Final Rangeland Health Assessments For Hart Creek 0532, Box T 0534, And Alder Creek FFR 0639 Allotments

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Final Rangeland Health Assessment
Hart Creek 0532, Box T 0534, and Alder Creek FFR 0639 Allotments

2013 Supplement to the Hart Creek, Box T, and Alder Creek Allotments Rangeland Health Standards and Guidelines Assessment
The Rangeland Health Standards and Guidelines Assessment for the Hart Creek, Box T, and Alder Creek allotments was completed in 2006 as a portion of the grazing permit renewal process. Until 2013, no rangeland health determinations were completed and the permit authorizing grazing use in this allotment has not been fully processed for renewal. The current document consists of the 2006 RHA, in full, supplemented by new information available since the 2006 document was completed. Portions of this 2013 document that supplement the 2006 document are presented in this two-field table format with the header above, while those portions carried forward unchanged from the 2006 document are outside the two-field tables. The 2013 supplement to the assessment includes data complied between 2006 and 2013, as well as the completion of the 2013 evaluation report and determinations consistent with the Livestock Grazing Permit Renewal Desk Guide for Idaho Bureau of Land Management, May 2009. The 2013 determinations for the Hart Creek, Box T, and Alder Creek FFR allotments are compiled at the end of this document.

Background

In 1997, in accordance with 43 CFR 4180 2(b), the Idaho BLM adopted rangeland health standards and guidelines for livestock grazing management (Appendix A-1), which were developed in coordination with the Resource Advisory Councils. There are eight standards, not all of which apply to any one parcel of land. The standards of rangeland health are expressions of the level of physical and biological condition or degree of function required for healthy, sustainable rangelands. Rangelands should be meeting or making significant progress toward meeting the standards. If the standards are met, nutrient and hydrologic cycling, and energy flow are adequate to sustain the rangeland.

Indicators are typical physical and biological factors and processes that can be measured or observed. This document examines the indicators for each standard and uses quantitative and qualitative information including inventory data, monitoring data, health assessment information, or other observations to evaluate the current status of each indicator for each standard. Observations of each indicator for each standard, and trends in measured indicators, are discussed below for all of the standards that are applicable to these allotments.

Guidelines direct the selection of grazing management practices, and where appropriate, livestock management facilities promote significant progress toward, or the attainment and maintenance of the Standards.

Conclusions as to whether or not allotments are meeting, or making significant progress toward meeting, the Standards and Guidelines will be provided in a separate evaluations and determinations document based on information provided in this document. Additional

information will be considered in developing the evaluations and determinations if received in a timely manner.

A Draft Assessment was previously mailed to interested parties of record, including grazing permittees, applicable state agencies, Indian tribes, and identified interested public, September 10, 2004. Comments were received from Robert Thomas, the grazing permittee on the Hart Creek, Box T and Alder Creek FFR allotments. These comments have been considered and incorporated as appropriate in the development of this Final Assessment. No other comments were received in response to the September 10, 2004 Draft Assessment mailing.

Idaho Rangeland Health Standards Assessment

Resource conditions are evaluated according to the Standards for Rangeland Health, as adopted by Idaho BLM in 1997. The following subsections discuss resource conditions, by allotment and pasture, as they relate to each standard.

Hart Creek Allotment (0532)

Physiography - The Hart Creek Allotment is located approximately 1 mile southwest of Oreana, Idaho in Owyhee County (Appendix I). Elevations range from approximately 2,800 feet to 6,500 feet. The allotment is within Major Land Resource Area D25 Owyhee High Plateau (Soil Survey Staff, 1981). The majority of the soils in the allotment are shallow to moderately deep and well drained. Soils are clayey to loamy and vary in surface and subsurface rock fragments. These soils formed in residuum and alluvium derived predominantly from welded rhyolitic tuff. The landform features of pastures 1 and 2 are alluvial hills and plateaus dissected by drainages. The landforms of pasture 3 are hills and mountains deeply dissected by drainages. The landform features of pasture 3 are the result of volcanic activity and soils are rhyolitic in origin.

Approximately 50 percent of the allotment area is represented by the Calcareous Loam ecological site. The remaining 50 percent of the allotment area is represented by loamy sites of various precipitation ranges (18%), various sandy or sandy loam sites (11%), and Shallow Claypan 12-16" (11%).

The allotment is divided into three pastures made up of federal, state, and private lands totaling approximately 26,569 acres (Table A.0.1).

Table A.0.1. Hart Creek allotment acreage* summary.

Pasture	Federal	State	Private	Total
#1 (Hart Creek Field)	8,728	0	722	9,450
#2 (Browns Creek Field)	9,115	642	318	10,075
#3 (Cat Creek Field)	6,992	9	43	7,044
Totals	**24,835**	**651**	**1,083**	**26,569**

*Acreages represent best available estimates.

Table ALLOT-1: Hart Creek allotment acreage* summary

Pasture	Federal	State	Private	Total
#1 (Hart Creek Field)	8,733	0	717	9,449
#2 (Browns Creek Field)	9,157	639	315	10,111
#3 (Cat Creek Field)	6,990	12	42	7,043
Totals	**24,879**	**651**	**1,073**	**26,603**

*Acreages based on 2013 BLM GIS data.

Livestock Use History

The 1999 Owyhee Resource Management Plan identifies the Hart Creek allotment for intensive management, of medium priority. Active permitted use is allocated for 2,365 animal unit months (AUM's) of cattle. From 1997 through 2004, through an agreement between the BLM and the permittee, 1,000 AUMS of non-use was approved each year, in order to rest pastures 1 or 2 in alternate years (Table A.0.2). The spring turnout date varies in pasture 1 or 2 each year based on range readiness. The earlier use period in the Hart Creek Allotment allowed for an earlier grazing start date for the Box T Allotment. Since 1997, pasture 3 has been grazed from the second or third week of April until between May 31 and June 5, annually. Although this grazing use occurs during the critical growing period for perennial bunchgrasses each year, the 1,000 AUM's of voluntary non-use has helped reduce overall livestock impacts during the scheduled use period. The livestock removal date is relatively early in the growing season (early June), when there is usually enough residual soil moisture, coupled with spring and early summer precipitation, to allow bunchgrass regrowth. Perennial key forage bunchgrasses have attained relatively good vigor with this grazing practice. The livestock operator currently hauls water to several locations in pastures 1 and 2 in order to distribute livestock use across the allotment. Available actual use records and acres/AUM are presented in Appendices F-1 and F-2.

The current livestock grazing permit is held by Robert Thomas.

Table A.0.2. Hart Creek allotment grazing rotation, 1997-2004.

Pasture	1997	1998	1999	2000	2001	2002	2003	2004
1 – "Hart Creek"	Rest	3/2-4/10	Rest	3/2-4/13	Rest	3/12-4/20	Rest	3/4-4/10
2 – "Browns Creek"	3/16-4/15	Rest	3/1-4/12	Rest	3/1-4/13	Rest	3/7-4/21	Rest
3 – "Cat Creek Field"	4/22-5/31	4/15-6/3	4/15-5/31	4/15-5/26	4/10-6/4	4/13-5/31	4/15-5/31	4/11-5/31

Actual use reported for Hart Creek allotment between 2005 and 2012 by the permittee are provided in Table LVST-1.

Table LVST-1: Hart Creek allotment grazing rotation, 2005-2012

Pasture	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
1 – Hart Creek	Rest	3/3-4/14	Rest	3/5-4/12	Rest	3/5-4/22	Rest	3/6-4/25
2 – Browns Creek	3/3-4/19	Rest	3/4-4/12	Rest	3/5-4/21	Rest	3/8-4/25	Rest
3 – Cat Creek Field	4/10-6/12	4/10-6/6	4/9-6/11	4/16-6/21	4/18-6/8	4/24-6/5	4/21-5/8	4/24-6/7

Rangeland Health Evaluation Summary –Thirteen assessments were conducted in this allotment during the 2002 field season. This allotment is composed mostly of Loamy ecological sites with the Shallow-Claypan ecological site co-dominating the landscape in the higher elevation areas.

Pasture 1

Three Rangeland Health Evaluation Summary Worksheets (worksheet) were completed in this pasture, one in low elevation Loamy 7-10" site, one in a Sandy Loam 8-12" site, and one in a Calcareous Loam 7-10" ecological site.

Pasture 2

Four worksheets were completed in this pasture, one in a low elevation Loamy 7-10" site, one in a Loamy Bottom 8-14" site, and two in Calcareous Loam 7-10" ecological sites. The Loamy Bottom ecological site is not representative of a major portion of this pasture or allotment; a worksheet was completed on this site to capture condition information for this relatively rare ecological site.

Pasture 3

Five worksheets were completed in this pasture: four in Shallow-Claypan ecological sites located in the upper elevation portions of the pasture, and one in a Loamy ecological site representative of the low elevation portion of the pasture.

Standard 1: Watersheds

The following is excerpted from the Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management, and pertains to assessment of rangeland health as it relates to riparian and wetland areas:

"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.

Indicators may include, but are not limited to, the following:

1. The amount and distribution of ground cover, including litter, for identified ecological site(s) or soil-plant associations are appropriate for site stability.

2. Evidence of accelerated erosion in the form of rills and/or gullies, erosional pedestals, flow patterns, physical soil crusts/surface sealing, and compaction layers below the soil surface is minimal for soil type and landform."

Field forms and site photos indicate that several soil stability and hydrologic function indicators are in the moderate range of departure from conditions found in reference areas and ecological site guides. Signs of historic and active soil erosion are found at all sites. Many of the documented erosional features appear to be a result of older erosional episodes or long-term processes in various stages of stabilization. These erosional processes have led to an increase in the amount of rock fragments on the soil surface at many sites; these rock fragments currently aid in site stabilization, but nevertheless soil loss. Table A.1.3 summarizes all Range Health Indicators for the Hart Creek allotment, by degree of departure from reference site conditions. Individual Rangeland Health Indicator ratings by site and pasture are presented in Appendix C.

Table A.1.3. Rangeland Health Indicator ratings summary – Hart Creek allotment.

^Standard 1-Watersheds	Degree of Departure				
	None-to-slight	Slight-to-moderate	Moderate	Moderate-to-extreme	Extreme
Pasture 1[1]	13	15	6	2	0
Pasture 2[2]	22	20	6	0	0
Pasture 3[3]	39	16	5	0	0

^ See Appendix C for individual RLH indicator ratings.
*[1]Summarizes: 1 Loamy 7-10", 1 Sandy Loam 8-12" and 1 Calcareous loam 7-10" ecological sites
[2] Summarizes: 2 Calcareous Loam 7-10", 1 Loamy 7-10" and 1-Loamy Bottom 8-14" ecological sites
[3] Summarizes: 1 Loamy 7-10", 1 Shallow Claypan 11-13", 2 Shallow Claypan 12-16", and 1 Mt, Ridge 14-18" ecological sites

Pasture 1

Site Stability – Indicators of soil erosion in Pasture 1 of the Hart Creek allotment were present in the form of water flow patterns and pedestaled plants. In some areas, water flow patterns were longer than expected, with pronounced cut sides in some places. In other areas, short water flow patterns and ponded catchments were evident. Pedestaled plants were documented at all sites. The most pronounced plant pedestaling, coupled with terrecettes formation, was noted at the Loamy site. These erosional features were most common in the interspatial areas between shrubs. Both Water Flow Pattern and Pedestals/Terrecettes indicators rated a slight-to-moderate departure from expected conditions for at the Sandy Loam and Calcareous Loam sites, but rated a moderate-to-extreme departure from expected conditions at the Loamy site. Gullies were

documented at the Sandy Loam site in the north portion of the pasture (4S1W27SWSE), and at the Loamy site in the central portion of the pasture (5S1W6SESE). Bare ground was a concern at the Sandy Loam site, with a moderate range of departure from expected conditions.

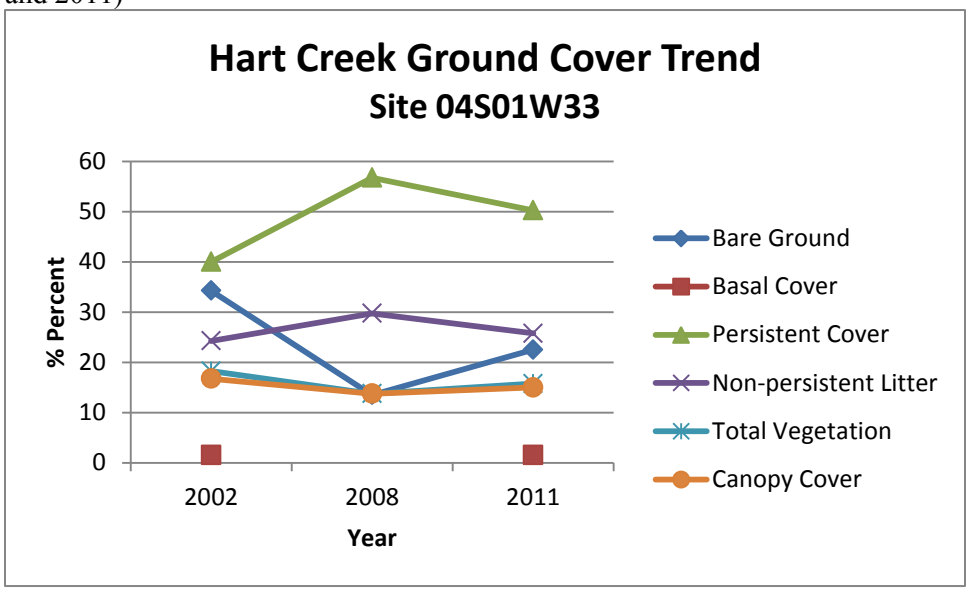
Hydrologic Function – The Loamy and Sandy Loam sites rated in the moderate range of departure from reference site conditions for soil factors affecting hydrologic function in Pasture 1. Soil factors negatively affecting hydrologic function consisted of areas of physical soil crust formation and low organic matter content in the surface layer, and poor soil structure in the interspatial areas. Low organic matter content and poor soil structure are due to the reduced cover from plants, biological soil crusts, and associated litter in these interspatial areas that would normally help to protect the soil from raindrop impact and overland flow. The plant community indicator related to hydrologic function showed a moderate degree of departure, with many sites being dominated by increaser species rather than the large-structured bunchgrass species associated with these ecological sites. This is particularly true in the large, open interspatial areas that are now dominated by relatively low-structured Sandberg bluegrass and annuals. The large decreaser bunchgrass species provide optimum canopy cover for increased interception of rain and snow, and increased thermal and wind shielding, as well as residual biomass in the form of plant litter and roots, which introduce significant amounts of organic matter into the system. The large, fibrous root systems of these large bunchgrasses also increase soil pore space and provide habitat for soil microorganisms. All these attributes increase infiltration and other hydrologic functions. Increaser species are structurally much smaller and do not facilitate hydrologic functions nearly as well. The shrub component was slightly higher than expected at all sites. Microbiotic soil crusts were weakly represented on most areas with the exception of the Calcareous Loam site, where adequate biotic crusts were noted. Overall, the plant community consists of perennial increaser species and annuals, which have replaced the majority of perennial decreaser plants. The shrub component is also increasing in this community.

2013 Supplement to the Hart Creek Allotment Rangeland Health Standards and Guidelines Assessment

Ground Cover Trend

Ground cover trend data were collected in pasture 1 at the nested plot frequency transect (04S01W33) in 2002, 2008, and 2011 (Figure Soil-1). Bare ground showed a non-significant increase over the short term and a significant (Student's T-test; p-value <0.1) long-term decrease, while gravel, rock, persistent litter, and biologic a soil crusts (after this referred to as persistent cover) showed a short-term non-significant decrease and a long-term non-significant increase. The remaining values of basal vegetation, non-persistent litter, total vegetation, and canopy cover were primarily static over the short and long term. 2009 data for basal vegetation were not used due to inconsistencies in data recording; short-term trend was therefore excluded.

Figure Soil-1: Ground Cover data from trend site 04S01W33for the Hart Creek allotment (2002, 2008, and 2011)



The site experienced a primarily upward trend between 2002 and 2008 that was especially reflected in a reduction of bare ground and an increase in persistent cover. Since 2008, however, bare ground has been increasing again and the remaining values are static or have decreased. Shrub density trend (see Standard 4) indicates that shrubs have been variable depending on species and year, which is not reflected in the static canopy cover readings.

Since 1996, grass frequency trend (see Standard 4) shows no record of deep-rooted perennial bunchgrasses at this site, while shallow-rooted Sandberg bluegrass and cheatgrass have been increasing. Overall interpretations of trend data suggest that ground cover conditions reflect a static to downward trend since 2008 and may be related to deteriorating biotic conditions that continue due to an increase in invasive annuals and the absence of deep-rooted bunchgrasses.

Pasture 2

Site Stability – Indicators of soil erosion were present in the form of water flow patterns that were mostly short, unconnected and stabilized by gravels. Pedestaled Sandberg bluegrass plants were noted in the flow paths. These soil erosion indicators rated a slight-to-moderate departure from reference conditions and were most active at the loamy site where pedestaling was very common. These erosional features have lead to an increase in the amount of rock fragments on the soil surface, with true desert pavement represented in some areas. Significant amounts of rock fragments on the soil surface currently aid in surface stabilization, but nonetheless represent soil loss. There is an inadequate amount of litter on most of these areas, which limits site stability by reducing organic content and exposing the soil surface to raindrop impact and overland flow. The exception is the Sandy Loam site, which displayed few signs of active or historic erosion, despite its side-slope position.

