Habitat conditions for sagebrush associated species are assumed to be correlated with conditions for sage-grouse. The gray wolf was removed from the Endangered Species list in 2009; although, it remains a BLM Type 1 Special Status Species and individuals likely pass through the northern portions of the pasture.

Wildlife habitat condition was evaluated using riparian information (Standard 2) and native upland plant community information (Standard 4). These assessments provide information regarding abundance, diversity, vigor, cover of plants, structure and trend of plant communities, grazing utilization, and weed presence. Species-specific assessments and monitoring results are also presented.

<u>Greater Sage-grouse</u>

Hammett #1 North Pasture supports 17,437 acres of Preliminary Priority Habitat (PPH) for sage-grouse (Map 2). PPH are areas that have been identified as having the highest conservation value (breeding/lekking, nesting, brood-rearing, and winter habitat) for maintaining sage-grouse populations. The mosaic of big sagebrush and low sagebrush habitat types supports breeding

(lekking), nesting and brood-rearing, and wintering habitats. Wyoming big sagebrush typically occurs in the southern portion of the pasture while mountain big sagebrush occurs in the northern portion of the pasture. Low sagebrush habitat types occur on shallow stony soil types throughout the pasture.

The pasture supports two leks in the upper reaches of King Hill Creek that were discovered in 2002. Eleven grouse were recorded at lek E055 and three at lek E056 in 2002. These leks have not been monitored annually, but recent monitoring efforts in 2012 and 2014 reported no attendance at these leks and they are considered inactive by the Idaho Department of Fish and Game (IDFG). Lek E050 located approximately 2.3 miles southwest of the pasture historically had peak grouse attendance of up to 33 birds. Recent monitoring by IDFG documented eight grouse in 2006 and no attendance in 2014; this lek is also considered inactive.

Several active leks are located approximately 1.2 to 5.4 miles east of the pasture in the Shoshone Field Office (FO). These grouse could potentially utilize PPH habitat in the pasture as the leks are within typical distances grouse hens north of the Snake River travel when selecting nest sites.

Sage-grouse telemetry data gathered by IDFG from 2008 to the present documents grouse occupying the pasture during the breeding season (mid-March), although it's unknown if hens chose nest sites in the pasture. Telemetry data also documents the pasture as important fall and winter habitat; grouse likely utilize low sagebrush in late fall/winter and transition to big sagebrush depending on annual snow depth. Sage-grouse also use habitat in the pasture as a corridor, as radio-collared birds in the Four Rivers FO have been documented in the Shoshone FO during the winter.

Suitability of sage-grouse breeding habitat (nesting and late and early-brood rearing) is based on canopy cover and height of sagebrush, grasses, and forbs, and the availability of specific forbs that are preferred food for pre-nesting grouse hens and broods. The suitability of late brood-rearing habitats are inferred from wet meadow and spring conditions (Standard 2). Breeding habitat suitability is inferred from upland rangeland health assessments and trend data (Standard 4).

Of 35 rangeland health assessment sites, 25 (71%) indicated a moderate departure from expected conditions for functional/structural groups reflecting reduced levels of large, tall- and mid-stature perennial bunchgrasses that are important for horizontal nesting cover for sage-grouse. These sites occur throughout the pasture, regardless of elevation. Invasive plants were outside the normal range of variability at nine of the 35 sites and occurred <4500.

Seven long-term vegetation monitoring sites occurred in nesting (03S10E11A, 03S10E11B, 03S10E13B) and early brood-rearing (03S10E13A, 03S10E25, 03S11E30, 03S11E19) habitats (within 2 miles of E055 and E056). Frequencies of mountain big sagebrush were static and generally provided adequate vertical nesting cover. Bluebunch wheatgrass decreased significantly at two mountain big sagebrush sites (03S10E11B, 03S10E13B) and had a downward trend at the third (03S10E11B, Figure 7). With the exception of needlegrass and Idaho fescue (03S10E13B), mid-stature grasses either decreased (oniongrass – 03S10E11A,

03S10E13B) or were at insignificant levels to provide horizontal nesting cover (needlegrass – 03S10E11A, 03S10E11B; oniongrass – 03S10E11B).

Nesting and Brood-rearing Habitat - Sagebrush cover has remained static overall and has increased in cover in certain areas. Overall, big sagebrush cover is suitable to provide sage-grouse and sagebrush steppe special status species (e.g. sage sparrow, Brewer's sparrow) desirable nest sites. Low sagebrush occurs on rocky sites and on shallow soil types throughout the allotment. It is a very palatable species and an important forage species for adult sage-grouse throughout the year; it also provides concealment cover in brood-rearing habitat. Sage-grouse will also use low sagebrush for nesting, but typically select taller big sagebrush species.

Tall-and mid-stature (deep-rooted) perennial bunchgrasses (e.g. bluebunch wheatgrass, bottlebrush squirrel tail, Idaho fescue, and needle grasses) are essential components of sage-grouse habitat as they provide cover from predators at nest sites and in brood-rearing habitats. Frequencies of tall-and mid-stature perennial bunchgrasses have been significantly reduced in big and low sagebrush habitat types in portions of the pasture and do not provide suitable nesting and foraging cover for sage-grouse.

Forb species provide food for pre-laying hens and chicks, and associated insects are especially important food sources for new-born sage-grouse. Deep-rooted perennial forbs (e.g. arrowleaf balsamroot and lupine spp.) also provide additional cover in brood-rearing habitat. Several sage-grouse preferred forbs were present in the pasture including desert parsley, long leafed phlox, slenderleaf collomia, mountain dandelion, woolypod milkvetch, western yarrow, balsam root, and buckwheat. However, due to overall low diversity and abundance of perennial and preferred forbs throughout the pasture, sage-grouse early brood-rearing habitat was rated as marginal.

Late brood-rearing habitats are crucial to sage-grouse as the forbs and grasses in nesting/early brood-rearing habitat begin to dry out in summer (July-September). Sage-grouse and broods either move to higher elevation sagebrush communities or move to areas where water collects (e.g. wet meadows and springs) and support perennial grass and forb cover (cover and food) FAR condition springs (Twin Deer North and South, Bourbon, Bullet, and Section 7) provide marginal riparian wildlife habitat. Non-functioning springs (Blackhawk, Twin, and Muddy) with reduced vegetation lack cover for nesting and plant diversity for foraging for sage-grouse broods and other wildlife species. Overall, late-brood rearing habitat is rated as unsuitable as all springs but one (Ground Hog) are in FAR or NF condition. Springs were dominated by invasive annual grasses and weedy annual forbs which provide poor quality food and cover for sage-grouse broods.

<u>Pygmy Rabbit</u>

Surveys for pygmy rabbits (BLM Type 2 Special Status Animal) were conducted in 2004 in lower elevations where soils were loamy and deep enough for rabbit burrows. Additional surveys near the Goodman Flat area were conducted by Idaho Fish and Game in the fall and winter of 2006 and summer of 2007. No pygmy rabbits or burrows were detected at either survey area. Further review of potential pygmy rabbit habitat indicates areas with an adequate sagebrush component, but dominated by a weedy understory, lessens its suitability as pygmy rabbit habitat (personal communication, Ulmschneider, BLM 2005**).**

Big Game

In November 2004, pace transects were conducted to evaluate wildlife browse species (i.e., antelope bitterbrush) for utilization, age class distribution, and form class. Overall, bitterbrush had a hedged appearance and showed signs of stress, which could have been drought related. Utilization of bitterbrush indicated continuous, heavy use via a severely hedged form in 90% of the plants sampled; attributable to both livestock and big game, as droppings from both animal classes were observed along the transect. Bitterbrush age structure was heavily skewed towards older age classes (nearly 90% were mature and 10% were decadent). Two young bitterbrush and no seedlings were observed among 100 plants sampled, indicating a 2% recruitment rate in the stand. Additionally mule deer browse on sagebrush during the winter and spring and show highest preference for low sagebrush, mountain sagebrush, and foothills sagebrush.

Bats

Evening surveys were conducted for special status bat species, with special emphasis on the spotted bat. Spotted bat echo-location signals are detectable by the human ear. No spotted bats were detected, though an unknown bat species was seen near Emigrant Reservoir in the South Pasture.

Riparian Habitat

Riparian areas provide nesting habitat for migratory birds, as well as refugia for other riparian dependent special status species. Due to the very rocky, steep nature of King Hill, West Fork King Hill, and Little Canyon creeks, many areas are maintaining high quality riparian habitat. However, some more accessible reaches (WKING- 009.3, WKING-0.007.8, and WKING-001.0) lack riparian plant species diversity necessary to support special status animals and migratory birds.

Fish

No United States Fish and Wildlife Service (USFWS) listed Threatened, Endangered, or Candidate fish or aquatic species occur. Redband trout (BLM Type 2 Special Status Species) are present in King Hill and West Fork King Hill creeks, and may be seasonally present in East Fork King Hill and North Fork King Hill creeks in the early spring spawning period. Habitat needs for redband trout are being met in the segments that were in PFC. However, in FAR segments of West Fork King Hill Creek, width/depth ratios are often excessive, and shallow pool depths and low pool frequency provide poor to fair conditions for salmonid reproduction and survival. However, redband trout are known to inhabit these segments. In some FAR reaches, particularly in WFKH-009.3, poor riparian and aquatic habitat, and inadequate shading subject fish to increased predation, and allow excessive solar heating of the water column.

High frequency of good quality pools is critical to sustaining viable populations of salmonids. They are used by salmonids in all seasons and growth stages, and are critical to providing space for over-wintering, feeding, resting, spawning, and incubation. The deepest part of the channel of at least 1-foot is considered minimally adequate for salmonid survival. At the DMA sites on WKING-007.8 and 009.3, the pool quality index score was 20, which is considered “poor condition.” The high fine sediment levels in this reach are unsuitable for salmonid spawning.

Little Canyon Creek segment LCANY-014.6 likely hosts a seasonal population of redband trout in the early spring and winter; however, it is likely redband trout migrate upstream as water temperatures rise in the summer. Electro-fishing transects conducted in LCANY-015.1 in 2005 showed good populations and diverse age classes were present. Fisheries habitat ratings were fair in LCANY-014.6, and good to excellent in LCANY-015.1.

Fish are not present in Deer Creek due to intermittent/seasonal stream flows.

Appendices and Maps

Appendix 1. Indicators of Rangeland Health

Allotment - Pasture		N	N	N	N	N	N	N
Identifier		B-29	B-30A	B-51	B-52	B-58	B-59	B-64
Location		03S10E22	03S10E28	04S10E11	04S10E11	04S10E01	04S11E07	04S11E05
Ecological Site		Shallow Stony 8-16	Shallow Stony 8-16	Shallow Stony 8-16	Loamy 12-16	Shallow Stony 8-16	Shallow Stony 8-16	Shallow Stony 8-16
Indicator	Attribute							
1. Rills	S-H	N-S	N-S	N-S	N-S	N-S	N-S	N-S
2. Water Flow Patterns	S-H	S-M	S-M	S-M	N-S	S-M	M	S-M
3. Pedestals/Terracettes	S-H	S-M	M-E	S-M	N-S	N-S	S-M	S-M
4. Bare Ground	S-H	S-M	N-S	S-M	N-S	S-M	M	S-M
5. Gullies	S-H	N-S	N-S	N-S	N-S	N-S	N-S	N-S
6. Wind Scoured, Blowouts and/or Depositions	S-H	N-S	N-S	N-S	N-S	N-S	N-S	N-S
7. Litter Movement	S-H	N-S	N-S	N-S	N-S	N-S	S-M	N-S
8. Soil Surface to Erosion	S-H-B	S-M	S-M	S-M	N-S	S-M	M	M
9. Soil Surface Loss or Degradation	S-H-B	S-M	S-M	N-S	N-S	N-S	S-M	S-M
10. Plant Community Comp. & Dist. Relative to Infiltration & Runoff	H	N-S	M	S-M	N-S	M	M	M
11. Compaction Layer	S-H-B	N-S	N-S	N-S	N-S	N-S	N-S	N-S
12. Functional / Structural Groups	B	M	M	S-M	N-S	M	M	M
13. Plant Mortality / Decadence	B	N-S	M	S-M	N-S	M	M	S-M
14. Litter Amount	H-B	S-M	S-M	N-S	N-S	M-E	M	M
15. Annual Production	B	N-S	M	N-S	N-S	S-M	S-M	S-M
16. Invasive Plants	B	N-S	S-M	M	N-S	M-E	M-E	M-E
17. Reproductive Capability of Perennial Plants	B	S-M	S-M	N-S	N-S	N-S	N-S	N-S