Hydrologic Function – Soil factors affecting hydrologic function generally rated in a slight-to-moderate range of departure with little physical soil crust formation, adequate organic matter content in the surface layer, and good soil structure. Many of these sites have an abundance of rock fragments on the surface, as well as biological soil crusts, which protect soil from erosion and aid in infiltration by reducing runoff. The plant community indicator, as it relates to hydrologic function, showed a moderate degree of departure. Many sites are dominated by increaser and annual grass species rather than the large-structured bunchgrasses associated with these ecological sites. This is particularly true in the large, open interspatial areas, which are now dominated by low-structured Sandberg bluegrass and annuals. The shrub component is slightly higher than expected at all sites. Biological soil crusts were adequately represented in most areas. Overall, the plant community is dominated by increaser and annual grass species and an increasing shrub component.

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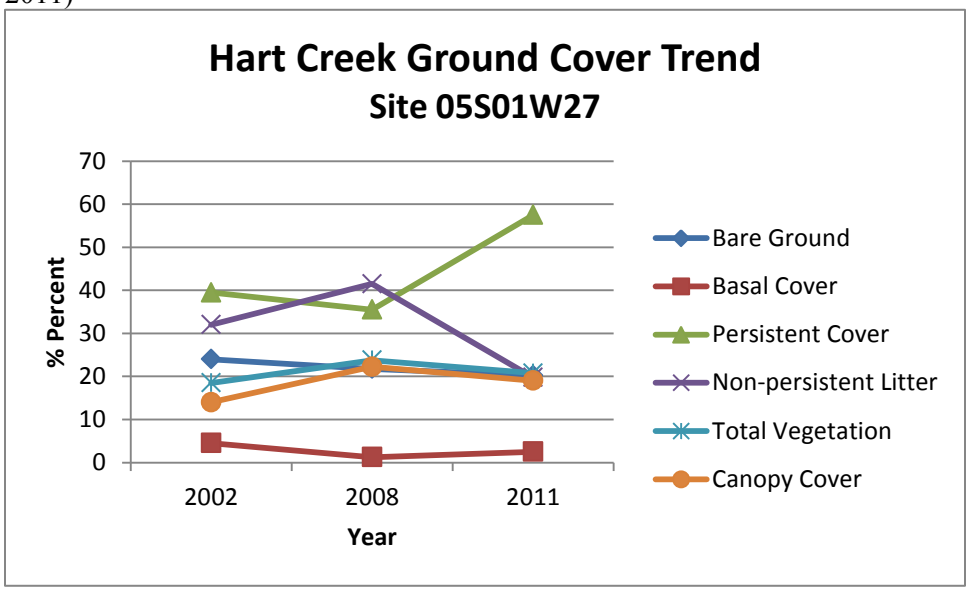
Ground Cover Trend Data

Ground cover trend data were collected in pasture 2 at the nested plot frequency transect (05S01W27) in 2002, 2008, and 2011 (Figure Soil-2). Over the short term, values of bare ground, basal vegetation, total vegetation, and canopy cover have remained static. Significant changes (Student's T-test; p-value <0.1) were recorded with an increase in persistent cover and a decline in non-persistent litter. Over the long term, bare ground, basal vegetation, and non-persistent litter showed a decline with the latter being significant. Total vegetation remained static, while persistent cover showed a significant increase, along with a decrease in non-persistent litter.

Figure Soil-2: Ground Cover data from trend site 05S01W27the Hart Creek allotment (2002, 2008, and 2011)



This site displays a slight upward trend between 2002 and 2008 for most values, while the more recent years have been primarily static, with the exception of non-persistent litter and persistent

cover, which display an inverse relationship. Bare ground has decreased minimally and remains below the expected range of values (50 to 60 percent) for this Sandy Loam 8-12" ecological site. Shrub density data (see Standard 4) do not indicate a clear trend in condition and only match canopy ground cover trend by remaining static over the long term while short-term variations differ.

Grass frequency trend shows that deep-rooted perennial bunchgrasses have not been recorded since 1996, shallow-rooted bunchgrass dominates, and that cheatgrass has been on the increase in recent years. Overall interpretations of trend data suggest that ground cover conditions readings reflect small, non-significant changes, rather than significant progress or declines. The site appears static with an underlying component of variability, along with a static to downward trend for biotic conditions due to the absence of deep-rooted perennial bunchgrasses and an increase in invasive annuals.

2013 Site Visit (field report available in Project File)

A field visit in the spring of 2013 (see project file) was made near the rangeland health assessment site (05S01W03) in pasture 2. Conditions appear to have deteriorated, based on observations that found widespread impairment from trampling and hoof disturbance. Bare soils were churned and left the interspaces between shrubs void of vegetation; the spring has been very dry and little new vegetative growth, including cheatgrass, was present. When undisturbed, biotic soil crusts are usually abundant across this landscape and the calcareous soils; however, here they were primarily found underneath the protection of shrubs and trampled in the interspaces.

Pasture 3

Site Stability – Indicators of soil erosion were present in the form of water flow patterns of short distance and now mostly stabilized by gravels, and pedestaled plants with some terrecette formation. Both indicators rated a slight-to-moderate departure from expected conditions for these ecological sites. These processes are most pronounced and active on the Loamy site in the northeast (5S1W32SWNE) and the Shallow-Claypan site in the southeast (6S1W7NENW). It is likely that frost heave action on sites with clayey subsoils has accelerated pedestaling caused by erosional processes. These erosional features are most common in the interspatial areas where there is evidence of historic soil loss, correlated to the degree of plant pedestaling and definition of the flow paths. The amount of surface litter appeared to be adequate at all sites, providing additional soil protection and aiding in maintenance of site stability.

Hydrologic Function – Soil factors affecting hydrologic function rate in the slight-to-moderate range of departure for organic matter content and soil structure for all sites. However, at the Loamy site, physical soil crusts are associated with areas of surface ponding. The amount of litter on these sites is adequate, considering the large amount of rock fragments on the surface. The plant community indicator, as it relates to hydrologic function rated in the moderate degree of departure at the Loamy site and one Shallow Claypan site. Large bunchgrass species tend to be underrepresented at the Shallow-Claypan sites, while smaller grass species, such as Sandberg bluegrass are common in the interspaces. The shrub component is appropriate at most sites within this pasture, but was higher than expected on the loamy and the lower elevation clayey sites. Biotic soil crusts were adequately represented on most sites. The sites in the west central

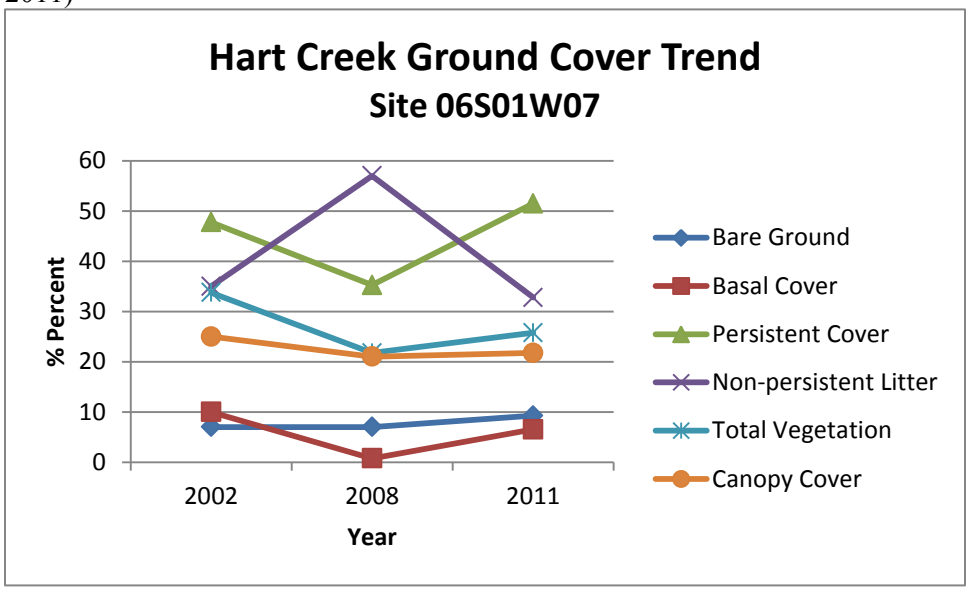
(6S2W10NWNW) and northwest (5S2W35NWSE) portions of this pasture were close to reference conditions for Shallow-Claypan sites in the area. Overall, the Shallow-Claypan plant community in this pasture consists of perennial decreaser plants, with smaller component of increaser species. The Loamy plant community is dominated by increaser and annual grass species with a relatively high amount of shrub cover and a weak biological soil crust component.

2013 Supplement to the Hart Creek, Box T, and Alder Creek Allotments Rangeland Health Standards and Guidelines Assessment

Ground Cover Trend

Ground cover trend data were collected in pasture 3 at the nested plot frequency transect (06S01W07) in 2002, 2008, and 2011 (Figure Soil-3). Bare ground and canopy cover remained relatively static over the long and short term, while total vegetation, basal cover, and persistent cover all declined between 2002 and 2008 and then increased again in 2011, with only the latter showing a significant (Student's T-test; p-value <0.1) short-term and non-significant long-term increase. Non-persistent litter remained static over the long-term while significantly decreasing after peaking in 2008.

Figure Soil-3: Ground Cover data from trend site 06S01W07Hart Creek allotment (2002, 2008, and 2011)



Ground cover data reflect a slightly upward trend between 2008 and 2011, after most values showed a general decline from 2002 to 2008. An inverse relationship between persistent cover and non-persistent litter is apparent but cannot be interpreted. Bare ground is slightly increasing but remains below the expected range of 40 to 50 percent for this Shallow Claypan 12-16" ecological site. Shrub density (see Standard 4) does not indicate a clear trend, while frequency shows a decline in low sagebrush.

Like the trend sites in the other pastures, no deep-rooted perennial bunchgrass plants have been recorded since 1996 at this site. Grass frequency data (See Standard 4) show that shallow-rooted Sandberg bluegrass and cheatgrass dominate. Overall interpretations of trend data suggest that

ground cover conditions readings reflect a static to small non-significant upward trend, since the majority of values have maintained over the long term despite decreasing biotic conditions due to the absence of deep-rooted perennial bunchgrasses and an increase in invasive annuals.

2013 Site Visit (field report available in Project File)

The pasture was visited in the spring of 2013 with stops made at trend site 06S01W07 and RHFA site 080502-2A. Observations support the above ground cover trend, as the site displayed stable conditions due to abundant surface gravels and cobbles that reduce erosion potential. Pedestaling is common though appears to be primarily historic since biological soil crusts are present, with several occupying the sides of pedestals, indicating inactivity.

The past RHFA data shows increased invasive annuals, such as cheatgrass and juniper. Although juniper is scattered beyond the site, they do not appear to be a problem here. Cheatgrass is present along with the dominating Sandberg bluegrass and occasional bulbous bluegrass. The cheatgrass patches increase uphill, especially along the drier south-facing slopes.

Cattle disturbance was found in the drainage of Buckaroo Creek (see Standard 2). Away from these conglomeration points, the disturbance decreases, although a mix of active and inactive pedestals and water flow paths are still common. Some patches contain soil crusts, mostly mosses, which reduce erosion and stabilize, while a few feet over, flow patterns may prevail. Shrubs present are mostly low and mountain sagebrush, some rabbitbrush, and scattered juniper, especially in the moister draws. Grasses species are mostly Sandberg bluegrass, some bulbous bluegrass, and cheatgrass.

Standard 2: Riparian Areas and Wetlands

The following is excerpted from the Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management, and pertains to assessment of rangeland health as it relates to riparian and wetland areas:

> 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.
>
> Indicators may include, but are not limited to, the following:
>
> 1. The riparian/wetland vegetation is controlling erosion, stabilizing streambanks, shading water areas to reduce water temperatures, stabilizing shorelines, filtering sediment, aiding in floodplain development, dissipating energy, delaying flood water, and increasing recharge of groundwater appropriate to site potential.
>
> 2. Riparian/wetland vegetation with deep strong binding roots is sufficient to stabilize streambanks and shorelines. Invader and shallow rooted species are a minor component of the floodplain.
>
> 3. Age class and structural diversity of riparian/wetland vegetation is appropriate for the site.
>
> 4. Noxious weeds are not increasing.

Stream Inventories/Assessments

Stream-associated riparian inventories were conducted by Riparian Resources in 2000 and 2001. The BLM conducted riparian proper functioning condition assessments in 2004 and 2005. Inventories included descriptions of vegetative community composition and cover, stream channel conditions and riparian proper functioning condition assessments. Appendix D-1 summarizes the BLM riparian proper functioning condition (PFC) checklist elements specific to Standard 2. The standard checklist has 17 indicators; of these, numbers 6-12 and 14 describe features associated with riparian vegetation (Appendix B, Methods, describes the PFC ratings). Map 2 shows the locations of stream segments. The BLM reviewed the following internal data: Rapid Riparian Habitat Evaluation (Browns Creek (T5S R2W S35 NWNE) 6/10/96, Hart Creek 008.5 4/26/96), Riparian Aquatic Data Sheets (Browns Ck 3520 9/7/96, Browns Ck 3860 8/31/96, Browns Ck 4160 8/31/96), Stream Survey Form Browns Ck (T5S R1W S30) 3/22/78, Hart Ck (T5S R2W S23) 3/27/78).

BLM also reviewed the State of Idaho's Beneficial Use Reconnaissance Protocol database (IDEQ 2004b) for Bates, Pickett, Browns, and Hart Creeks. IDEQ uses these data, along with other information, to determine beneficial use support status.

PFC assessments were conducted along 16.0 of 16.0 known stream miles with the potential to support riparian vegetation. The overall ratings are summarized in Table A.2.1.

Table A.2.1. Riparian PFC in Hart Creek allotment.

Condition Rating	Miles	Percent
Proper Functioning Condition	5.9	37
Functional-At Risk (Upward)	7.5	47
Functional-At Risk (Static)	2.6	16

Pasture 1

Hart Creek flows through the middle portion of Pasture 1. The lower alluvial reach is dewatered by a diversion near the upper end of the reach. Dominant community types are black cottonwood/oak leaf sumac and black cottonwood/willow. The understory is dominated by cheatgrass. The middle reach of Hart Creek occurs within a steep-walled bedrock canyon that is well armored with riparian shrubs and large diameter rocks. The upper reaches are dominated by black cottonwood/willow and willow/rose community types. Pickett Creek is characterized by a black cottonwood/oak leaf sumac community type with some willow. Cheatgrass is prevalent in the understory. Bates Creek and Little Hart Creek are both large ephemeral streams that also flow through the allotment. Bates Creek contains perennial riparian vegetation along its upper reaches in the adjacent allotment but perennial surface and shallow subsurface flow dissipate before the stream drainage enters this pasture. The upper 0.5 miles of Little Hart Creek is well-armored with rock, and has an overstory comprised of arroyo willow, oak leaf sumac, and clematis.

Riparian graminoids appear to be underrepresented along Pickett and Hart Creeks. The dominant graminoids species are either early seral species such as spike rushes and species

indicative of past high grazing use such as sword leaf rush. Scotch thistle was noted along Hart Creek segment 001, and whitetop was noted along Hart Creek segments 002 and 003.

Table A.2.2 summarizes key findings from the stream inventory related to riparian vegetation and stream bank stability on Hart Creek.

Table A.2.2. Hart Creek riparian community types and stream bank stability.

Stream Segment ID (length, miles)	Riparian Community Type	Deep Binding Root Mass (% of banks)	Bed Material	Bank Material	Stream banks covered/stable and uncovered/ stable (%)	Active Bank Erosion (%)
HAR001 (0.5 mi)	Cottonwood/ oak leaf sumac Cottonwood/ willow	< 35	Gravel to small cobble	Silt to gravel	40	50
HAR002 (1.7 mi)	Cottonwood/ willow	35-65	Sand to small cobble	Silt to small cobble	70	10
HAR003 (0.3 mi)	Cottonwood/ willow Oak leaf sumac	65-85	Sand to cobble	Silt to gravel	70	< 5
HAR004 (0.8 mi)	Willow/rose	65-85	Sand to cobble	Silt to cobble	90	< 5
Little Hart Ck LHT001 (0.4 mi)	Oak leaf sumac/Willow	---	Sand to small boulder	Sand to small boulder	---	---
Pickett Creek PIC001 (1.0 mi)	Cottonwood/oak leaf sumac Cottonwood/ willow	35-65	Sand to cobble	Silt to cobble	70	10
--- = No available data						

Pasture 2

Browns Creek is located along the eastern boundary of Pasture 2 and is mostly contained within a steep-walled bedrock canyon; it is well armored with riparian vegetation and large diameter rocks. Most reaches contain representative riparian shrub communities. Riparian graminoids appear to be under-represented along most reaches with the dominant species being either early seral species such as spike rushes or species indicative of past high grazing use, such as sword leaf rush. The dominant understory species along segments 002 and 003 is cheatgrass. Canada thistle was noted along Browns Creek segment 004.

Table A.2.3 summarizes key findings from the stream inventory related to riparian vegetation and streambank stability on Browns Creek.

Table A.2.3. Browns Creek community types and bank stability

Stream Segment (length miles)	Riparian Community type	Deep Binding Root Mass (% of banks)	Bed Material	Bank Material	Stream banks covered-stable and uncovered - stable (%)	Active Bank Erosion (%)
BRO002 (0.6 mi)	Willow/bench	35-65	Sand to cobble	Silt to cobble	70	< 5

Stream Segment (length miles)	Riparian Community type	Deep Binding Root Mass (% of banks)	Bed Material	Bank Material	Stream banks covered-stable and uncovered - stable (%)	Active Bank Erosion (%)
BRO003 (0.7 mi)	Willow/bench	35-65	Gravel to cobble	Silt to gravel	70	< 5
BRO004 (1.0 mi)	Willow/rose	65-85	Sand to cobble	Silt to cobble	100	< 1
BRO005 (0.2 mi)	Willow/bench	65-85	Sand to cobble	Silt to gravel	60	< 5

Pasture 3

Several small headwater streams originate in Pasture 3. Little Browns Creek, Cat Creek and Buckaroo Creek are all intermittent tributaries to Browns Creek. Whiplash willow/woods rose is the dominant community type along Little Browns Creek and upper Browns Creek however, only about 50-70% of the banks are stabilized by vegetation or rock. The understory along Little Browns Creek is dominated by Kentucky bluegrass while cheatgrass predominates along the lower reaches of Browns Creek (segment 007). Browns Creek segment 007 is an ephemeral reach with an overstory of cottonwood and understory of oak leaf sumac, arroyo willow or coyote willow. Reproduction of cottonwood and willows is very good.

Riparian communities along an unnamed tributary to Little Browns Creek are dominated by the quaking aspen/willow community. Most reaches maintain representative riparian shrub communities. Riparian graminoids appear to be underrepresented along most reaches. Dominant species are either seral species such as spike rushes, and species indicative of past high grazing use such as sword leaf rush. Kentucky bluegrass is the dominant understory species along Buckaroo Creek segments 003 and 004 and along Cat Creek. Canada thistle was noted along Buckaroo Creek segment 004.

Table A.2.4 summarizes key findings from the stream inventory related to riparian vegetation and streambank stability.

<u>Spring Inventories/Assessments</u>

Riparian proper functioning condition assessments were conducted on seep/spring associated riparian areas by BLM in 2003, 2004 and 2005 (Table A.2.5). Appendix D-3 summarizes the BLM riparian proper functioning condition (PFC) checklist elements for lentic systems. The standard checklist has 20 indicators that describe hydrologic, vegetative and erosion/deposition features associated with riparian-wetland areas (Appendix B, Methods, describes the PFC ratings). Map 2 shows known spring locations.

Table A.2.4. Community types and bank stability.

Stream Segment (length, miles)	Riparian Community type	Deep Binding Root Mass (% of banks)	Bed Material	Bank Material	Streambanks Covered Stable and Uncovered Stable (%)[2]	Active Bank Erosion (%)

Stream Segment (length, miles)	Riparian Community type	Deep Binding Root Mass (% of banks)	Bed Material	Bank Material	Streambanks Covered Stable and Uncovered Stable (%)[2]	Active Bank Erosion (%)
Brown Creek						
BRO007 (0.9 mi)	Cottonwood/Willow Willow/Bench	35-65	Gravel to cobble	Silt to gravel	60	< 5
BRO011 (1.0 mi)	Willow/rose	65-85	Sand to cobble	Silt to gravel	70	10
BRT001 (0.2 mi)	Willow/bench	35-64	Sand to cobble	Silt to cobble	60	20
Little Browns Creek						
LBR001 (1.1 mi)	Willow/rose	35-65	Sand to cobble	Silt to gravel	60	20
Trib LBT001 (0.8 mi)	Cottonwood/ willow	35-65	Silt to gravel	Silt to gravel	50	30
Cat Creek						
CAT001 (0.4 mi)	Willow/bench Cottonwood/ willow	35-65	Sand to cobble	Silt to cobble	70	10
CAT002 (0.8 mi)	Willow/bench Willow	65-85	Gravel to cobble	Silt to gravel	60	20
Buckaroo Creek						
BUC003 (1.2 mi)	Willow/bench	65-85	Gravel to cobble	Silt to cobble	70	10
BUC004 (0.9 mi)	Willow/bench Willow	35-65	Silt to cobble	Silt to gravel	50	10
Trib BUT001 (0.2 mi)	Riparian inventory not conducted in 2005, PFC data only					
Trib BUT002 (0.2 mi)	Riparian inventory not conducted in 2005, PFC data only					
Trib BUT003 (1.2 mi)	Riparian inventory not conducted in 2005, PFC data only					

[1]Covered and Stable banks are defined as having over 50 percent of the streambank surfaces covered by vegetation in vigorous condition, or the banks are OVER 50 percent covered by materials (large cobble, boulders or anchored rock) that prevent bank erosion. Streambanks are stable; that is, they do not show indications of alteration such as breakdown, erosion, tension cracking, shearing or slumping.
[2]Uncovered and Stable banks are defined as having less than 50 percent of the streambank surfaces covered by vegetation in vigorous condition, or the banks are LESS THAN 50 percent covered by materials that do not allow bank erosion. Streambanks do not show indications of alteration such as breakdown, erosion, tension cracking, shearing or slumping.

Pastures 1 and 2

Pastures 1 and 2 do not contain any known spring-associated riparian/wetland areas.

Pasture 3

Seven known lentic riparian-wetland areas occur in Pasture 3. Three of these have been developed with troughs.

Henderson Spring contains a trough that is overgrown with willows, but is still holding water. The source is not fenced. Willows are abundant, with good regeneration, although riparian forbs are underrepresented and the site contains a substantial amount of bare ground.

The source water area of Alibi Spring is fenced. However the water is diverted to a trough and the former riparian area has been dewatered.

Cat Spring heads in a draw bottom about 75 ft upstream of the Cat Spring Exclosure. The channel has downcut several feet through a former wet meadow and appears stable at its current elevation. The upper banks and channel margins are dominated by willows, rose and other shrubs. The majority of the spring area is fenced and noxious/invasive species occur within the exclosure.

Table A.2.5. Springs in Hart Creek allotment, Pasture 3.

Name	Location	PFC Rating	Comment
Cat Spring 1	T06S R02W S01 NESW	FAR-Downward	Above Exclosure
Cat Creek Exclosure	T06S R02W S01 NESW	FAR-Static	Exclosure with trough; trough dry
Cat Spring 2	T06S R02W S01 NESW	FAR-Upward	Cat Creek source
Alibi Spring	T06S R02W S01 SESE	FAR-Downward	Trough
5323HSB (Henderson Springs)	T06S R02W S14 NENW	FAR-Downward	Old trough, mostly grown over.
Henderson Springs 2	T06S R02W S11 SESW	Not Rated	
Buckaroo Spring	T06S R02W S07 SESW	PFC	Buckaroo Spring

FAR=Functional-at Risk

Riparian Utilization Monitoring Results

Table A.2.6 summarizes data from herbaceous riparian vegetation stubble height monitoring. Stubble height measurements are a simple and effective tool to monitor rangeland use in key areas. Individual plant measurements are collected from herbaceous vegetation such as grasses, sedges, and rushes. Generally stubble heights of 4 to 6 inches are an acceptable standard for effective streambank protection, prevention of sedimentation, and maintenance of plant communities (USDI, BLM 1999).

Table A.2.6: Riparian vegetation utilization in Hart Creek allotment.

Pasture	Stream Segment	Date	Stubble Height (“)	Shrub Use (%)	Bank Alteration	Comment
5321	Hart Creek HAR001	7/25/00	NM	slight	NM	Little riparian vegetation; dry; Photo shows rock and bedrock substrate
	HAR001	6/30/99	NM	NM	NM	Recent washout, no vegetation along the greenline

Pasture	Stream Segment	Date	Stubble Height (")	Shrub Use (%)	Bank Alteration	Comment
	HAR002	6/30/99	NM	0	NM	Thick willows and cottonwoods, not much grass in the understory
	HAR003	4/26/96	4-6"	none	NM	Very few graminoids; no apparent use of willow; Photos show site is willow dominated
5323	Buckaroo Creek BUC004	7/25/00	NA	NA	NM	No riparian vegetation; Photos show ephemeral channel
	Cat Creek CAT002	7/25/00	NM	none-slight	none	Graminoids poor; Photo shows herbaceous height generally 2-4"
	Browns Creek BRO011	6/10/96	9.5"	NM	NM	No apparent livestock use; riparian trend appears to be up

NM = Not Measured

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The table below represents a comprehensive summary of the information for the allotment currently in the BLM riparian database relative to Standard 2 (also see Map RNGE-1A).

Table RIPN-1: Riparian information for the Hart Creek allotment

	Allotment, Pasture Name, and Miles assessed			**Assessment Issues/ Impacts Identified**	**Total Miles *Assessed***
Stream Name	**Hart Creek- 01**	**Hart Creek- 02**	**Hart Creek- 03**		
Hart Creek	0.8 (PFC- 2001)				3.3
	0.5 (FARS- 2001/2008)			overwide, braided & straightened channel/ presence of weeds	
	2.0 (FARU- 2001/ 2008)			channel meanders/ bank instability & erosion	
Pickett Creek	1.0 FARS- 2001)			lack of plant composition/ areas of overwide channels/ areas of inadequate vigorous veg with stabilizing roots	1.0
Browns Creek		1.7 (PFC- 2000/2008)			3.6
			0.9 (FARS- 2000)	water emerges and submerges/ areas of under developed floodplain & overwide channels/ inadequate soil moisture to support veg with stabilizing plants that protect banks/ lateral instability	
			1.0 (FARU- 2001)	access points have overwide channels and unstable banks	
Buckaroo Creek			2.2 (FARS- 2000)	inadequate soil moisture & plant composition to protect	2.2

				stream banks/ overwide channel	
Buckaroo Creek Trib			0.4 (FARS-2000) 0.5 (FARU-2000)	inadequate floodplain access & soil moisture/ lack of plants with stabilizing roots/ high erosion & deposition/ overwide channel	0.9
Cat Creek (Brown's Creek Trib)			1.2 (FARS-2000)	water gap present/ lack of soil moisture, plant composition, veg vigor, and deep-rooted plants to stabilize stream banks	1.2
Little Brown's Creek			1.1 (FARU-2001)	areas where foodplain is not inundated/ areas of inadequate soil moisture, plant composition, plant vigor, and veg to stabilize banks	1.1
Little Brown's Creek Trib			0.8 (FARS-2001)	extensive use by livestock/ streambanks eroded/ inadequate veg and vigor to stabilize banks	0.8

Springs Assessed, Condition, & Issues Identified

Spring Name	Pasture	Assessment Year	PFC Condition	Assessment Issues/ Impacts Identified
Cat Spring	3	2003/2008	FAR/FAR	development repair/maintenance required/ upland veg encroaching on remaining rip area inside exclosure
Alibi Spring	3	2003/2008	FAR/NF	non-functioning troughs/ inadequate soil moisture to support rip. Veg.
Unnamed Spring "5233HSB"	3	2003	NF	shrinking rip area/ altered flow patterns/ inadequate plant composition and vigor/ excessive sediment
Buckaroo Spring	3	2005/2008	PFC/NA	
Unnamed Spring	3	2012	NF	greater than 50% bare soil/ excessive erosion

Standard 3: Stream Channel/Floodplain

The following is excerpted from Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management, and pertains to the assessment of rangeland health standards and guidelines related to stream channels and floodplains:

> 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.
>
> Indicators may include, but are not limited to, the following:
>
> 1. Stream channels and floodplains dissipate energy of high water flows and transport sediment. Soils support appropriate riparian-wetland species, allowing water movement, sediment filtration, and water storage. Stream channels are not entrenching.

2. Stream width/depth ratio, gradient, sinuosity, and pool, riffle and run frequency are appropriate for the valley bottom type, geology, hydrology, and soils.

3. Streams have access to their floodplains and sediment deposition is evident.

4. There is little evidence of excessive soil compaction on the floodplain due to human activities.

5. Streambanks are within an appropriate range of stability according to site potential.

6. Noxious weeds are not increasing.

Stream Inventories/Assessments
Stream-associated riparian inventories were conducted by Riparian Resources in 2000 and 2001. BLM conducted riparian proper functioning condition (PFC) assessments in 2004 and 2005. Inventories included descriptions of vegetative community composition and cover, stream channel conditions and riparian PFC assessments. Appendix D-2 summarizes the BLM riparian PFC checklist elements specific to Standard 3. Items1-5, 12, and 14-17 of the standard 17-item PFC checklist describe features associated with soil erosion-deposition, channel form, and hydrology. (Appendix B-2, Methods, describes the PFC ratings). Map 2 shows the location of stream segments. BLM reviewed the following internal data: Rapid Riparian Habitat Evaluation (Browns Creek (T5S R2W S35 NWNE) 6/10/96, Hart Creek 008.5 4/26/96), Riparian Aquatic Data Sheets (Browns Ck 3520 9/7/96, Browns Ck 3860 8/31/96, Browns Ck 4160 8/31/96), Stream Survey Form Browns Ck (T5S R1W S30) 3/22/78, Hart Ck (T5S R2W S23) 3/27/78).

BLM also reviewed the State of Idaho's Beneficial Use Reconnaissance Protocol database (IDEQ 2004b) for Bates, Pickett, Browns, and Hart Creeks. IDEQ uses these data, along with other information, to determine beneficial use support status.

High intensity rainstorms occurred across much of the pasture in 2002 and 2003. Runoff from these events caused extensive scour of some steeper ephemeral reaches and corresponding deposition along the lower gradient stream segments, including Hart Creek. Many of the drainages in this allotment show signs (scour and/or deposition) of high runoff flows dating from 1 or 2 years ago to possibly 40-50 years ago. Some of the more deeply scoured areas may have occurred during the region-wide flooding in December 1964 and January 1965.

Pasture 1
The lower reach of Hart Creek is diverted. Because flow is diverted during the summer months, the abundance of riparian bank stabilizing species is limited and hence bank stability is affected. The upper reaches of Hart Creek are topographically and geologically controlled and stream bank stability is maintained by a combination of woody riparian species and larger diameter substrate. Pickett Creek is also topographically and geologically controlled, except for the lower reach, which opens into an alluvial valley. An old diversion occurs in the alluvial portion, but does not appear to be affecting flow or channel conditions. The lower part of this reach is a deposition zone where bedload drops out as flow dissipates across an unconfined floodplain.

Pasture 2
Browns Creek is contained mainly within a steep-walled bedrock canyon and is well-armored with riparian vegetation and large diameter rocks. Even where the channel is not topographically confined, the channel is well armored with rock, bedrock or riparian shrubs.

Pasture 3
Browns Creek segment 007 is an ephemeral reach that shows evidence of recent and past high runoff events. Portions of the channel are under bedrock control, while other portions have become incised into alluvial fill material. The channel is stable at its current elevation. The upper reach of Browns Creek (011) is a moderate gradient channel that has been impacted by an old road that traverses along and across portions of the channel. The road now provides the primary access for livestock. Little Browns Creek and an unnamed headwater tributary are steep, confined streams, with flow processes controlled mostly by gradient. A small intermittent tributary to Browns Creek (BRT001) which parallels Cat Creek appears to have a 'flashy' flow regime with arroyo willow providing the dominant stabilizing mechanism. The headwaters of Cat Creek occur near the Toy Pass divide. However, the riparian portion begins at a spring about 3 miles downstream, just upstream of the Cat Creek Exclosure. The channel is incised within a narrow valley bottom and contains large parallel rubble piles, evidence that the channel was further entrenched during a high but not so recent, runoff event (possibly during the 1964-65 floods). The channel is stable at its current elevation and appears well-armored with rock and woody riparian species. Buckaroo Creek also heads near Toy Pass but with the exception of riparian vegetation at Henderson Springs, does not support riparian vegetation until about 2 miles downstream. Buckaroo Creek has an intermittent flow regime, and contains evidence of high scouring flows. The streambed is stable at its current elevation. However, streambank stability is lower than expected for parts of Buckaroo Creek. Buckaroo tributaries BUT001 and 002 contain short reaches dominated with hydric vegetation, which are dissipating energies associated with high flows. A third tributary to Buckaroo Creek (BUT003) also has a stable bed elevation and channel form.

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See Table RIPN-1 above under Standard 2 for a comprehensive table of BLM riparian information associated with Standards 2 and 3 (also see Map RNGE-1A).

Standard 4: Native Plant Communities

The following is excerpted from Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management, and pertains to assessment of rangeland health for the native plant communities standard:

> 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.
>
> Indicators may include, but are not limited to, the following:

1. Native plant communities (flora and microbiotic crusts) are maintained or improved to ensure the proper functioning of ecological processes and continued productivity and diversity of native plant species.

2. The diversity of native plant species is maintained.

3. Plant vigor (total plant production, seed and seedstalk production, cover, etc.) is adequate to enable reproduction and recruitment of plants when favorable climatic events occur.

4. Noxious weeds are not increasing.

5. Adequate litter and standing dead plant material are present for site protection and for decomposition to replenish soil nutrients relative to site potential.

Rangeland Health Evaluations on the Hart Creek allotment were conducted in June of 2002. Appendix C contains ratings for individual indicators by site. Table A.4.1 summarizes ratings of Rangeland Health Indicators related to the Native Plant Communities standard from Rangeland Health Evaluation Worksheets in each pasture. Conditions at each site were compared to appropriate nearby reference areas, or to ecological site guides when reference areas are not available.

Table A.4.1: Rangeland Health Assessment Worksheet Summary

Standard 4-Native Plant Communities	Degree of Departure				
	None-to-slight	Slight-to-moderate	Moderate	Moderate-to-extreme	Extreme
Pasture 1[1]	9	10	4	4	0
Pasture 2[2]	11	15	4	6	0
Pasture 3[3]	25	11	5	4	0

[1] 3 sites assessed: 1 Loamy 7-10", 1 Sandy Loam 8-12" and 1 Calcareous loam 7-10" ecological sites

[2] 4 sites assessed: 2 Calcareous Loam 7-10", 1 Loamy 7-10" and 1-Loamy Bottom 8-14" ecological sites

[3] 5 sites assessed: 1 Loamy 7-10", 1 Shallow Claypan 11-13", 2 Shallow Claypan 12-16", and 1 Mt. Ridge 14-18" ecological sites.

Nested plot frequency transect studies are established in each pasture. Chi-square statistical analysis was performed on frequency data (Appendix B), and the significance level for testing the data was set at P=0.05. The P-value reports the likelihood that the observed difference between two measurements was due to chance alone. A P-value of 0.05 (5%) indicates that there is a 5% chance of obtaining the observed result even when is no actual change in species frequency. Conversely, when P=0.05 there is a 95% probability that the difference between the two frequency measures represents a true change in plant species frequency (USDI, BLM 1998-1). The P-value is a measurement of statistical probability and does not necessarily reflect biological significance. Nested plot frequency data are presented in Appendix E.