S= Soil/Site Stability; **H**= Hydrologic Function; **B**= Biotic Integrity

N-S = None to Slight departure from expected range **S-M** = Slight to Moderate departure from expected range **M** = Moderate departure from expected range **M-E** = Moderate to Extreme departure from expected range **E** = Extreme departure from expected range

Allotment - Pasture		N	N	N	N	N	N	N
Identifier		B-67	B-68	B-74	B-75	B-77	B-78	B-79
Location		04S10E13	04S11E09	04S10E02	04S10E03	03S10E27	03S10E11	03S11E30
Ecological Site		Shallow Stony 8-16	Loamy 7-10	Shallow Stony 8-16	Shallow Stony 8-16	Shallow Stony 8-16	Shallow Stony 8-16	Shallow Stony 8-16
Indicator	Attribute							
1. Rills	S-H	N-S	N-S	N-S	N-S	N-S	N-S	N-S
2. Water Flow Patterns	S-H	M	S-M	S-M	N-S	S-M	M	S-M
3. Pedestals/Terracettes	S-H	N-S	N-S	M	M	M	M	M
4. Bare Ground	S-H	M	M	M	M	N-S	S-M	S-M
5. Gullies	S-H	N-S	N-S	N-S	N-S	N-S	N-S	N-S
6. Wind Scoured, Blowouts and/or Depositions	S-H	N-S	N-S	N-S	N-S	N-S	N-S	N-S
7. Litter Movement	S-H	S-M	N-S	S-M	N-S	S-M	M	N-S
8. Soil Surface to Erosion	S-H-B	M	M	M	M-E	M	S-M	S-M
9. Soil Surface Loss or Degradation	S-H-B	M	N-S	M	S-M	N-S	M	S-M
10. Plant Community Comp. & Dist. Relative to Infiltration & Runoff	H	M-E	M	M	M-E	M	M	M
11. Compaction Layer	S-H-B	N-S	N-S	N-S	N-S	N-S	N-S	N-S
12. Functional / Structural Groups	B	M-E	M-E	M-E	M	M	M	M
13. Plant Mortality / Decadence	B	S-M	M	M	N-S	S-M	S-M	S-M
14. Litter Amount	H-B	M	S-M	S-M	M	N-S	M	S-M
15. Annual Production	B	S-M	S-M	M	M	S-M	M	S-M
16. Invasive Plants	B	M-E	S-M	M	M-E	N-S	N-S	N-S
17. Reproductive Capability of Perennial Plants	B	N-S	N-S	N-S	N-S	S-M	S-M	N-S

S= Soil/Site Stability; **H**= Hydrologic Function; **B**= Biotic Integrity

N-S = None to Slight departure from expected range **S-M** = Slight to Moderate departure from expected range **M** = Moderate departure from expected range **M-E** = Moderate to Extreme departure from expected range **E** = Extreme departure from expected range

Allotment - Pasture		N	N	N	N	N	N	N
Identifier		B-80	B-81	B-82	B-83	B-84	B-85	B-86
Location		03S11E31	03S11E32	04S11E05	03S10E25	03S11E31	03S10E25	03S11E19
Ecological Site		Shallow Stony 8-16	Shallow Stony 8-16	Shallow Stony 8-16	Shallow Stony 8-16	Shallow Stony 8-16	Shallow Stony 8-16	Shallow Stony 8-16
Indicator	Attribute							
1. Rills	S-H	N-S	N-S	N-S	N-S	N-S	N-S	N-S
2. Water Flow Patterns	S-H	M	S-M	N-S	S-M	S-M	S-M	S-M
3. Pedestals/Terracettes	S-H	M	M	N-S	S-M	S-M	S-M	S-M
4. Bare Ground	S-H	M	S-M	N-S	N-S	S-M	N-S	S-M
5. Gullies	S-H	N-S	N-S	N-S	N-S	N-S	N-S	N-S
6. Wind Scoured, Blowouts and/or Depositions	S-H	N-S	N-S	N-S	N-S	N-S	N-S	N-S
7. Litter Movement	S-H	N-S	M	N-S	N-S	N-S	N-S	N-S
8. Soil Surface to Erosion	S-H-B	M	S-M	S-M	N-S	S-M	N-S	S-M
9. Soil Surface Loss or Degradation	S-H-B	M	M	S-M	S-M	S-M	S-M	M
10. Plant Community Comp. & Dist. Relative to Infiltration & Runoff	H	M	M	S-M	S-M	M	S-M	M
11. Compaction Layer	S-H-B	N-S	N-S	N-S	N-S	N-S	N-S	N-S
12. Functional / Structural Groups	B	M	M	M	S-M	M	S-M	M
13. Plant Mortality / Decadence	B	S-M	S-M	N-S	S-M	N-S	S-M	S-M
14. Litter Amount	H-B	S-M	M	N-S	S-M	S-M	S-M	S-M
15. Annual Production	B	S-M	M	S-M	N-S	M	S-M	S-M
16. Invasive Plants	B	S-M	N-S	S-M	N-S	M-E	S-M	N-S
17. Reproductive Capability of Perennial Plants	B	N-S	N-S	N-S	N-S	S-M	S-M	N-S

S= Soil/Site Stability; **H**= Hydrologic Function; **B**= Biotic Integrity

N-S = None to Slight departure from expected range **S-M** = Slight to Moderate departure from expected range **M** = Moderate departure from expected range **M-E** = Moderate to Extreme departure from expected range **E** = Extreme departure from expected range

Allotment - Pasture		N	N	N	N	N	N	N
Identifier		B-87	B-88	B-89	B-90	B-91	B-92	B-95
Location		03S11E20	03S11E19	03S10E13	03S10E13	03S10E23	03S10E11	03S10E10
Ecological Site		Shallow Stony 8-16	Shallow Stony 8-16	Shallow Stony 8-16	Fractured South Slope 12-16	Fractured South Slope 12-16	Shallow Stony 8-16	Shallow Stony 8-16
Indicator	Attribute							
1. Rills	S-H	N-S	N-S	N-S	N-S	N-S	N-S	N-S
2. Water Flow Patterns	S-H	M	S-M	S-M	S-M	M	M	M
3. Pedestals/Terracettes	S-H	M	M	S-M	S-M	S-M	S-M	S-M
4. Bare Ground	S-H	M	S-M	N-S	S-M	M	M	S-M
5. Gullies	S-H	N-S	N-S	N-S	N-S	N-S	N-S	N-S
6. Wind Scoured, Blowouts and/or Depositions	S-H	N-S	N-S	N-S	N-S	N-S	N-S	N-S
7. Litter Movement	S-H	N-S	N-S	N-S	N-S	M-E	S-M	S-M
8. Soil Surface to Erosion	S-H-B	S-M	S-M	N-S	S-M	S-M	S-M	S-M
9. Soil Surface Loss or Degradation	S-H-B	M	S-M	S-M	S-M	S-M	S-M	S-M
10. Plant Community Comp. & Dist. Relative to Infiltration & Runoff	H	M	M	M	S-M	N-S	S-M	S-M
11. Compaction Layer	S-H-B	N-S	N-S	N-S	N-S	N-S	N-S	N-S
12. Functional / Structural Groups	B	M	M	M	S-M	S-M	M	S-M
13. Plant Mortality / Decadence	B	S-M	S-M	S-M	S-M	S-M	S-M	S-M
14. Litter Amount	H-B	S-M	M	S-M	N-S	N-S	S-M	S-M
15. Annual Production	B	M	M	S-M	N-S	N-S	N-S	N-S
16. Invasive Plants	B	N-S	N-S	N-S	N-S	S-M	N-S	S-M
17. Reproductive Capability of Perennial Plants	B	S-M	S-M	S-M	N-S	S-M	S-M	S-M

S= Soil/Site Stability; **H**= Hydrologic Function; **B**= Biotic Integrity

N-S = None to Slight departure from expected range **S-M** = Slight to Moderate departure from expected range **M** = Moderate departure from expected range **M-E** = Moderate to Extreme departure from expected range **E** = Extreme departure from expected range