Pasture 1

Rangeland Health Evaluation

The assessment at T 04S R 01W Sec 27 was conducted in the sandy loam ecological site. The level of cheatgrass infestation resulted in the indicator for invasive plants being placed in the moderate-to-extreme range of departure for this ecological site. The indicator for functional/structural groups rated in the moderate range of departure based on a low occurrence of large perennial bunchgrasses. Squirreltail, a short-lived perennial grass, was present mostly under the protective canopy cover of shrubs. Indian ricegrass and needle-and-thread grass were both noted throughout the area. The few forbs present were persistent species such as phlox and fiddleneck. Biotic soil crusts were present, but also occurred primarily under the protective cover of shrub canopies.

At T 04S R 01W Sec 33, a calcareous loam site near a nested plot frequency transect, the indicator for functional/structural groups rated in the moderate-to-extreme range due to a low occurrence of perennial bunchgrasses. Remnant squirreltail plants tend to occur under the protective cover of shrub canopy. Biologic soil crusts occur both under shrubs and in plant interspaces. The presence of which, aids in soil retention and increases the organic content of the soil. The amount of litter at this site is less than expected, which is primarily due to the relative absence of perennial bunchgrasses and drought.

At a Loamy 7-10" ecological site, indicators for functional/structural groups and plant mortality/decadence were rated in the moderate-to-extreme range of departure. Occurrence of large perennial bunchgrasses is lower than expected at this ecological site. The dominant understory species is Sandberg bluegrass, with a few squirreltail plants persisting under the shrub canopies. Sandberg bluegrass plants are commonly pedestaled and many exhibit evidence of decadence and mortality. The indicator for soil surface loss or degradation was in the moderate range. Biological soil crusts are weakly present and only persist under plant canopies.

Nested Plot Frequency

The nested plot frequency transect located at T 04S R 01W Sec 33 was established in 1987 and was re-read in 1996 and 2002. Frequency monitoring data for each year are summarized in table A.4.2. Sandberg bluegrass frequency was 1% in 1987 and 1996, and increased substantially to 9% in 2002 (P=0.005). Bud sagebrush frequency was 85% in 1987 and 87% in 1996 then decreased substantially to 70% in 2002 (P-value 0.005). Most forbs were not recorded in 1987 or 1996, according to protocol at the time.

Table A.4.2. Hart Creek Pasture 1 frequency.

	1987	1996	2002	P-Value
Squirreltail	51%	41%	47%	0.380
Sandberg bluegrass	1%	1%	9%	0.005*
Gray horsebrush	1%	1%	0%	0.560*
Big sagebrush	--	1%	6%	0.540
Shadscale	41%	49%	51%	0.498
Bud sagebrush	85%	87%	70%	0.005
Phlox**	29%	61%	65%	n/a**
Globe mallow	--	--	4%	--
Fleabane	--	--	4%	--

Biscuit Root	--	--	1%	--
Bur Buttercup	--	--	1%	--

-- = Not measured/no data available.
*significance of changes cannot be reliably detected when frequency measurements are less than 4%.
** Due to high year-to-year variability of forb species, variation in frequency measurements between years is not interpreted as directional trend, and significance level is not calculated.

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Data were collected at the pasture 1 nested plot frequency transect (T 04S, R 01W, Sec 33) in 2011. No deep-rooted perennial bunchgrass plants were recorded in the plots in 1996, 2002, 2008, or 2011. Frequency data for grass species indicate a downward trend in condition short term (data from the last two dates) and long term (all data), with an increase in cheatgrass frequency and Sandberg bluegrass frequency within the plots. At the same time, squirreltail frequency (a mid-statured increaser species) has continued to decline with successive dates when frequency data were recorded, with an insignificant increase between 2008 and 2011. Change in frequency recorded was statistically significant (Student's T-test; p-value <0.1) in the short and long-term for squirreltail, the long term for Sandberg bluegrass, and the short term for cheatgrass. In total, these data identify a short and long term downward trend at this transect site. While the recorded density of big sagebrush did not change between 2002 and 2011, data indicate the density of shadscale increased from 1996 to 2002 and also through 2011. Bud sagebrush density was less consistent with an increase recorded between 1996 and 2002 and a decrease between 2002 and 2001.

Figure VEG-1: Frequency of grass species at the trend transect (T. 04S., R. 01W., Sec 33) in pasture 1 of the Hart Creek allotment

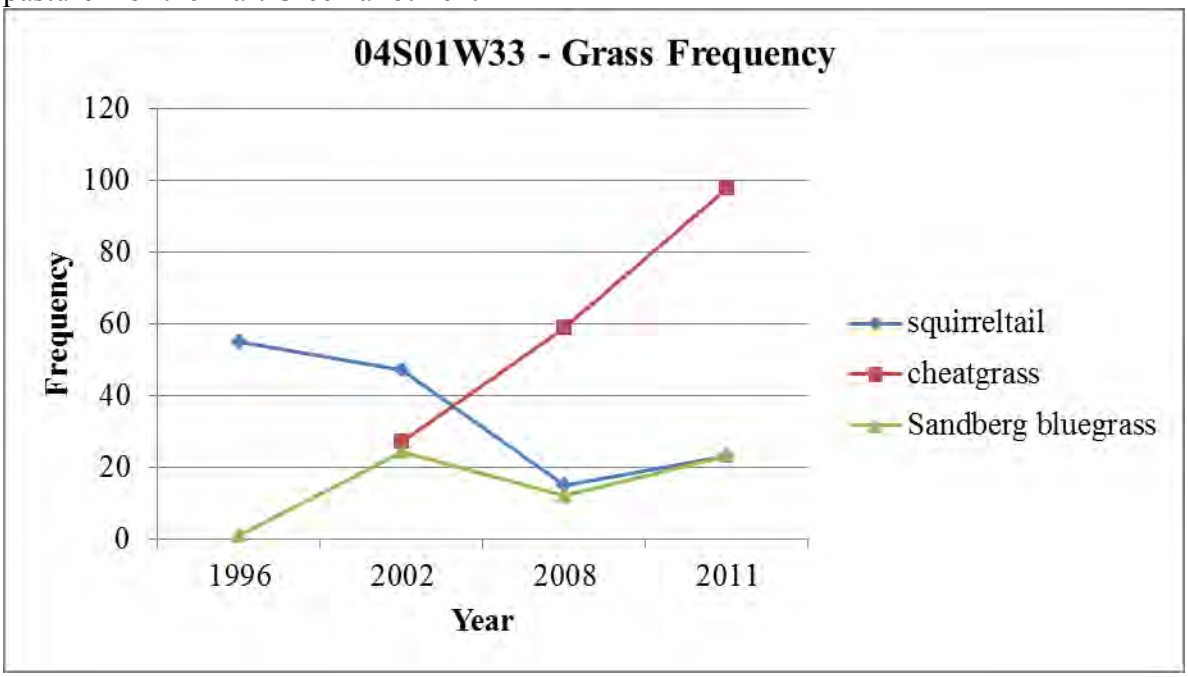
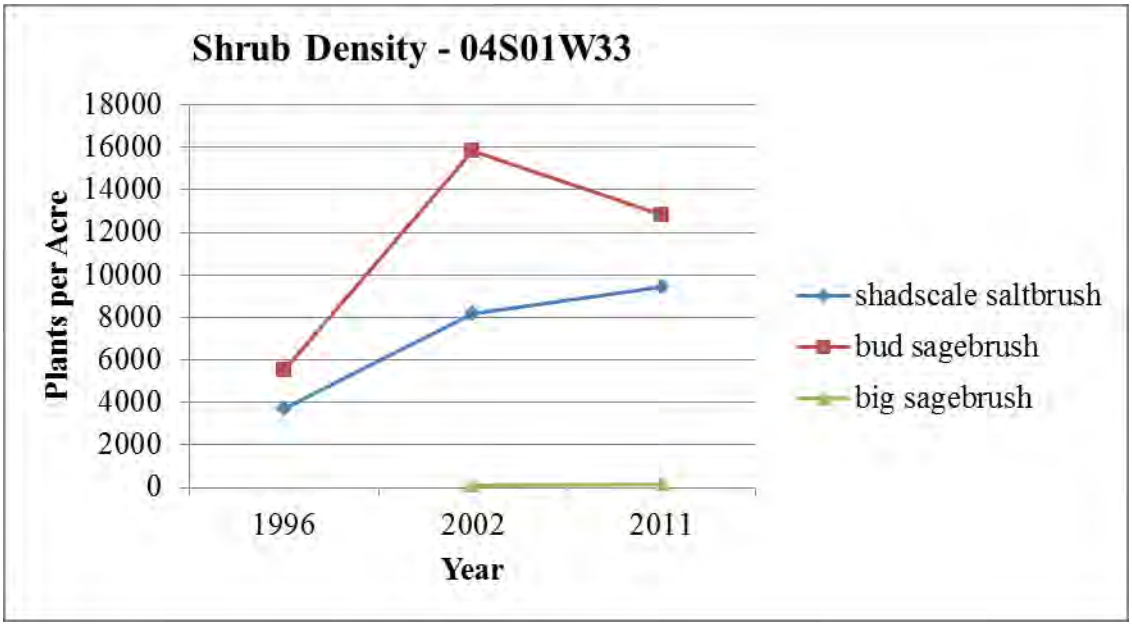


Figure VEG-2: Density of shrubs at the trend transect (T. 04S., R. 01W., Sec 33) in pasture 1 of the Hart Creek allotment



These data are consistent with 2012 sage-grouse habitat assessment data that identify vegetation communities in Wyoming big sagebrush sites that have no cover of mid to deep-rooted perennial bunchgrasses.

Table A.4.3. Hart Creek Pasture 1 Ground Cover

Year	Vegetation	Plant Litter	Microbiotic crusts	Rock / gravel	Bare ground
1987	4	20	3	38	36
1996	6	20	4	44	26
2002	4	27	5	29	35

Shrub densities were measured in 1996 and 2002. Density of bud sagebrush increased from an estimated 5,550 plants per acre in 1996 to 15,900 plants per acre in 2002. Shadscale density also increased from 3,700 plants per acre in 1996 to 8,150 plants per acre in 2002. Percent ground cover by type was collected at trend sites, and is compiled in Table A.4.3. Available utilization data are presented in table A.4.4.

Table A.4.4. Hart Creek Pasture 1 key perennial grass utilization.

Pasture 1	Bluebunch wheatgrass	Idaho fescue	Indian ricegrass	Thurber's needlegrass	Squirreltail
1993	30 %	30 %	---	---	35 %
1994	29 %	---	---	60 %	---
1995	---No Data---				
1996	3 %	---	---	---	10 %
1997	Rested				
1998	8 %	---	3 %	3 %	13 %
1999	Rested				
2000	---	---	---	30 %	26 %
2001	Rested				
2002	---No Data---				
2003	Rested				
-- = Not measured/no data available.					

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Utilization of bluebunch wheatgrass and Idaho fescue, key forage species, recorded in pasture 1 between 2004 and 2012 are provided in Table VEG-1.

Table VEG-1: Hart Creek pasture 1 key perennial grass utilization

Year	Bluebunch wheatgrass	Idaho fescue
2004		
2005		
2006		
2007	21%	40%
2008		
2009		
2010		
2011	10%	
2012	22%	

Neither Thurber's needlegrass nor bluebunch wheatgrass was detected in frequency monitoring, and bluebunch wheatgrass was not noted on rangeland health evaluation worksheets. However, utilization measurements were taken for bluebunch wheatgrass in 1993, 1994, 1996, and 1998. This conflicting data suggest that bluebunch wheatgrass plants may have been misidentified as Thurber's needlegrass during rangeland health evaluations, based upon similar vegetative characteristics of these two species.

Pasture 2

Rangeland Health Evaluation

Rangeland Health Evaluation Summary Worksheet from T 05S R 01W Sec13, the Loamy Bottom ecological site, rated three indicators in the moderate-to-extreme range of departure from expected conditions (Table A4-1): functional/structural groups, plant mortality and decadence, and invasive plant levels. Indian ricegrass was found in trace amounts, and squirreltail was

primarily found under the protective cover of shrub canopies. The understory component of the plant community at this site is dominated by cheatgrass. Microbiotic crusts are low at this site and occur primarily under the canopy cover of perennial species. Basin big sagebrush plants show signs of decadence and mortality.

The worksheet at T 05S R 01W Sec15, a Loamy ecological site, listed two indicators in the moderate-to-extreme range of departure from reference site conditions: functional/structural groups and invasive species. The larger decreaser bunchgrasses are primarily lacking from the plant community at this site and the understory is dominated by cheatgrass with some Sandberg bluegrass and squirreltail plants present. The density of shrubs in this plant community is roughly double what is expected for the area.

At T 05S R 01W Sec27, a calcareous loam ecological site, the indicator for functional structural groups was categorized as moderate-to-extreme, and the indicator for plant mortality and decadence was categorized as moderate. Although Indian ricegrass and needlegrass were expected to exist, none were observed. Sandberg bluegrass is the dominant grass species, and squirreltail occurs primarily under the protective canopy cover of the shrubs. Sandberg bluegrass exhibited low vigor, decadence, and mortality. Microbiotic crusts occur throughout the site, but are primarily found under shrub canopies.

At the calcareous loam site located at T 05S R 01W Sec03, indicators for plant mortality and decadence, litter amount, and invasive plants were the moderate range of departure from reference area conditions. The component of large perennial bunchgrasses is lower than expected for the site, while the shrub component was higher than expected. Cheatgrass occurs in scattered patches throughout the area. Uprooting was noted as the cause of perennial grass mortality. Microbiotic crusts are common under plant canopies, but rare in the interspaces.

Nested Plot Frequency
Appendix E contains graphs of nested plot frequency data. Chi-square statistical analysis was performed on frequency data (Appendix B).

A nested plot frequency transect and photo-plot was established at T 05S R 02W Sec27 in 1987, and was re-read in 1996 and 2002. Frequency monitoring results are presented in table A.4.5. Squirreltail increased significantly from 6% in 1987, to 33% in 1996, and to 41% in 2002 (P-value < 0.001). Bud sagebrush frequency increased significantly from 28% in 1987 to 53% in 1996, then decreased slightly to 42% in 2002 (P-value 0.003). Frequency for common forb species was only recorded in 2002.

Table A.4.5. Hart Creek Pasture 2 frequency monitoring data.

	1987	1996	2002	P-Value
Sandberg bluegrass	91%	94%	99%	0.910
Squirreltail	6%	33%	41%	<0.001
Shadscale	81%	78%	75%	0.604
Bud sagebrush	28%	53%	42%	0.003
Big sagebrush	--	4%	2%	--

Bur buttercup	--	--	18%	--
Phlox	--	--	11%	
Tumble mustard	--	--	5%	--
Globe mallow	--	--	1%	--
-- = Not measured/no data available.				

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Data were collected at the pasture 2 nested plot frequency transect (T 05S, R 01W, Sec 27) in 2011 (note that the 2006 evaluation incorrectly located the trend plot for pasture 2 in Range 2 West rather than the correct Range 1 West). No deep-rooted perennial bunchgrass plants were recorded in the plots in 1996, 2002, 2008, or 2011. Frequency data for grass species indicate a static to downward trend in condition long-term (all data) with an increase in cheatgrass frequency and Sandberg bluegrass frequency within the plots. At the same time, squirreltail frequency (a mid-statured increaser species) has fluctuated, with greater frequency in 2002 as compared to 1996, decreased frequency through 2008, and again greater frequency through 2011. No change in frequency recorded in the short-term (between 2008 and 2011) was statistically significant (Student's T-test; p-value <0.1). Shrub density data do not indicate a clear trend in condition.