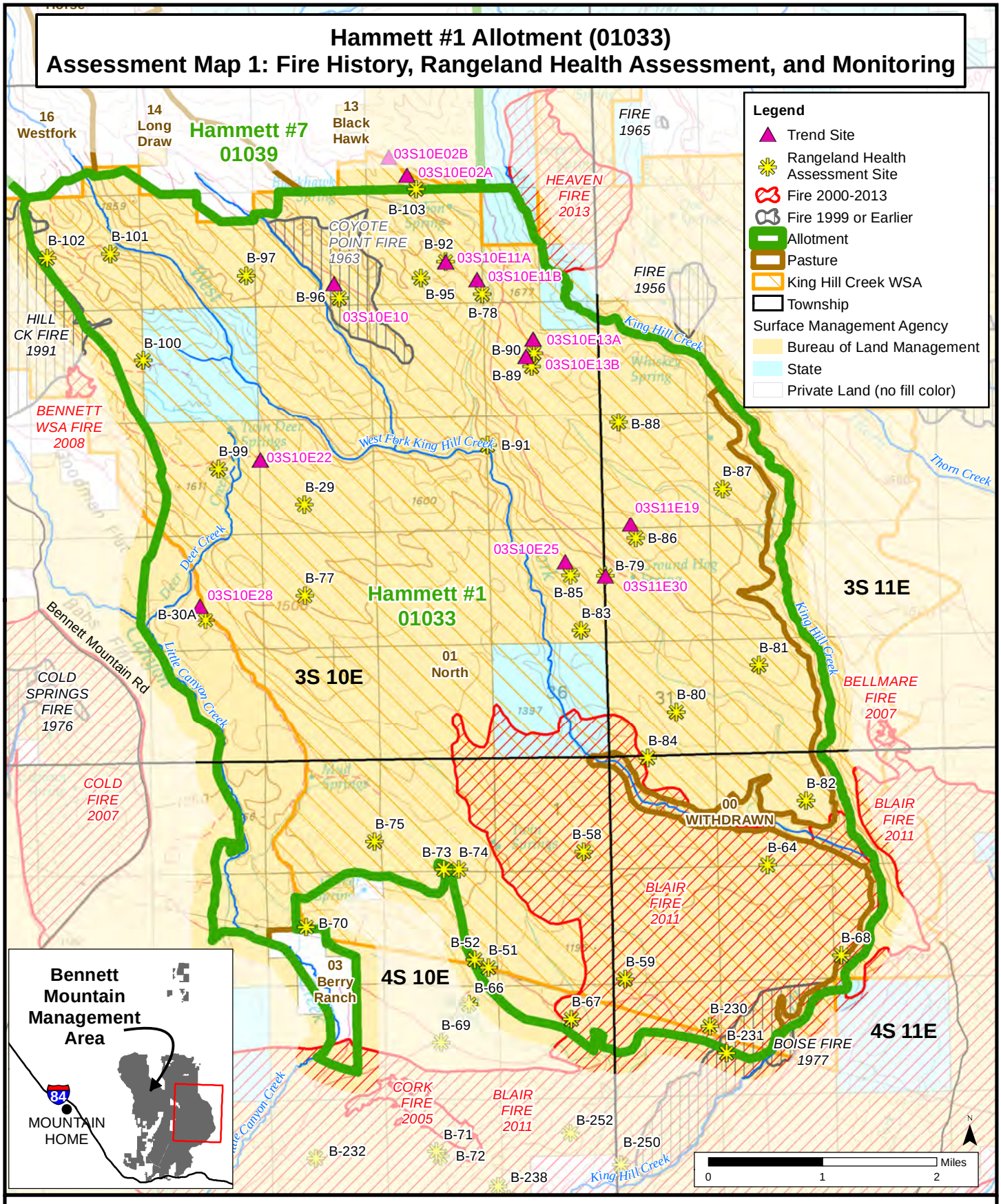
Allotment - Pasture		N	N	N	N	N	N	N
Identifier		B-96	B-97	B-99	B-100	B-101	B-102	B-230
Location		03S10E10	03S10E09	03S10E21	03S10E17	03S10E08	03S10E08	04S11E18
Ecological Site		Loamy 12-16	Loamy 12-16	Loamy 12-16	Shallow Stony 8-16	Rubbleland	Loamy 12-16	Loamy 12-16
Indicator	Attribute							
1. Rills	S-H	N-S	M	N-S	N-S	S-M	N-S	N-S
2. Water Flow Patterns	S-H	M-E	M	S-M	S-M	M	M	N-S
3. Pedestals/Terracettes	S-H	M	S-M	S-M	S-M	S-M	M	N-S
4. Bare Ground	S-H	M	M	N-S	S-M	S-M	S-M	N-S
5. Gullies	S-H	N-S	N-S	N-S	N-S	N-S	N-S	N-S
6. Wind Scoured, Blowouts and/or Depositions	S-H	N-S	N-S	N-S	N-S	N-S	N-S	N-S
7. Litter Movement	S-H	M	N-S	N-S	N-S	S-M	N-S	N-S
8. Soil Surface to Erosion	S-H-B	S-M	S-M	S-M	S-M	S-M	S-M	S-M
9. Soil Surface Loss or Degradation	S-H-B	M	M	S-M	S-M	S-M	S-M	S-M
10. Plant Community Comp. & Dist. Relative to Infiltration & Runoff	H	S-M	S-M	S-M	S-M	N-S	S-M	S-M
11. Compaction Layer	S-H-B	N-S	N-S	N-S	N-S	N-S	N-S	N-S
12. Functional / Structural Groups	B	M	M	M	S-M	N-S	M	S-M
13. Plant Mortality / Decadence	B	M-E	M	M	S-M	N-S	N-S	M
14. Litter Amount	H-B	M	S-M	S-M	S-M	N-S	S-M	N-S
15. Annual Production	B	S-M	S-M	S-M	S-M	N-S	S-M	N-S
16. Invasive Plants	B	N-S	N-S	N-S	N-S	N-S	N-S	M
17. Reproductive Capability of Perennial Plants	B	S-M	S-M	S-M	S-M	N-S	S-M	S-M

S= Soil/Site Stability; **H**= Hydrologic Function; **B**= Biotic Integrity

N-S = None to Slight departure from expected range **S-M** = Slight to Moderate departure from expected range **M** = Moderate departure from expected range **M-E** = Moderate to Extreme departure from expected range **E** = Extreme departure from expected range

Maps

Hammett #1 Allotment (01033)
Assessment Map 1: Fire History, Rangeland Health Assessment, and Monitoring



U.S. Department of the Interior
Bureau of Land Management, Idaho
Boise District, Four Rivers Field Office
Map date: May 26, 2014

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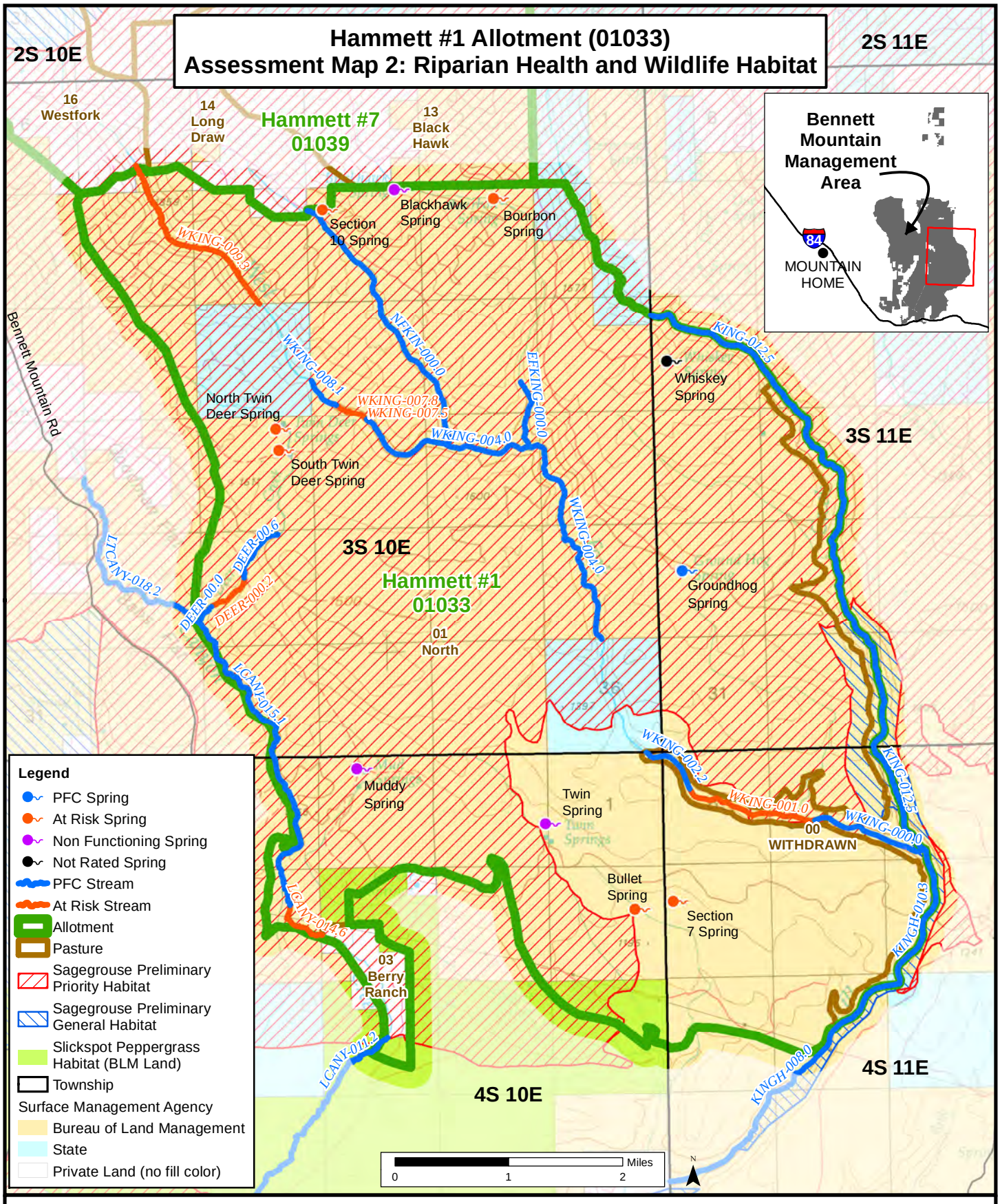
Hammett #1 Allotment (01033)
Assessment Map 2: Riparian Health and Wildlife Habitat



U.S. Department of the Interior
Bureau of Land Management, Idaho
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Map date: May 26, 2014

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EVALUATION REPORT

Achieving the Idaho Standards for Rangeland Health

Field Office: IDB010 Four Rivers

Allotment Name and Number: Hammett #1 Allotment (01033), North and Berry Ranch Pastures

Name of Permittee(s): Casa Del Norte, c/o John McCallum (1102221)
Iron Horse Ranch LLC, c/o John McCallum (1101651)

Applicable Standards

The Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management (Standards and Guidelines) are used as management goals to maintain or improve resources, protect cultural resources, and sustain productivity of the land. Standards that are appropriate to a particular allotment are used and provide information used to determine the health and condition of public lands. This document provides the evaluation of information presented in the rangeland health assessment and whether Standards are being achieved. The determination of significant factors or causal agents for areas not meeting a particular Standard (or set of Standards) and whether or not livestock management practices are in conformance with applicable guidelines is presented in the Determination document.

The following Standards apply to public lands in the allotment: 1 (Watersheds), 2 (Riparian Areas and Wetlands), 3 (Stream Channel/Floodplain), 4 (Native Plant Communities), 7 (Water Quality), and 8 (Threatened and Endangered Plants and Animals). Standard 5 (Seeding) does not apply because no drill seedings have occurred. Standard 6 (Exotic Plant Communities) does not apply because, although exotic annual plants occur, vegetative communities are maintaining 25% to 30% composition of sagebrush regardless of the understory; that range approximates the Ecological Site Descriptions for sagebrush in the allotment.

EVALUATE STANDARDS

Since the Assessments, Evaluations, and draft Determinations were completed (February 2010), plant community trend data have been updated across the Bennett Mountain Management Area. Plant frequency data were collected at permanent study locations in 2010 and 2011. The 2011 Blair Fire was added to the analysis. Updates have been made to the Standards these data inform.

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.

Evaluation and Information Sources

Rangeland Health Field Assessments, indicating the state of the rangeland in 2004, and long-term monitoring of the plant community and other watershed health indicators from 1988/1990 to 2010/2011 were used to assess the state and trend of watershed conditions.

Rangeland Health and Long-Term Trend

An increase in basal cover of persistent vegetation provided some protection to the watershed, but there was an overall downward trend in ecological condition, due to a reduction of deep-rooted perennial grasses which hold water and soil in place (see Standard 4 for more information on bunchgrass declines). In 2004, 20% of the soil/site stability and hydrologic function indicators were beyond the normal range of variability expected for the ecological sites (greater than "slight to moderate" rating). Erosion was observed at 42% of the assessment locations in the form of pedestalled grasses, terracettes, and accentuated water flow paths (Appendix 1). Areas of exposed soils were documented in association with these features, and the structure and composition – shifts from large, deep-rooted perennial grasses to smaller, shallow-rooted invasive, exotic annual species – was inadequate to capture and infiltrate moisture and control runoff. These problems were likely exacerbated by the 2011 Blair Fire which occurred seven years after the Rangeland Health Field Assessments were completed. This fire occurred in the southern part of the North Pasture where exotic annual grass cover was already greatest and watershed protection after a fire would be reduced (Map 1). There were no trend plots in this portion of the pasture.

Basal cover of persistent vegetation increased significantly in seven out of eight locations between 1988/1990 and 2010/2011. However, the capacity of the plant community to withstand runoff and erosion decreased, as the native understory community degraded to a more ruderal state (fewer large perennial bunchgrasses and more exotic annual grasses). Bare ground did not change significantly in six out of eight locations and decreased in two. Photo point comparisons between 1987/1989/1990 and 2004 and then between 2004 and 2010/2011 depicted an increase and then a decrease in pedestalling of Sandberg bluegrass and a minor decline and then improvements in overall plant community conditions. By 2010/2011, perennial grasses and forbs would have been able to capture and cycle nutrients and water better than in 2004; however, as a whole, watershed features provided inadequate protection against erosion and excessive runoff.