Figure VEG-3: Frequency of grass species at the trend transect (T. 05S., R. 01W., Sec 27) in pasture 2 of the Hart Creek allotment

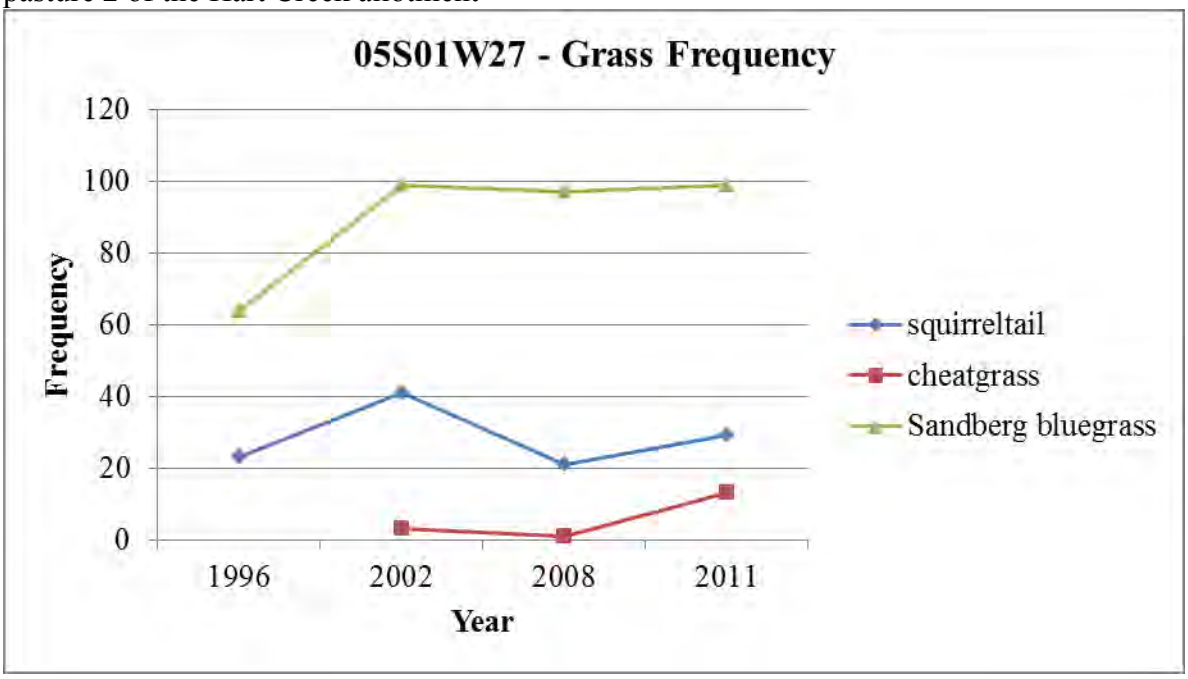
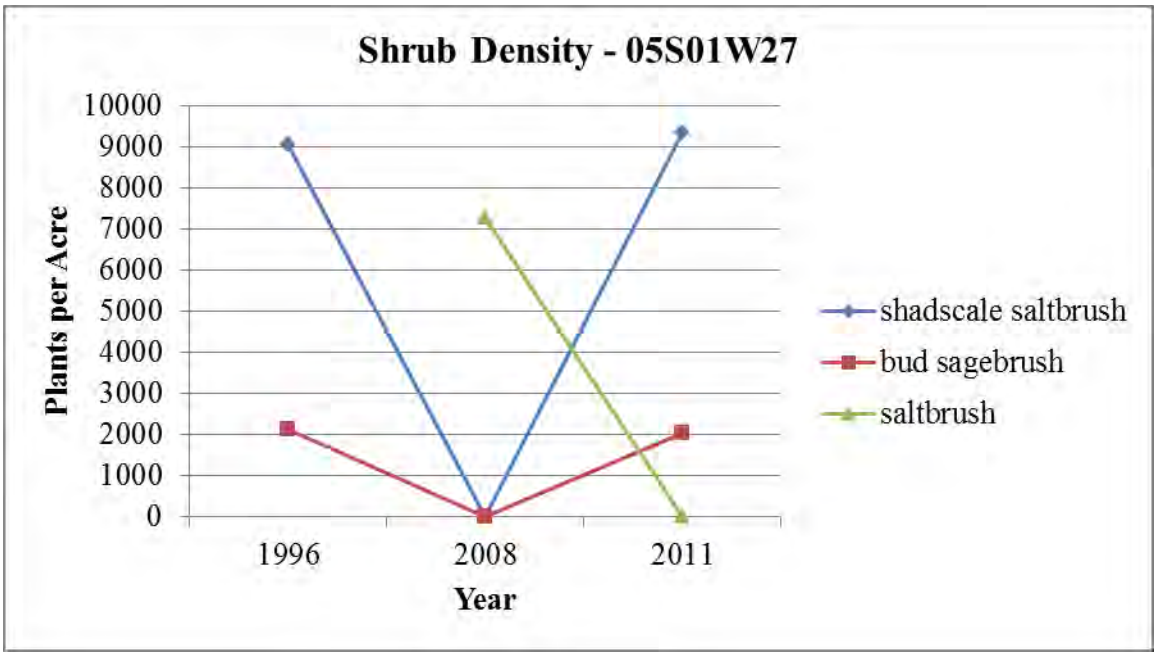


Figure VEG-4: Density of shrubs at the trend transect (T. 05S., R. 01W., Sec 27) in pasture 2 of the Hart Creek allotment



These data are consistent with 2012 sage-grouse habitat assessment data that record cover of mid- to deep-rooted perennial bunchgrasses depressed to 6 percent at two sample sites in low sagebrush communities.

Table A.4.6 presents available utilization data for perennial grasses as a percentage of estimated current year's growth.

Table A.4.6. Hart Creek Pasture 2 utilization

Pasture 2	Indian ricegrass	Squirreltail	Sandberg's bluegrass
1993	---	30 %	---
1997	18 %	24 %	---
1998	Rested		
1999	60 %	56 %	---
2000	Rested		
2001	---	9 %	15 %
2002	Rested		
--- = Not measured/no data available.			

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Utilization of bluebunch wheatgrass and Sandberg bluegrass, key forage species, recorded in pasture 2 between 2003 and 2012 are provided in Table VEG-2.

Table VEG-2: Hart Creek pasture 2 utilization

Year	Bluebunch wheatgrass	Sandberg bluegrass
2003		4
2004		
2005		
2006		
2007		25
2008		
2009	19	
2010		
2011	6	
2012		

Pasture 3

Rangeland Health Evaluation
At the Shallow-Claypan 12-16" ecological site, indicators for plant mortality and decadence, and invasive plants were determined to be in the moderate range of departure. Uprooting of Idaho fescue plants was noted as the main cause of plant mortality. Isolated cheatgrass populations exist along trails and roads, and Western juniper trees are scattered throughout the area, and are apparently expanding into the assessment site.

At T 06S R 02W Sec 07, a Shallow-Claypan 11-13" ecological site, the indicator for plant mortality and decadence was placed in the moderate range of departure, and indicators for invasive plants and functional/structural groups were in the moderate-to-extreme range of departure from expected conditions. Indicators of decadence and plant mortality were noted in the form of decadent shrubs and crown die-out of Sandberg bluegrass. Cheatgrass tended to be common, and western juniper were scattered throughout this area. The larger perennial bunchgrasses were primarily absent from the area and Sandberg bluegrass was the dominant grass species. Squirreltail and microbiotic crusts were found primarily under the protective cover of shrub canopies.

The worksheet completed at T 05S R 01W Sec 32, a Loamy 7-10" ecological site, rated the indicator for plant mortality and decadence in the moderate range, and indicators for functional/structural groups and invasive plants in the moderate-to-extreme range of departure. Indicators of decadence and plant mortality were noted in the form of shrub decadence due to mechanical, insect damage, drought, and plant mortality was evident in low vigor Sandberg bluegrass plants.

At T 06S R 02W Sec 10, a mountain ridge 14-18" site, all indicators for biotic integrity are in the none-to-slight range of departure for this ecological site. Bluebunch wheatgrass and Idaho fescue plants are vigorous and common, low sagebrush is adequately present for this site. Few western juniper trees are present and are in the juvenile age class.

At T 05S R 02W Sec 35, a Shallow-Claypan 12-16" site, eight of the nine indicators rated in the none-to-slight range. The indicator for invasive species rated in the moderate range of departure due to cheatgrass and western juniper trees. Bluebunch wheatgrass and Idaho fescue occur commonly throughout the area. The amount of low sagebrush present was adequate for the site.

Nested Plot Frequency

A nested plot frequency transect at T 06S R 01W Sec 06, was established in 1987, and was re-read in 1996 and 2002. Chi-square statistical analysis was performed on frequency data (See Appendix B), and the significance level was set at $P \leq 0.05$. Please refer to page 15 of this document for a discussion of significance levels.

During this monitoring period Sandberg bluegrass frequency decreased significantly from 40% in 1987, to 11% in 1996 and then increased to 41% in 2002 ($P < 0.001$). Complete frequency monitoring results are summarized in Table A.4.7. Appendix E contains graphs of nested plot frequency data.

Table A.4.7. Hart Creek Pasture 3 frequency monitoring data.

	1987	1996	2002	P-value
Sandberg bluegrass	40%	11%	41%	P<0.001
Squirreltail	--	4%	9%	P=0.152
Cheatgrass	--	--	91%	--
Low sagebrush	78%	64%	66%	P=0.152
Onion	--	--	58%	--
Pussy toes	--	--	44%	--
Phlox	--	--	36%	--
Lupine	--	--	29%	--
Milkvetch	--	--	13%	--
Bur buttercup	--	--	6%	--
-- = Not measured/no data available.				

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Data were collected at the pasture 3 nested plot frequency transect (T 06S, R 01W, Sec 6) in 2011. No deep-rooted perennial bunchgrass plants were recorded in the plots in 1996, 2002, 2008, or 2011. Frequency data for grass species indicate a static to downward trend in condition long-term (all data) with an increase in cheatgrass frequency and squirreltail frequency within the plots. At the same time, Sandberg bluegrass frequency has declined between 2002 and 2008 and remained static through 2011. The recorded increase in the frequency of squirreltail was statistically significant (Student's T-test; p-value <0.1) in the short-term (2008 to 2011), while other recent changes recorded were not.

These data are consistent with qualitative information from the rangeland health assessment completed near the trend plot. Other rangeland health assessment sites in pasture 3 have a greater presence of deep rooted perennial bunchgrasses. Shrub density data are only available for low sagebrush and do not indicate a clear trend in condition.

Figure VEG-5: Frequency of grass species at the trend transect (T. 06S., R. 01W., Sec 6) in pasture 3 of the Hart Creek allotment

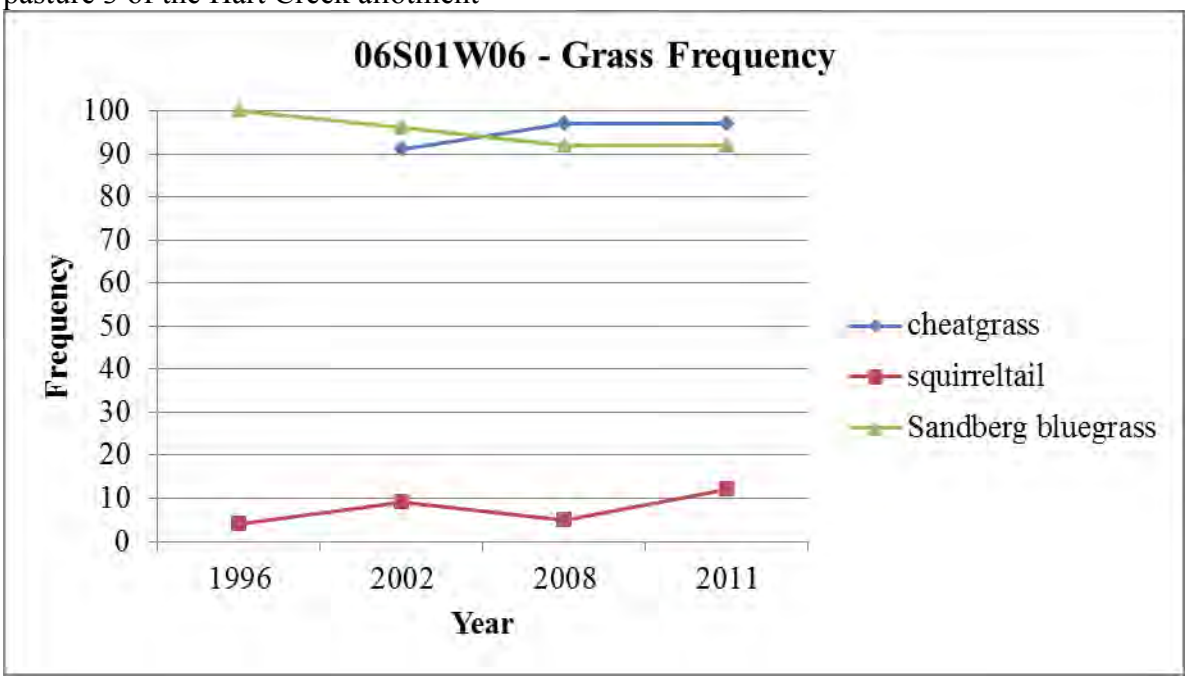
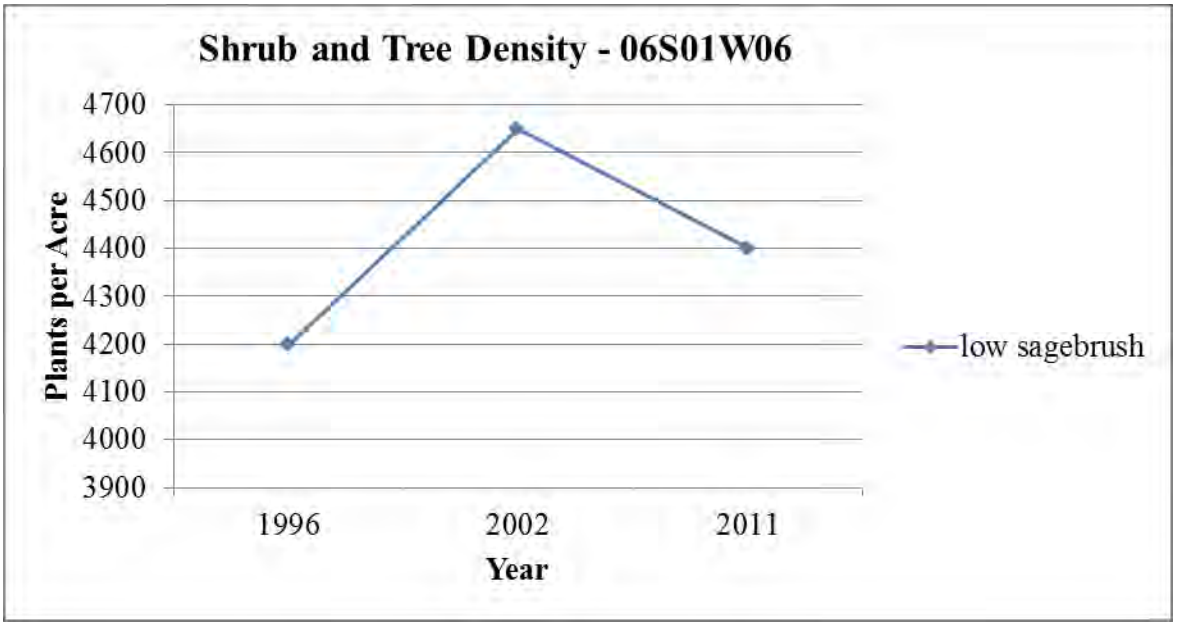


Figure VEG-6: Density of shrubs at the trend transect (T. 06S., R. 01W., Sec 6) in pasture 3 of the Hart Creek allotment



These data are consistent with 2012 sage-grouse habitat assessment data that recorded 10 percent or less mid- to deep-rooted perennial bunchgrass cover in mountain big sagebrush vegetation communities.

Utilization of key perennial species was measured in Pasture 3 in 1992, 1994, 1996, 2001, and 2003. Utilization measurements are not available for all species in all years measurements were taken. Available data is presented in Table A.4.8.

Table A.4.8. Hart Creek Pasture 3 utilization.

Pasture 3	Bluebunch wheatgrass	Idaho fescue	Squirreltail	Sandberg bluegrass
1992	14 %	---	---	---
1994	30 %	60 %	30 %	---
1996	20 %	21 %	---	---
2001	---	---	14 %	44 %
2003	---	---	---	5 %
--- = Not measured/no data available.				

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Utilization of bluebunch wheatgrass and Idaho fescue, key forage species, recorded in pasture 2 between 2004 and 2012 are provided in table VEG-3.

Table VEG-3: Hart Creek pasture 3 utilization

Year	Bluebunch wheatgrass	Idaho fescue	Sandberg bluegrass
2004			
2005			
2006	25		26
2007			29
2008			20
2009	46		32
2010			30
2011	6	6	8
2012			24

Standard 5: Rangeland Seeding

This standard does not apply to this allotment.

Standard 6: Exotic Plant Communities

Although exotic plant species occur in this allotment and some areas are dominated by exotic plant species, no pasture is compromised so extensively that the entire pasture is managed to meet the minimum requirements of soil stability and maintenance of existing perennial communities, therefore this standard is not applied to this allotment.

Standard 7: Surface and Ground Water Quality

The following is excerpted from Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management, and pertains to the assessment of rangeland health standards and guidelines applicable to stream surface and ground water quality:

> "Surface and ground water on public lands comply with the Idaho Water Quality Standards.
>
> Indicators may include, but are not limited to, the following:
>
> 1. Physical, chemical, and biologic parameters described in the Idaho Water Quality Standards."

Surface Water Monitoring

This assessment includes a review of known data collected by BLM and Idaho Department of Water Quality (IDEQ). Data are evaluated to maintain consistency with current State of Idaho water quality standards and total maximum daily load (TMDL) assessments and allocations.

IDEQ reports water quality data differently than it has in the past. Prior to 2002, IDEQ prepared and submitted to EPA two separate documents. The first of these was a list (called a "§303(d) list") of all impaired waters in the state, as required under Section 303(d) of the Clean Water Act (IDEQ 1998). The second was a report (called a "§305(b) report") that summarized the status of all of Idaho's waters, as required under Section 305(b) of the Clean Water Act. IDEQ now prepares one report called The Integrated 303(d)/305(b) Report, which is a combination of these two documents.

The Integrated Report identifies water bodies differently than old §303(d) lists and §305(b) reports. The old lists and reports used "water quality limited segments" to identify streams and portions of streams that were impaired; the Integrated Report uses "assessment units." Assessment units are groups of similar streams within a sub basin that have similar land use practices, ownership, or land management.

Table A.7.1 lists the beneficial use support status for waters within the Hart Creek Allotment. In addition, all waters are assumed to support agriculture, industrial water supply, wildlife habitats and aesthetics, but none of the waters within the Hart Creek Allotment have been assessed for these uses. IDEQ has conducted Sub basin Assessments and Total Maximum Daily Load analyses for 303(d) streams in the Mid Snake River\Succor Creek Sub basin (IDEQ 2003). Table A.7.2 summarizes TMDL actions.