Evaluation Finding – Allotment/watershed is:

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

Rationale for Evaluation Finding
The downward trend in deep-rooted perennial bunchgrass frequencies which leads to decreased soil and water retention, plus moderate or greater departure of one fifth of soil/site stability and hydrologic function indicators demonstrated that proper nutrient cycling, hydrologic cycling, and energy flow were not occurring.

Standard 2: Riparian Areas and Wetlands ___ Standard does not apply
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.

Evaluation and Information Sources
Functioning condition assessments, Designated Monitoring Areas (DMAs), field visits, proper functioning condition evaluations, topographic maps, aerial photography, and GIS data.

Rangeland Health
Streams
King Hill, West Fork King Hill, North Fork King Hill, East Fork King Hill, Little Canyon, and Deer creeks were stratified into 17 stream segments totaling 25.5 miles. Eighty-three percent (21.1 miles) of stream segments were in proper functioning condition (PFC) and 17% (3.5 miles of West Fork King Hill Creek, 0.5 miles of Little Canyon Creek, and 0.4 miles of Deer Creek) were in functioning-at-risk (FAR) condition with static to downward trends (Map 2). PFC stream segments had dense and vigorous assemblages of obligate riparian plant species representing the potential natural vegetation (PNV) for the stream type, flow regime, and substrate composition. FAR condition stream segments had low willow regeneration, dead and decadent willows, absence of PNV plant species, encroachment of upland, and/or disturbance related plant species on the floodplain, streambanks, and greenline.

Springs
Of the nine springs rated for functioning condition, one (11%) were in PFC, five (56%) were in FAR condition, and three (33%) were in non-functioning (NF) condition (Map 2). PFC springs were vegetated with deep-rooted riparian species including willows, sedges, and rushes. FAR condition springs exhibited low densities and frequencies of obligate hydric vegetation, moderate to heavy trampling levels, bare soils, hummocking, and encroachment of upland and/or disturbance species into the plant communities. Disturbance species including Kentucky bluegrass, Baltic rush, spikerush, and foxtail, together with weedy annual grasses and forbs are dominant at the NF condition springs. Site visits between 2010 and 2014 indicated static conditions at eight springs.

Evaluation Finding – Allotment/watershed is:

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

Rationale for Evaluation Finding

Soil compaction, reduction or absence of obligate riparian vegetation, and encroachment of upland species at FAR and NF condition streams and springs are not providing for proper nutrient cycling, hydrologic cycling, and energy flow.

Standard 3: Stream Channel/Floodplain ___ Standard does not apply

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.

Evaluation and Information Sources

Rangeland health field assessments, functioning condition assessments, DMAs, field visits, topographic maps, aerial photography, satellite images, and GIS data.

Rangeland Health

Streams

Eighty-three percent (21.1 miles) of stream segments were in PFC, and 17% (4.4 miles) were in FAR condition with static to downward trends (Map 2).

The 21.1 miles of PFC stream segments along King Hill, West Fork King Hill, North Fork King Hill, East Fork King Hill, Little Canyon, and Deer creeks were generally inaccessible to livestock, were rock-armored, and/or had dense assemblages of deep-rooted riparian vegetation, and were vertically and laterally stable. The 4.4 miles of FAR condition segments had elevated bank erosion rates and high sediment levels due to weakened riparian vegetation, bank shearing, trampling and trailing by livestock. The dominance of upland species along the riparian areas, and along the greenline, does not provide sufficient cover and root mass to protect vulnerable streambanks and floodplains from flooding flows.

Evaluation Finding – Allotment/watershed is:

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

Rationale for Evaluation Finding

A total of 18% (4.4 miles) of stream segments were in FAR condition with static to downward trends. Elevated erosion and sediment levels and unstable streambanks prevent these streams from providing proper nutrient cycling, hydrologic cycling, and energy flow.

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.

Evaluation and Information Sources

Rangeland Health Field Assessments from 2004 and long-term monitoring of the plant community from 1988/1990 to 2010/2011 were used to assess the state and trend (Map 1).

Rangeland Health and Long-Term Trend

These data sets indicate that key native plant species have declined or had low frequencies, exotic annuals have increased or had high frequencies, and conditions were outside the range of historic variability, resulting in a downward trend in ecological condition. Field assessments found that eight out of the nine indicators of biotic integrity were beyond the normal range of variability expected for the ecological sites in at least two locations (27% of 324 indicators were above normal; 1% extreme, 4% moderate to extreme, and 22% moderate). Shifts in species composition from large-stature perennial grasses (e.g., bluebunch wheatgrass), which have above ground biomass and root systems effective at such processes, to invasive, exotic annual plants (e.g., cheatgrass, medusahead, and bur buttercup) which are smaller, grow singly, and have less extensive root systems, impact all biotic and hydrologic processes. Other indications of degradation were pedestalled and dying bunchgrasses, shrub decadence, and excess litter due to high densities of exotic annual species.

Long-term monitoring indicated that deep rooted perennial grass frequencies decreased significantly in three NPFTs having the greatest (>50%) initial frequencies. In these locations, relative frequencies (ending compared to beginning) decreased 26-76%. Areas with <50% initial frequencies did not decline significantly, but their means did decrease substantially.

Also between 1988/1990 and 2010/2011, exotic annual grass frequencies increased in 38% of the NPFTs. Half of the NPFTs had 40-60% exotic annual grass frequency in 2010/2011. Locally high and increasing frequencies of exotic annual grasses, coupled with the decline of deep-rooted perennial grasses, signal a functional change in the plant community. Exotic annuals could influence both the probability of ignition and the fire return interval which in turn could degrade the native plant community beyond the initial infestations. The 2011 Blair Fire burned approximately 30% of the southern half of the pasture and exotic annual grasses are probably more pervasive there today and the fire return interval will likely decrease as a result.

Evaluation Finding – Allotment/watershed is:

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

Rationale for Evaluation Finding
The downward trend for large perennial bunchgrass frequencies in one third of the trend sites, plus moderate or greater departure of one quarter of biotic diversity indicators demonstrated that Hammett 1 Allotment is not meeting Idaho Standards for Rangeland Health.

Standard 5: Seedings X Standard does not apply
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.

Evaluation and Information Sources
Rangeland health field assessments, long-term trend monitoring data and/or photographs, wildfire database, field visits, actual use reports, and allotment files.

Standard 6: Exotic Plant Communities, Other than Seedings X Standard does not apply
Exotic plant communities, other than seedings, will meet minimum requirements of soil stability and maintenance of existing native and seeded plants.

Evaluation and Information Sources:
Rangeland health field assessments, long-term trend monitoring data and/or photographs, wildfire database, field visits, actual use reports, and allotment files.

Standard 7: Water Quality ___ Standard does not apply
Surface and ground water on public lands comply with the Idaho Water Quality Standards.

Evaluation and Information Sources
Idaho Department of Environmental Quality (IDEQ) data (2010 Integrated Report), field inspections, water temperature dataloggers, thermograph data, and bacterial sampling.

Rangeland Health
IDEQ has not examined water quality in mainstem King Hill Creek (IDEQ Integrated Report 2010). However, IDEQ examined water quality in West Fork King Hill Creek in 2010, and found that water temperatures exceeded water temperature standards for cold water biota. A TMDL shade target for stream temperature was prepared and West Fork King Hill Creek and its first order tributaries, North and East Fork King Hill creeks, remain on the 303(d) list of impaired waters (IDEQ Integrated Report 2010). BLM data show that West Fork King Hill Creek exceeded temperature standards for cold water biota, but met bacterial levels standards for *E. coli* bacteria (one time sample).

IDEQ developed sediment TMDLs for Little Canyon Creek. The BLM data show the TMDL target of <30% fine sediment (in riffles), and streambank stability of <20% active bank erosion was fully met in segment LCANY-015.1. One FAR condition segment (LCANY-014.6) may not satisfy the <20% active bank erosion standard, but the segment met the TMDL target for ≤30%

fine sediments. All segments of Little Canyon Creek met bacterial standards for primary and secondary contact recreation, based on 2009 BLM data.

Evaluation Finding – Allotment/watershed is:
____ Meeting the Standard
____ Not Meeting the Standard, but making significant progress towards meeting
_X_ Not Meeting the Standard

Rationale for Evaluation Finding
West Fork King Hill Creek exceeded IDEQ temperature standards for cold water biota, and one segment of Little Canyon Creek may not be meeting TMDL streambank erosion targets.

Standard 8: Threatened and Endangered Plants and Animals ____Standard does not apply
Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

Evaluation and Information Sources:
Rangeland health field assessments, Conservation Data Center, plant and animal surveys, and wildlife habitat assessments.

Rangeland Health
Plants
No federally listed plant species are currently known to occur within the allotment. However, habitat for slickspot peppergrass (proposed for listing under the Endangered Species Act [ESA]) does occur in the southern portion of the allotment (348 acres) (Map 2). At least two element occurrences of morning milkvetch (*Astragalus atratus* var. *inseptus),* a BLM Special Status Species, also occur in the southern portion of the allotment.

Wildlife
No federally listed wildlife species are known to occur. Greater sage-grouse, a candidate species under the Endangered Species Act, are present. Two active leks occur in the eastern part of the allotment and the uplands provide marginal breeding and brood-rearing habitat (Map 2). Shrub understories lacked mid- to tall- stature native bunchgrasses, and exotic annuals were common to abundant in some areas, primarily in the southern part of the North Pasture. The majority of springs, which provide late brood-rearing habitat, were in FAR condition. Though potential pygmy rabbit habitat exists, surveys conducted in 2004, 2006, and 2007 found no rabbits.

Due to the very rocky, livestock-inaccessible characteristics of King Hill, lower segments of West Fork King Hill, and the upper segment of Little Canyon creeks, many areas are maintaining high quality riparian habitat. However, livestock accessible reaches of WKING- 009.3, WKING-0.007.8, and WKING-001.0 lack riparian plant species diversity necessary to support special status animals. One PFC spring had dense healthy riparian vegetation components suitable for special status wildlife. Five FAR condition and three NF condition springs provide

marginal riparian wildlife habitat. Degraded wetland areas with reduced vegetation lacked nesting cover for and plant forage diversity.

The decline in rangeland health influences the potential for these areas to support populations of special status plants and animals. Invasive annuals have encroached into many plant communities and perennial bunchgrasses have declined. Recently burned areas (4,040 acres in the 2011 Blair Fire) could become dominated by exotic annuals. In some FAR condition riparian areas, replacement of the potential natural vegetation by xeric upland plant species (e. g., bulbous bluegrass, sagebrush, and cheatgrass) has occurred.

Fish

Redband trout (BLM Type 2 Special Status Species) are present in King Hill and West Fork King Hill creeks, and may be seasonally present in East Fork King Hill and North Fork King Hill creeks in the early spring spawning period. Habitat needs for redband trout are being met in the segments that were in PFC. However, in FAR segments of West Fork King Hill Creek, width/depth ratios were excessive, pools were filled with sediment, hiding and escape cover was lacking, lower than expected pool frequency, and high fine sediment levels provide only poor to fair conditions for salmonid reproduction and survival. In Little Canyon Creek segments LCANY-014.6, aquatic habitat ratings were fair to good. In LCANY-015.1, aquatic habitat was rated in good to excellent condition. Standard 8 is being met in PFC segments, but not FAR condition segments.

Evaluation Finding – Allotment/watershed is:

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

Rationale for Evaluation Finding

Habitat needs for upland and riparian-dependent species are not being met where important habitat components (e.g., food, cover) are reduced or absent. Habitat needs of redband trout, a Type 2 sensitive species, are not optimal in the FAR condition segments of West Fork King Hill and Little Canyon creeks.