Beneficial Use Support and Total Maximum Daily Loads (TMDL)

Table A.7.1. Designated and Existing Beneficial Use Support Status (IDEQ 2004a)

Name (Assessment Unit)	**CWAL**	**SS**	**PCR**	**SCR**
Hart Creek -3rd order-source to mouth (ID17050103SW018_03)	---	---	---	---

Name (Assessment Unit)	CWAL	SS	PCR	SCR
Hart Creek -2nd order-source to mouth (ID17050103SW018_02)	---	---	---	---
Little Hart Creek-2nd order (ID17050103SW018_02)	N/A	N/A	---	---
Pickett Creek-2nd order (ID17050103SW016_02)	Not Supporting	N/A	---	---
Bates Creek-3rd order (ID17050103SW017_03)	---	N/A	---	---
Bates Creek-2nd order (ID17050103SW017_02)	---	N/A	---	---
Browns Creek-4th order (ID17050103SW019_04)	Not Supporting	N/A	---	---
Browns Creek-3rd order (ID17050103SW019_03)	Not Supporting	N/A	---	---
Browns Creek-2nd order (ID17050103SW019_02)	Not Supporting	N/A	---	---
Little Browns Creek-2nd order (ID17050103SW019_02)	Not Supporting	N/A	---	---
Buckaroo Creek-2nd order (ID17050103SW019_02)	Not Supporting	N/A	---	---
Cat Creek-2nd order (ID17050103SW019_02)	Not Supporting	N/A	---	---

CWAL=Cold Water Aquatic Life; SS=Salmonid Spawning; PCR=Primary Contact Recreation; SCR=Secondary Contact Recreation; N/A=Not Applicable --- = Not Assessed

Table A.7.2. TMDL Action (IDEQ 2003)

Name (Assessment Unit)	TMDL Action
Pickett Creek-2nd order (ID17050103SW016_02)	De-list sediment
Browns Creek-4th order (ID17050103SW019_04)	De-list sediment; de-list temperature
Browns Creek-3rd order (ID17050103SW019_03)	De-list sediment; de-list temperature
Browns Creek-2nd order (ID17050103SW019_02)	De-list sediment; de-list temperature

Water Temperature

The sub basin assessment and TMDL process generally addresses only those streams that have been 303(d) listed (The beneficial use support status in Table A7-1 is based on IDEQ analysis of water quality data from various sources). Table A.7.3 summarizes BLM water quality monitoring for streams in the Hart Creek Allotment. Water temperature data are adjusted according to the 10% exceedence policy and the temperature exemption (IDEQ 2002 and ID APA 58.01.02). Table A.7.4 summarizes instantaneous grab temperatures.

Table A.7.3: Stream Temperature Monitoring Summary for Hart Creek Allotment

Stream	Dates Sampled	Max Temp (^oC)	Max Avg Temp (^oC)	CWAL	SS
Hart Creek (Pasture 1) 4761497N/ 542668E	6/20-9/21/02	21.5	18.5	FS	ND

CWAL=Cold Water Aquatic Life (water temp. $\leq 22^o$ C, with a maximum daily average of $\leq 19^oC$);
SS=Salmonid Spawning (water temp. $\leq 13^o$ C, with a maximum daily average of $\leq 9^oC$)
FS=Fully Supports beneficial use; NS=Does Not Support beneficial use; ND=No Data

Table A.7.4: Stream Temperature Instantaneous Grab Samples for Hart Creek Allotment

Stream	Dates Sampled	Temp (^oC)	Data Source
Hart Creek (2001SBOIA015) (T5S R1W S18 SENE) Pasture 1	7/17/01	Dry	IDEQ
Browns Creek (1996SBOIB003) (T05S R01W S024 NWNE) Pasture 2	6/5/96	23	IDEQ
Browns Creek (1996SBOIB004) (T05S R01W S06 NWNW) Pasture 2	6/6/96	Dry	IDEQ
Browns Creek (T5S R2W S35 NWNE) Pasture 3	6/10/96	11	BLM

The amount of stream channel shading provided by topography (e.g., canyon walls) and vegetation is important in regulating the amount of direct solar radiation that reaches the water surface. While topography generally remains constant, activities that occur in and near the riparian areas may affect the amount and type of vegetation shading the stream channel. The potential or capability for a stream system to support riparian shrubs and trees depends on the stream type (gradient, stream bed and bank materials, valley bottom width, flow regime, etc) and landscape setting. Table A.7.5 summarizes shade measurements at discrete sites for streams in the Hart Creek Allotment. Point-in-time measurements were collected with a spherical densitometer.

Table A.7.5. Stream shade monitoring.

Stream	Date	Shade (%)	Stream Type	Source
Browns Creek (1996SBOIB003) (T5S R1W S24 NWNE) Past 2	6/5/96	< 1	B	IDEQ

Stream Type = Rosgen Stream Classification Level I (Rosgen 1996)

Fecal Coliform

The current standard for primary contact recreation beneficial use designation is 406 Escherichia coli organisms/100 ml for a single sample and 576 E. coli organisms/100 ml for a single sample for secondary recreational contact (IDAPA 58.01.02). Exceedence of these standards for a single sample does not necessarily constitute a violation of water quality standards. When a single sample exceeds the limit, additional samples must be collected over a specified time frame.

The data presented in Table A.7.6 are for total fecal coliform, including E. coli. Older analyses reported only fecal coliform and total coliform counts, rather than E. coli, specifically, in accordance with previous water quality standards that only specified standards for total fecal coliform counts (for primary contact recreation the standard was 500 colonies/100 ml and for secondary contact recreation the water quality standard was 800 fecal coliform colonies/100 ml).

Table A.7.6. Coliform bacteria analyses.

Stream	Date	Total Coliform	Fecal Coliform	E. coli	Beneficial Use Criteria Status
Browns Creek (T5S R2 WS35 NENE)	6/10/96	---	10	---	Met criteria
--- = Not measured/no data available.					

Sediment
Water quality criteria for sediment are determined on a case-by-case basis (IDAPA 58.01.02.250.05). In the absence of specific criteria, sediment shall not exceed quantities that impair designated uses. BLM has conducted ocular estimates of substrate composition, but these data are not presented in this analysis because their accuracy cannot be determined.

Water Chemistry
Table A.7.7 summarizes water chemistry monitoring only for streams in the Hart Creek Allotment.

Table A.7.7. Water chemistry monitoring in the Hart Creek allotment.

Stream	Date	pH	Cond. (uS/cm)	D.O. (mg/L)	Instant. Temp (^{o}C)
Browns Creek (T5S R2 WS35 NENE)	6/10/96	8.2	120	8.6	11
Water Quality Standard		6.5 – 9.0	---	>6	$\leq$ 22
--- = Not measured/no data available.					

Ground Water
BLM has not conducted groundwater quality monitoring within the Hart Creek Allotment.

Other Data Reviewed
BLM reviewed the following internal data: Rapid Riparian Habitat Evaluation (Browns Creek (T5S R2W S35 NWNE) 6/10/96, Hart Creek 008.5 4/26/96), Riparian Aquatic Data Sheets (Browns Ck 3520 9/7/96, Browns Ck 3860 8/31/96, Browns Ck 4160 8/31/96), Stream Survey Form Browns Ck (T5S R1W S30) 3/22/78, Hart Ck (T5S R2W S23) 3/27/78).

BLM also reviewed the State of Idaho's Beneficial Use Reconnaissance Protocol database (IDEQ 2004b) for Bates, Pickett, Browns, and Hart Creeks. IDEQ uses these data, along with other information, to determine beneficial use support status.

Current IDEQ information identifies that the BLM portion of the three pastures within the Hart Creek allotment contain approximately 44.6 miles of stream that are not supporting the watershed's beneficial uses, and 19.6 miles that have not been assessed. The allotment contains portions of nine assessment units (AUs) (Table RIPN-2) with associated beneficial uses and pollutants. Four of the AUs are currently not supporting the beneficial uses, and all of the streams that occur within them are also on the 303(d) list of impaired waters.

Table RIPN-2: IDEQ information for the Hart Creek allotment

AU #	AU Name	Beneficial Use Not Being Met	Pollutant/ Pollution	TMDL
ID17050103SW013_02	Fossil Creek - 1st and 2nd order	not assessed		
ID17050103SW016_02	Pickett Creek - 1st & 2nd order	CWAL[1]	sedimentation/ siltation temperature	No
ID17050103SW018_02	Bates Creek - 1st and 2nd order	not assessed	NA	NA
ID17050103SW017_03	Bates Creek - 3rd order	not assessed	NA	NA
ID17050103SW018_02	Hart and Little Hart Creeks - 1st and 2nd order	not assessed	NA	NA
ID17050103SW018_03	Hart Creek - 3rd order	not assessed	NA	NA
ID17050103SW019_02	Brown Creek - 1st & 2nd order	CWAL	sedimentation/ siltation	No
ID17050103SW019_03	Brown Creek - 3rd order	CWAL	sedimentation/ siltation	No
ID17050103SW019_04	Brown Creek - 4th order	CWAL	sedimentation/ siltation	No

[1]CWAL = cold water aquatic life

Standard 8: Threatened and Endangered Plants and Animals

The following is excerpted from Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management, and pertains to the assessment of rangeland health standards and guidelines as they relate to threatened and endangered plants and animals:

> "Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.
>
> Indicators may include, but are not limited to, the following:
>
> 1. Parameters described in the Idaho Water Quality Standards.
>
> 2. Riparian/wetland vegetation with deep, strong, binding roots is sufficient to stabilize stream banks and shorelines. Invader and shallow rooted species are a minor component of the floodplain.

3. Age class and structural diversity of riparian/wetland vegetation are appropriate for the site.

4. Native plant communities (flora and microbiotic crusts) are maintained or improved to ensure the proper functioning of ecological processes and continued productivity and diversity of native plant species.

5. The diversity of native plant species is maintained.

6. The amount and distribution of ground cover, including litter, for identified ecological site(s) or soil-plant associations are appropriate for site stability.

7. Noxious weeds are not increasing."

Botany

No federally listed plant species are known to occur in the Hart Creek this allotment. The U.S. Fish and Wildlife Service (USFWS) considers all of Idaho to be within the potential range of Ute ladies'-tresses (*Spiranthes diluvialis*), a federally listed threatened orchid species, but requires Section 7 consultation in only three counties of southeast Idaho, and in areas where the plant is actually found (USFWS 2002). Specific surveys for this plant are recommended prior to authorizing federal actions in southwest Idaho, but are not required (Glenne 2004). Most wetland areas in this area meet the definition of "disqualified habitat" (USFWS 2002) due to past disturbance (mining, overgrazing), improper hydrologic regime, and/or improper associated species. Potential habitat (USFWS 2002) has been found in Owyhee County, but the likelihood that Ute ladies'-tresses occurs in these allotments is very low.

Five BLM Sensitive species known to occur in the Hart Creek allotment include White eatonella (*Eatonella nivea*), white-margined wax plant (*Glyptopleura marginata*), King's desertgrass (*Blepharidachne kingii*), and Earth lichen (*Catapyrenium congestum*) and Simpson's hedgehog cactus (*Pediocactus simpsonii* var. *robustior*) are all Type 4. King's desertgrass, a Type 3 species, is the species of highest conservation concern in these allotments. Table A8-1 describes the habitat, status, and location of these species.

Table A8-1: Hart Creek Special Status Plant Populations

Allot/ Pasture	Species	BLM Status [1]	Plant Type	Habitat
532-1	*Eatonella nivea* White eatonella	Sensitive Type 4	low elev. Annual	Sandy or volcanic soils, usually loose soils, with sagebrush
532-1,2	*Glyptopleura marginata* White-margined wax plant	Sensitive Type 4	low elev. Annual	Sandy-gravelly or loose ash soils in salt desert shrub vegetation
0532-2	*Blepharidachne kingii* King's desertgrass	Sensitive, Type 3	low elev. Perennial	Gravelly soils in salt desert shrub vegetation
0532-2	*Catapyrenium congestum* Earth lichen	Sensitive Type 4	low elev. Lichen	Biologic soil crust in undisturbed Wyoming sage or salt desert shrub vegetation
0532-2	*Pediocactus simpsonii* var. *robustior* Simpson's hedgehog cactus	Sensitive Type 4	low-mid elev. Perennial	Rocky or sandy benches and canyon rims in low sage, mountain sage, or salt desert shrub vegetation

[1]Status definitions:
BLM Sensitive: Species on the Idaho State Director's list. The plant is of conservation concern.
Type 1: Species listed by the FWS as threatened or endangered, or proposed or candidates for listing under the Endangered Species Act
Type 2: Species with a high likelihood of being listed in the foreseeable future due to global rarity and significant endangerment factors.
Type 3: Species globally rare with moderate endangerment factors
Type 4: Species generally rare in Idaho, small populations or localized distribution may currently have low threat levels
Type 5: Species that may be added to the BLM Sensitive species list pending new information

Inventories for special status species have been conducted for King's desertgrass, a "target" species known to occur in portions of Pasture 2. Most of the special status plant populations in the Hart Creek allotment were reported to be in good condition with low or no threats from livestock or other disturbances. The populations of white eatonella, white-margined wax plant, and hedgehog cactus appeared to be in good condition. In 1995, 2002, and in 2012 one population (EO. .001) of King's desertgrass was in good condition with no threats noted. The status of the other population (EO. .002) is unknown; impacts were not reported and the site has not been revisited. The Earth lichen occurrence has not been re-located due to vague location description; to date its status is unknown.

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Six BLM sensitive species known to occur in the Hart Creek allotment include White eatonella (*Eatonella nivea*), white-margined wax plant (*Glyptopleura marginata*), King's desertgrass (*Blepharidachne kingii*), Earth lichen (*Catapyrenium congestum*), Simpson's hedgehog cactus (*Pediocactus simpsonii* var. *robustior*), and Stoutstem threadplant (*Nemacladus rigidus*). King's desertgrass, a Type 3 species, is the species of highest conservation concern in these allotments.

Information found in the allotment file reports Simpson's hedgehog cactus as having a population in pasture 2 however, no IDFG Elemental Occurrence (EO) is associated with a specific location. The potential for this cactus is consistent with the habitat in which it grows. Table VEG-3 describes the habitat, status, and location of these species.

Table VEG-3: Hart Creek special status plant populations

Allot/ Pasture	Species	BLM Status[1]	Plant Type	Habitat
1	*White eatonella (Eatonella nivea)*	Sensitive Type 4	low elev. Annual	Sandy or volcanic soils, usually loose soils, with sagebrush.
1, 2	White-margined wax plant (*Glyptopleura marginata*)	Sensitive Type 4	low elev. Annual	Sandy-gravelly or loose ash soils in salt desert shrub vegetation.
2	King's desertgrass (*Blepharidachne kingii*)	Sensitive Type 3	low elev. Perennial	Gravelly soils in salt desert shrub vegetation.
2	Earth lichen (*Catapyrenium congestum*)	Sensitive Type 4	low elev. Lichen	Biologic soil crust in undisturbed Wyoming sage or salt desert shrub vegetation.
2	Simpson's hedgehog	Sensitive	low elev. Perennial	Rocky or sandy benches

	cactus (*Pediocactus simpsonii var. robustior*)	Type 4		and canyon rims in low sage, mountain sage, or salt desert shrub vegetation.
2	Stoutstem threadplant (*Nemacladus rigidus*)	Sensitive Type 4	low elev. Annual	Gravelly soils in salt desert shrub vegetation.

[1]Status definitions:
BLM Sensitive: Species on the Idaho State Director's list. The plant is of conservation concern.
Type 1: Species listed by the FWS as threatened or endangered, or proposed or candidates for listing under the Endangered Species Act
Type 2: Species with a high likelihood of being listed in the foreseeable future due to global rarity and significant endangerment factors.
Type 3: Species globally rare with moderate endangerment factors
Type 4: Species generally rare in Idaho, small populations or localized distribution may currently have low threat levels
Type 5: Species that may be added to the BLM Sensitive species list pending new information

Inventories for special status species have been conducted for King's desertgrass, a target species known to occur in portions of pasture 2. Most of the special status plant populations in the Hart Creek allotment were reported to be in good condition with low or no threats from livestock or other disturbances. The population of stoutstem threadplant is a relatively new reporting from 2012. The Elemental Occurrence (EO) for this particular population has not been recorded in the new Idaho Fish and Wildlife Information System (IFWIS) Species Diversity database (IDFG, 2011). The populations of white eatonella, white-margined wax plant, and hedgehog cactus appeared to be in good condition. In 1995, 2002, and in 2012 one population (EO .001) of King's desertgrass was in good condition with no threats noted. The status of the other population (EO .002) is unknown; impacts were not reported and the site has not been revisited. The earth lichen occurrence has not been located since it was first identified due to vague location description; to date, its status is unknown.

Wildlife

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Wildlife Habitats

Information Sources

Information sources that were used to assess and evaluate the composition and condition of wildlife habitats within the Hart Creek allotment include sage-grouse habitat assessments (SG HA; 2002, 2008, 2009, and 2012), land cover classification (2002), aerial imagery (2011), photographs (2002, 2008, 2009, 2010, 2012, and 2013), and field visits (2012 and 2013), in addition to information summarized above in Standards 1, 2, 3, 4, and 7 in this document.

Landscape Setting

Two Level IV Ecoregions of Idaho are represented within the present allotment and include the Unwooded Alkaline Foothills (12j) and the Owyhee Uplands and Canyons (80f) (Map WDLF-1) (McGrath, et al., 2002). Although these ecoregions are relatively similar, they are distinguished by differences in physiography, precipitation, and elevation. Generally, the Unwooded Alkaline Foothills are located at the lowest elevations and are characterized by rolling foothills and benches with xeric shrub steppe and salt desert shrub vegetation communities; sparsely vegetated badlands also occur in this ecoregion. The Unwooded Alkaline Foothills ecoregion is well represented in Hart Creek pastures 1 and 2 (Map WDLF-1). The Owyhee Uplands and Canyons ecoregion occurs at mid to high elevations and is characterized by a volcanically derived landscape of lava fields, tuffaceous outcrops dissected by deep, sometimes precipitous canyons. Vegetation communities in this ecoregion include mesic shrub steppe, mountain shrub, and woodlands. The Owyhee Uplands and Canyons ecoregion is best represented in Hart Creek pasture 3 (Map WDLF-1).

Habitat, Cover Types, and Ecological Sites

A variety of major habitats and general cover types occur within the allotment (Table WDLF-1; Map WDLF-2). These upland and riparian habitats and cover types occur within a variety of ecological sites that will be discussed by pasture in more detail below.

Table WDLF-1: Major habitat and general cover types within the Hart Creek allotment

Habitat Type	General Cover Type	Percentage of Allotment	
		General Cover Type	Habitat Type
Salt Desert Shrub	salt desert shrub	50	50
Grassland	bunchgrass	4	4
Shrub Steppe[1]	big sagebrush	31	38
	mountain big sagebrush	5	
	low sagebrush	2	
Mountain Shrub	mountain shrub	<1	<1
Forest	aspen	<1	3
	juniper	3	
	Douglas--fir	<1	
Riparian	wet meadow	<1	<1

Non-native/Disturbed	exotic annuals	3	3

[1]Shrub steppe habitat type includes the predominant big and low sagebrush communities in the area. Big sagebrush (*Artemisia tridentata*) cover types include communities dominated by the subspecies Wyoming (*wyomingensis*) and Basin (*tridentaaa*) and mixed communities of both species. Mountain big sagebrush (*A. tridentata vaseyana*) and low sagebrush (*A. arbuscula*) cover types comprise the remaining sagebrush communities.

Focal Special Status Species

Greater sage-grouse

Population Ecology

No fewer than 10 leks (occupied or active) are located in or near the allotment. In addition, the allotment is located within several 75 percent breeding bird density (BBD) lek buffers (4 mile; Table WDLF-2).

Table WDLF-2: Attendance at occupied leks[1] in or within 4 miles of the Hart Creek allotment, 2007-2012

Lek[2]	Pasture/s[3]	Survey Year[4]					
		2012	**2011**	**2010**	**2009**	**2008**	**2007**
2O642*	3	0	41	40	--	0	--
2O196	1, 2, 3^	23	16	11	8	4	16
2O197*	2, 3	37	34	32	19	17	19
2O664*	1, 2^, 3	19	14	8	8	9	15
2O505*	1, 2	28	40	26	21	29	35
2O705	2, 3	7	8	6	11	12	--

[1]A traditional display area where two or more male sage-grouse have attended in 2 or more of the previous 5 years (Idaho Sage-grouse Advisory Committee 2006).
[2]Leks with 75 percent BBDs are designated by an asterisk.
[3]The pasture in which the lek is located is designated by the ^ symbol.
[4]Surveys were not conducted in years indicated by dashes (--).

Several additional leks that occur within or in proximity (≤4 miles) to the allotment that have been active within the last 5 years but that do not qualify as occupied include 2O201 (located in pasture 2), 2O548 (located in pasture 3), 2O504, and 2O507.

Habitat Characteristics

Northern Great Basin Population/Owyhee Subpopulation Mid-Scale
Recently, Idaho BLM initiated a modeling effort to identify preliminary priority sage-grouse habitat (PPH) within the Snake River Plain MZ (Makela & Major, 2012). Priority habitat includes breeding, late brood-rearing, and winter concentration areas. Because priority habitat areas have the highest conservation value for maintaining the species and its habitat, it is BLM

policy (as per WO IM 2010-071) to identify these areas in collaboration with respective state wildlife agencies. With the exception of the lowest elevation portions of pastures 1 and 2, the current model indicates that the remainder of pastures 1 and 2, and all of the pasture 3 are comprised entirely of PPH (Map WDLF-3).

Owyhee Front/Triangle Local Population Fine-scale
A review of the 2012 PPH output revealed that the area around the Toy Mountain group allotments in one of the critical input data layers (i.e., Idaho Sage-grouse Key Habitat Planning Map) had, for the most part, not been refined since its initial creation in the early 2000s. Much of the area was coarsely classified as Conifer Encroachment (R3). Review of recent (2012) aerial imagery and an Owyhee Field Office (OFO) land cover classification (Bunting & Strand, 2008) of the area have provided better habitat information and edits to be incorporated into the 2013 Greater Sage-grouse Habitat Planning Map (as per IM ID-2013-010). The update identifies large areas of currently Key Habitat (K) that were misclassified as R3 across the OFO, especially in the Toy Mountain group area. The update reveals that the allotment pastures have varying amounts of key habitat, conifer encroachment, and perennial grassland areas (Map WDLF-4).

Allotment/Pasture Site-scale
Based on a telemetry study of sage-grouse from the Owyhee Front/Triangle local population, seasonal locations show that the allotment contains differing amounts of breeding, upland summer, early and late brood-rearing riparian summer, and winter seasonal habitats (Table WDLF-3; Map WDLF-6; also see narrative under each allotment pasture).

Table WDLF-3: Seasonal habitat types within the Hart Creek allotment on BLM lands

Pasture	Seasonal Habitat			
	Breeding	**Upland Summer**	**Early/Late Brood-rearing Lentic/Lotic Areas**	**Winter**
1	X		X	X
2	X		X	X
3	X	X	X	X

Habitat Assessments
The current conditions of sage-grouse seasonal habitats were assessed following protocols outlined in the Sage-grouse Habitat Assessment Framework (SG HAF; (Stiver, Rinkes, & Naugle, 2010)). The primary habitat indicators and habitat suitability ranges within the SG HAF are consistent with sage-grouse habitat management guidelines provided by Connelly et al. (2000), the State of Idaho's sage-grouse management alternative (The State of Idaho, 2012), and interim BLM sage-grouse habitat management guidance as per WO-IM 2012-043. Habitat indicators and suitability ranges should not be viewed independently but rather as an assembly of vegetation components that contribute to providing for sage-grouse seasonal habitat requirements.

Pasture 1
General Riparian Habitat
Of the 4.7 miles of assessed stream riparian habitat in this pasture, approximately 1.2 miles are rated in properly functioning condition (PFC) while the remaining 3.5 miles are rated as

functioning-at-risk (FAR). Of the FAR reaches, 2.0 miles appear to be in an upward trend while the remaining 1.5 miles are static. While there is no direct correlation between functioning condition and special status species habitat, many of the indicators of riparian functionality are also crucial components of habitat for many special status species and other wildlife species, especially neotropical migratory birds. The indicators that assess structure, composition, and vigor of hydric vegetation are especially important, since these are key components of nesting, foraging and escape cover. Within the PFC reaches and FAR reaches with an upward trend, structural diversity, composition and vigor of hydric vegetation are as expected and resulting in habitat that is at least marginally suitable for dependent special status animals and other wildlife. These indicators are partially lacking in the FAR reaches with a static trend resulting in less than suitable habitat. The FAR reaches are also lacking adequate hydric vegetation cover (such as various sedges, rushes, willows and other woody riparian species) to protect banks and dissipate energy which may leave these habitats vulnerable during high flow events.

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General Riparian Habitat

In the present assessment, 4.3 miles of stream riparian habitat were assessed for PFC, and approximately 0.8 miles were rated as PFC (see Standard 2); otherwise, the remaining information above has not changed. Conditions along the majority of streams supporting riparian vegetation appear to be at least minimally adequate for dependent migratory birds. Although the herbaceous understory is lacking or dominated by upland or invasive species along some reaches of the assessed streams, woody species display diverse species and age-classes with multiple canopies which are providing structurally complex breeding, nesting, and foraging habitat for dependent species.

Focal Special Status Species

Greater sage-grouse

Habitat Characteristics

Habitat Assessments

The majority of pasture 1 is within the breeding and winter seasonal ranges of the Owyhee Front/Triangle local population (Map WDLF-6). The lowest elevation area in the northeast portion of the pasture is composed of mixed salt desert shrub vegetation communities and is not considered sage-grouse habitat. The dominant Wyoming big sagebrush ecological sites support breeding (including early brood-rearing) and winter sage-grouse habitat. Although there are no lentic sites in the pasture, several perennial streams and intermittent washes provide important early brooding-rearing areas. All sage-grouse habitat within the pasture is considered key habit, although scattered junipers do occur in the Hart Creek drainage and the higher elevations in the southwestern portion of the pasture (Map WDLF-4).

Sage-grouse Breeding Habitat Assessments

One breeding habitat assessment (T.05S R.02W Sec. 24) was conducted in the southern portion of pasture 2 within a Big sagebrush/bottlebrush squirreltail/Sandberg's bluegrass community. The protocol is referenced in Appendix B – Methods. Five of the seven indicators are in the "suitable habitat" category while sagebrush growth form is in the "marginal habitat" category

and perennial grass and forb height is in the "unsuitable habitat" category (Table A.8.1). The site was given an overall rating of marginal habitat because of the reduced grass and forb height and the limited effective cover provided by squirreltail and annual grasses. Healthy decreaser bunchgrasses such as bluebunch wheatgrass are generally larger and provide superior nesting cover and should be much more abundant on the site.

Table A.8.1. Hart Creek allotment, Pasture 1 sage-grouse breeding habitat assessment, 2002

Habitat Indicator	**Suitable Habitat**	**Marginal Habitat**	**Unsuitable Habitat**
Average Sagebrush Canopy Cover	X		
Average Sagebrush Height	X		
Sagebrush Growth Form		X	
Average Grass and Forb Height			X
Average Perennial Grass Canopy Cover	X		
Average Forb Canopy Cover	X		
Preferred Forb Abundance and Diversity	X		
Overall Site Assessment		**X**	
Refer to Appendix H for specific habitat rating criteria as included Habitat Assessment Worksheets			

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Breeding Habitat

Correction note: Breeding SG HA information provided in the 2006 Assessment for pasture 1 (above) was incomplete and erroneous. A closer inspection of allotment RHA files and SG HA summary sheets revealed that two additional SG HAs were conducted in 2002 and that some of the metrics provided in **Table A.8.1.** above were miscalculated. An up-to-date treatment of the full information available is provided below.

Four SG HAs were used to assess breeding habitat conditions within pasture 1 (Map WDLF-3). Three SG HAs were located within the Sandy Loam 8-12" ARTRW8/ACHY Ecological Site and one SG HA was located in the Loamy 10-13" ARTRW8/PSSPS Ecological Site. These ecological sites constitute a majority of the usable sage-grouse habitat (based on cover types/ecological sites) within the pasture (approximately 51 percent of shrub steppe acres; see Table WDLF-6 below), and therefore are representative of the conditions that predominate within pasture 1.

Although the most recent breeding SG HA in the pasture was conducted in 2008, a review of the results from three SG HAs conducted in the same and an additional Ecological Site in 2002 (see below) reveal that measurements of most indicators have remained consistent and provide validation for the current rating of sage-grouse breeding conditions within the pasture as marginal or worse.

- **04S01W32-2008 (R011XY014ID)**
  Marginal. Although sagebrush height and forb canopy cover were within the suitable range, most of the primary indicators fell within the marginal or unsuitable range (Table WDLF-4). Perennial grass cover is generally lacking although the one plant measured was 18 cm in height. Preferred forb species were few and

sparse. *Poa secunda* and cheatgrass were co-dominant and indicative of a phase transition (Phase A to B) within the reference state (State 1) which is probably due to improper historic grazing management. In general, breeding habitat conditions appear to be consistent with previous findings (see below).

- **04S01W27-2002** and **05S01W06-2002 (R011XY014ID)**
  Unsuitable. These assessment sites were at the periphery of occupied sage-grouse habitat where sagebrush steppe communities transition into lower elevation salt desert shrub vegetation. Although sagebrush canopy cover was slightly high, the sagebrush component does not appear to be limiting sage-grouse use. Unfortunately, the surveyors did not record plant heights but photos provide evidence that sagebrush height was suitable. Nevertheless, the perennial herbaceous understory vegetation components were severely lacking (Table WDLF-4). Perennial grass and forb canopy covers were in the unsuitable range, and photos reveal that height was also unsuitable. Forbs were extremely sparse and composed of only two species. Cheatgrass was a major component of the understory at one site while *Poa secunda* was dominant at the other. Overall, it appears this ecological site has transitioned to Phase B within the reference state.
- **05S02W24-2002 (R025XY019ID)**
  Marginal. Sagebrush canopy cover was slightly high though near suitable while height was slightly low (Table WDLF-4). Although perennial herbaceous vegetation (grass and forbs) canopy covers were suitable, height was very low and unsuitable. Cheatgrass was the dominant understory species and cover was very high (36 %). Nevertheless, forbs were very diverse and abundant. The lack of understory vertical cover, abundance of cheatgrass, and low sagebrush height are only providing marginal habitat. However, sage-grouse scat was documented at the site and several sage-grouse were observed nearby.

Table WDLF-4: Summary of breeding SG HAs[1] in pasture 1 of the Hart Creek allotment (2002 and 2008)

Habitat Indicator	**Ecological Sites[2]**		
	R011XY014ID-2008	**R011XY014ID-2002**	**R025XY019ID-2002**
	n=1	**n=2**	**n=1**
Sagebrush Canopy Cover (%)	32 (M)	26 (M)	26 (M)
Sagebrush Height (cm)	53 (S)	(S)[3]	28 (M)
Sagebrush Growth Shape	Mixed (M)	Mixed (M)	Mixed (M)
Grass and Forb Height (cm)	10 (M)	(U)[3]	8 (U)
Perennial Grass Canopy Cover (%)	2 (U)	4 (U)	12 (S)
Forb Canopy Cover (%)	6 (S)	2 (U)	10 (S)
Preferred Forb Availability	3 spp./sparse (U)	2 spp./sparse (U)	14 spp./abundant (S)
Overall Site Evaluation	**Marginal**	**Unsuitable**	**Marginal**

[1]Individual habitat indicator suitability ranges are given in parentheses and include Suitable (S), Marginal (M), and Unsuitable (U).
[2]Ecological sites include Sandy Loam 8-12 ARTRW8/ACHY (R011XY014ID) and Loamy 10-13 ARTRW8/PSSPS (R025XY019ID).
[3]Vegetation heights were not recorded at the two sites assessed in this ecological site in 2002. Ratings are based on examination of assessment photos.

Brood-rearing and Summer Riparian Habitats

Pasture 1 contains several stream valleys that support early brood-rearing lotic habitats including Bates Creek and portions of Hart and Little Hart Creek (Map WDLF-5A). Bates Creek is an ephemeral stream that was not assessed for PFC but has very little woody cover in a relatively

wide floodplain (246 to 330 feet) that has ample open areas that probably support succulent riparian and upland herbaceous vegetation during early spring. The upper portion of Little Hart Creek in pasture 1 is very similar to Bates Creek albeit a narrower floodplain (16 to 98 feet), but supports more woody cover and fewer open areas and opportunities for succulent herbaceous vegetation growth in the floodplain.

Hart Creek is a perennial stream that varies in geomorphology within the pasture. The middle portion of Hart Creek was assessed as FAR with an upward trend. This portion is located in a deep, moderately steep-sided valley and supports riparian vegetation with a moderately closed canopy and a fair amount of open areas with opportunities for succulent herbaceous vegetation growth in the floodplain.

The upper portion of Hart Creek was assessed as PFC, but sage-grouse use is probably limited due to its location in a deep, steep-sided valley with riparian vegetation that is dominated by a closed canopy of woody species and an understory of sparse, early-seral graminoids (e.g., spike and sword-leaf rushes) and noxious weeds (e.g., whitetop). In addition, the floodplain is narrow (16 to 82 feet) with very limited open areas with succulent herbaceous vegetation. Picket Creek is a perennial/ephemeral stream that traverses the pasture and was assessed as FAR with a static trend. Sage-grouse use is probably limited due to its location in a deep, steep-sided valley with riparian vegetation that is dominated by a closed canopy of woody species and a cheatgrass understory. In addition, the floodplain is narrow (33 to 164 feet) with very limited open areas with herbaceous vegetation.

Pasture 1 does not contain any known spring-associated lentic riparian/wetland areas.

In general, the riparian habitats available to and most likely used by sage-grouse (Bates, Little Hart, and Hart Creeks) are probably providing adequate conditions for early brood rearing. Although Bates and Little Hart Creek were not assessed for PFC, it is possible that these areas are supporting succulent herbaceous forage in the early spring. The middle portion of Hart Creek although not PFC, is on an upward trend and is minimally providing early brood-rearing habitat.

Winter Habitat

Four SG HAs were used to assess winter habitat conditions within pasture 1 (Map WDLF-5A). Three SG HAs were located within the Sandy Loam 8-12" ARTRW8/ACHY Ecological Site and one SG HA was located in the Loamy 10-13" ARTRW8/PSSPS Ecological Site. Overall winter habitat within the predominant ESDs in the pasture was rated as Suitable.

- **04S01W32-2008 (R011XY014ID)**
  Suitable. The amount (CC) and height of sagebrush would provide forage above any persistent snow (which is rare at the site's elevation), and provide adequate concealment and thermal cover (Table WDLF-5). In general, winter habitat conditions appear to be consistent with previous findings (see below).
- **04S01W27-2002** and **05S01W06-2002 (R011XY014ID)**
  Suitable. The amount (CC) and height of sagebrush would provide forage above any persistent snow (which is rare at the site's elevation), and provide adequate concealment and thermal cover (Table WDLF-5).
- **05S02W24-2002 (R025XY019ID)**
  Suitable. The amount (CC) and height of sagebrush would provide forage above any persistent snow (which is rare at the site's elevation), and provide adequate concealment and thermal cover (Table WDLF-5).

Table WDLF-5: Summary of winter SG HAs[1] primary indicators in pasture 1 of the Hart Creek allotment (2002 and 2008)

Habitat Indicator	Ecological Sites[2]		
	R011XY014ID-2008	**R011XY014ID-2002**	**R025XY019ID-2002**
	n=1	**n=2**	**n=1**
Sagebrush Canopy Cover (%)	32 (S)	26 (S)	26 (S)
Sagebrush Height (cm)	53 (S)	(S)[3]	28 (S)
Overall Site Evaluation	**Suitable**	**Suitable**	**Suitable**

[1]Individual habitat indicator suitability ranges are given in parentheses and include Suitable (S), Marginal (M), and Unsuitable (U).
[2]Ecological sites include Sandy Loam 8-12" ARTRW8/ACHY (R011XY014ID) and Loamy 10-13" ARTRW8/PSSPS (R025XY019ID).
[3]Vegetation heights were not recorded at the two sites assessed in this ecological site in 2002. Ratings are based on examination of assessment photos.

General Upland Habitat Assessment

Sagebrush and shadscale along with other shrubs, are providing good woody cover, structure and forage for sage-grouse and most other sagebrush steppe obligates. Bunchgrasses observed consisted primarily of increaser bunchgrass species including squirreltail that is persisting primarily under the protection of shrubs and Sandberg's bluegrass that provides little effective nesting cover. Decreaser bunchgrasses that provide the highest quality cover for sage-grouse and other ground nesting and foraging species are generally lacking from this pasture. This lack of quality cover may also support reduced populations of rodents, small birds, and insects that are prey for a diversity of raptors and other predatory species.

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General Upland Habitat Assessment

Several upland habitats and cover types occur within a variety of ecological sites within pasture 1 (Table WDLF-6).

Table WDLF-6: NRCS Ecological Sites within Hart Creek pasture 1

Habitat Type	General Cover Type	Ecological Site Description	Percentage of Allotment	
			Ecological Site Description	**General Cover Type**
Salt Desert Shrub	Shadscale	Calcareous Loam 7-10" ATCO-PIDE/ACHY-ACTH7	69	72
	Greasewood	Saline Bottom 8-12" SAVE4/LECI4	3	
Shrub Steppe	Big Sagebrush[1]	Sand 8-12" ARTRT/ACHY	3	28
		Sandy Loam 8-12 ARTRW8/ACHY	10	
		Loamy 8-12 ARTRW8/PSSPS-ACTH7	10	

		Loamy 10-13” ARTRW8/PSSPS	5	
	Low Sagebrush	Shallow Claypan 11-13” ARAR8/PSSPS	<1	<1
		Shallow Claypan 12-16” ARAR8/FEID	0.7	

[1]Big sagebrush (*Artemisia tridentata*) cover types include communities dominated by the subspecies Wyoming (*wyomingensis*) and Basin (*tridentaaa*) and mixed communities of both species.

In general, upland habitat conditions have not improved since the previous assessment. Although shrub cover has remained consistent and continues to provide adequate woody cover, structure, and forage for shrub-obligate and dependent species, the quality of the herbaceous understory has declined. Deep-rooted, tall-statured perennial bunchgrasses remain sparse and mid-statured squirreltail have declined in frequency while short-statured bluegrass (*Poa* sp.) and invasive cheatgrass have increased dramatically. These understory conditions probably are limiting habitat quality for many ground-nesting and foraging species.

Pasture 2

General Riparian Habitat

Of the 2.5 miles of assessed stream riparian habitat in this pasture, approximately 2.3 miles are rated in properly functioning condition (PFC) while the remaining 0.2 miles are rated as functioning-at-risk (FAR) with an upward trend. Within all of the assessed reaches; structural diversity, composition and vigor of hydric vegetation are as expected and resulting in habitat that is at least marginally suitable for dependant special status animals and other wildlife. The FAR reach is partially lacking adequate hydric vegetation cover (such as various sedges, rushes, willows and other woody riparian species) to protect banks and dissipate energy which may leave these habitats vulnerable to high flow events.

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General Riparian Habitat

In the present assessment, 1.7 miles of stream riparian habitat were assessed and were rated PFC; no riparian habitat within pasture 2 was rated FAR (see Standard 2); otherwise, the remaining information above has not changed.

Focal Special Status Species

Greater sage-grouse

Habitat Characteristics

Habitat Assessments

Similar to pasture 1, a substantial portion of pasture 2 is within the breeding and winter seasonal ranges of the Owyhee Front/Triangle local population, and the lowest elevation area in the northeast portion of the pasture is composed of mixed salt desert shrub vegetation communities and is not considered sage-grouse habitat (Map WDLF-5A). The dominant Wyoming big sagebrush ecological sites support breeding (including early brood-rearing) and winter sage-grouse habitat. Although there are no lentic sites in the pasture, several intermittent/ephemeral stream courses may provide important early brooding-rearing areas. All sage-grouse habitat

within the pasture is considered key habit although the 2012 Castle wildfire recently burned approximately 200 acres in the southern portion of the pasture (Map WDLF-4).

Sage-grouse Habitat Assessments
Breeding Habitat - One breeding habitat Assessment (T.05S R.01W Sec. 27) was conducted in the southern portion of pasture 2 in a Wyoming big sagebrush/ Sandberg bluegrass/bottlebrush squirreltail plant community (Map 2). Two of the seven indicators including average sagebrush canopy cover and sagebrush height are in the "suitable habitat" category while two indicators, sagebrush growth form and preferred forb abundance and diversity, are in the "marginal habitat" category and three indicators, average grass and forb height, average perennial grass canopy cover and average forb canopy cover are all in the" unsuitable habitat" category (Table A.8.3). The site was given an overall rating of unsuitable habitat because of the lack of effective herbaceous cover for nesting. Sandberg's bluegrass and longleaf phlox which dominate the understory are providing little effective nesting cover. Some squirreltail is present under the protection of shrubs.

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Breeding Habitat

Correction note: Breeding SG HA information provided in the 2006 Assessment for pasture 2 (above) was incomplete. A closer inspection of allotment RHA files revealed that three additional SG HAs were conducted in 2002. However, of these three, one was conducted in non-habitat and was not analyzed and will not be discussed further. An up-to-date treatment of the full information available is provided below.

Four SG HAs were used to assess breeding habitat conditions within pasture 2 (Map WDLF-6). Three SG HAs were located within the Sandy Loam 8-12" ARTRW8/ACHY Ecological Site and one SG HA was located in an undescribed Ecological Site that most resembles a combination of the Sand 8-12" ARTRT/ACHY and Saline Bottom 8-12" SAVE4/LECI4 ESDs. These cover types (although not necessarily the ecological sites) constitute all of the usable sage-grouse habitat within the pasture (Table WDLF-9 below), and therefore are representative of the conditions that predominate within pasture 2.

Although the most recent breeding SG HA in the pasture was conducted in 2008, a review of the results from three SG HAs conducted in the same and an additional Ecological Site in 2002 (see below) reveal that measurements of most indicators have remained consistent and provide validation for the current rating of sage-grouse breeding conditions within the pasture as Unsuitable.

- **05S01W17-2008 (R011XY014ID)**
  Unsuitable. The unsuitable rating is due to inadequate sagebrush canopy cover, height, and columnar growth form, and the lack of forb species diversity and abundance (Table WDLF-7). Perennial grass cover was composed of SIHY and although this indicator fell within the marginal canopy cover range, height was suitable. Nevertheless, cheatgrass was the dominant herbaceous species (30 percent) and additionally limits breeding habitat suitability, and is indicative of a phase transition (Phase A to B) within the reference state (State 1) which is probably due to historic improper grazing management. In general, breeding habitat conditions appear to be consistent with previous findings (see below).
- **05S01W15-2002** and **05S01W27-2002 (R011XY014ID)**

Unsuitable. The unsuitable rating is primary due to inadequate herbaceous understory vegetation components (Table WDLF-7). The lack of perennial grass for cover and forbs for forage is not providing the structural or functional habitat elements sage-grouse require for nesting and early brood rearing. Nevertheless, sagebrush canopy cover, height, and mixed growth form are for the most part adequate. Cheatgrass was the dominant herbaceous species (27 percent) at one site where forbs were scarce, while forbs were not diverse but more common at the other site where cheatgrass was not recorded. *Poa secunda* and cheatgrass understory dominance is indicative of a phase transition (Phase A to B) within the reference state (State 1) which is probably due to historic improper grazing management. Sage-grouse scat was documented at one of the sites and several sage-grouse were observed nearby indicating that the habitat conditions, although unsuitable overall, are not precluding all sage-grouse use in areas with some forb component.

- **05S01W13-2002 (Undescribed Ecological Site)**
  Unsuitable. The unsuitable rating is due to inadequate sagebrush canopy cover, height, and herbaceous vegetation components (Table WDLF-7). Greasewood (SAVE) was the dominant shrub (22 percent) with hopsage (GRSP) was also common. Cheatgrass was the dominant herbaceous species (30 percent). Forbs were not recorded. The site was within 50 m of Brown's Creek and probably has experienced heavy cattle utilization.

Table WDLF-7: Summary of breeding SG HAs[1] primary indicators in pasture 2 of the Hart Creek allotment (2002 and 2008)

Habitat Indicator	Ecological Sites[2]		
	R011XY014ID-2008	**R011XY014ID-2002**	**Undescribed-2002**
	n=1	**n=2**	**n=1**
Sagebrush Canopy Cover (%)	8 (M)	19 (S)	13 (M)
Sagebrush Height (cm)	25 (M)	42 (S)[3]	(M)[3]
Sagebrush Growth Shape	Columnar (U)	Mixed (M)	Mixed (M)
Grass and Forb Height (cm)	18 (S)	5 (U)[3]	(M)[3]
Perennial Grass Canopy Cover (%)	8 (M)	<1 (U)	2 (U)
Forb Canopy Cover (%)	4 (U)	<2 (U)	0 (U)
Preferred Forb Availability	3 spp./sparse (U)	≥3 spp./sparse (U)	0 spp./none (U)
Overall Site Evaluation	**Unsuitable**	**Unsuitable**	**Unsuitable**

[1]Individual habitat indicator suitability ranges are given in parentheses and include Suitable (S), Marginal (M), and Unsuitable (U).
[2]Ecological sites include Sandy Loam 8-12" ARTRW8/ACHY (R011XY014ID) and the undescribed ESD resembles Sand 8-12" ARTRT/ACHY (R011XY011ID) and Saline Bottom 8-12" SAVE4/LECI4 (R011XY002ID). An additional SG HA was conducted in a Calcareous Loam 7-10" ATCO-PIDE4/ACHY-ACTH7 (R011XY010ID) ESD but was not included in this analysis because the reference vegetation community does not provide sage-grouse habitat.
[3]Vegetation heights were not recorded at the some sites assessed in this ecological site in 2002. Ratings are based on examination of assessment photos.

Brood-rearing and Summer Riparian Habitats

Although pasture 2 contains several intermittent/ephemeral stream valleys that may support early brood-rearing habitat, none have been assessed for PFC primarily because they do not support woody, and in most cases, herbaceous riparian vegetation communities. At best, these areas may support succulent vegetation in the early spring.

An intermittent portion of Browns Creek was assessed as PFC but sage-grouse use is probably limited due to its location in a deep, steep-sided valley with riparian vegetation that is dominated by a closed canopy of woody species and an understory of sparse, early-seral graminoids (e.g., spike and sword-leaf rushes), cheatgrass and noxious weeds (e.g., Canada thistle). In addition, the floodplain is narrow (16 to 82 feet) with limited open areas with succulent herbaceous vegetation.

Pasture 2 does not contain any known spring-associated lentic riparian/wetland areas.

In general, the riparian habitats available to and most likely used by sage-grouse are probably not providing adequate conditions for early brood rearing. Flowing water and moist conditions are restricted to a short (and at times non-existent) period in the early spring, and hydric, succulent vegetation is probably sparse if it exists at all.

Winter Habitat

Four SG HAs were used to assess winter habitat conditions within pasture 2 (Map WDLF-6). Three SG HAs were located within the Sandy Loam 8-12" ARTRW8/ACHY Ecological Site and one SG HA was located in and undescribed Ecological Site that most resembles a combination of the Sand 8-12" ARTRT/ACHY and Saline Bottom 8-12" SAVE4/LECI4 ESDs. Overall winter habitat within the pasture was rated as Suitable.

- **05S01W17-2008 (R011XY014ID)**
  Suitable. Although canopy cover of sagebrush at this site was in the marginal range, height of sagebrush would provide forage above any persistent snow (which is rare at the site's elevation), and provide adequate concealment and thermal cover (Table WDLF-8). Overall, winter habitat conditions are suitable and appear to be consistent with previous findings (see below).
- **05S01W15-2002** and **05S01W27-2002 (R011XY014ID)**
  Suitable. Canopy cover and height of sagebrush would provide forage above any persistent snow (which is rare at the site's elevation), and provide adequate concealment and thermal cover (Table WDLF-8).
- **05S01W13-2002 (Undescribed Ecological Site)**
  Suitable. Canopy cover and height of sagebrush would provide forage above any persistent snow (which is rare at the site's elevation), and provide adequate concealment and thermal cover (Table WDLF-8).

Table WDLF-8: Summary of winter SG HAs[1] primary indicators in pasture 2 of the Hart Creek allotment (2002 and 2008)

Habitat Indicator	Ecological Sites[2]		
	R011XY014ID-2008	**R011XY014ID-2002**	**Undescribed-2002**
	n=1	**n=2**	**n=1**
Sagebrush Canopy Cover (%)	8 (M)	19 (S)	13 (S)
Sagebrush Height (cm)	25 (S)	42 (S)[3]	(S)[3]
Overall Site Evaluation	**Suitable**	**Suitable**	**Suitable**

[1]Individual habitat indicator suitability ranges are given in parentheses and include Suitable (S), Marginal (M), and Unsuitable (U).
[2]Ecological sites include Sandy Loam 8-12" ARTRW8/ACHY (R011XY014ID) and the undescribed ESD resembles Sand 8-12" ARTRT/ACHY (R011XY011ID) and Saline Bottom 8-12" SAVE4/LECI4 (R011XY002ID). An additional SG HA was conducted in a Calcareous Loam 7-10" ATCO-PIDE4/ACHY-ACTH7 (R011XY010ID)

ESD but was not included in this analysis because the reference vegetation community does not provide sage-grouse habitat.
[3]Vegetation heights were not recorded at the some sites assessed in this ecological site in 2002. Ratings are based on examination of assessment photos.

General Upland Habitat Assessment

Sagebrush and other shrubs are generally providing good woody cover, structure and forage for sage-grouse and most other sagebrush steppe obligates. However Big sagebrush appears decadent and exhibiting mortality at one ecological site (site T.05S, R.01W Section 15). Forbs recorded at nested frequency plots are dominated by bur buttercup and other species that provide little in the way of cover or forage for sage-grouse and possibly other ground nesting and foraging species. Increaser grasses, such as squirreltail, are greatly reduced and persisting primarily under the protection of shrubs. Sandberg's bluegrass (which generally provides little in the way of effective nesting cover is the dominant perennial grass species throughout most of this pasture. Additionally, cheatgrass occurrence ranges from scattered to dominant. The degraded herbaceous component may affect populations of rodents, small birds, and insects that are prey for a diversity of raptors and other predatory species.

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General Upland Habitat Assessment

Several upland habitats and cover types occur within a variety of ecological sites within pasture 2 (Table WDLF-9).

Table WDLF-9: NRCS Ecological Sites within Hart Creek pasture 2

Habitat Type	General Cover Type	Ecological Site Description	Percentage of Allotment	
			Ecological Site Description	General Cover Type
Salt Desert Shrub	Shadscale	Calcareous Loam 7-10" ATCO-PIDE/ACHY-ACTH7	76	82
	Winterfat	Silty 7-10" KRLA2/ACHY	1	
	Greasewood	Saline Bottom 8-12" SAVE4/LECI4	6	
Shrub Steppe	Big Sagebrush[1]	Sandy Loam 8-12" ARTRW8/ACHY	1	18
		Loamy 10-13" ARTRW8/PSSPS	17	

[1]Big sagebrush (*Artemisia tridentata*) cover types include communities dominated by the subspecies Wyoming (*wyomingensis*).

In general, upland habitat conditions have not improved since the previous assessment. Although shrub cover has remained consistent and continues to provide adequate woody cover, structure, and forage for shrub-obligate and dependent species, the quality of the herbaceous understory has declined. Deep-rooted, tall-statured perennial bunchgrasses remain sparse and mid-statured squirreltail have declined in frequency while short-statured bluegrass (*Poa* sp.) and invasive cheatgrass have increased. These understory conditions probably are limiting habitat quality for

many ground-nesting and foraging species.

Table A.8.3 Sage-grouse Breeding Habitat Assessment, Hart Creek Allotment, Pasture 2, 2002.

Habitat Indicator	Suitable Habitat	Marginal Habitat	Unsuitable Habitat
Average Sagebrush Canopy Cover	X		
Average Sagebrush Height	X		
Sagebrush Growth Form		X	
Average Grass and Forb Height			X
Average Perennial Grass Canopy Cover			X
Average Forb Canopy Cover			X
Preferred Forb Abundance and Diversity		X	
Overall Site Assessment			**X**
Refer to Appendix H for specific habitat rating criteria as included Habitat Assessment Worksheets			

Pasture 3

General Riparian Habitat

Of the 7.6 miles of assessed stream riparian habitat in this pasture, aproximately 0.8 miles are rated in properly functioning condition (PFC) while the remaining 6.8 miles are rated as functioning-at-risk (FAR). Of the FAR reaches, 5.9 miles are in an upward trend and 0.9 miles are in a static trend. Within the PFC reach and the FAR reach with an upward trend, structural diversity, composition and vigor of hydric vegetation are as expected and resulting in habitat that is at least marginally suitable for dependant special status animals and other wildlife. However, hydric vegetation cover to protect banks and dissipate energy is partially lacking in this FAR reach which may leave habitat vulnerable during high flow events. One or more of these key indicators are partially lacking within all of the remaining FAR reaches, resulting in habitat that is not adequately providing for some dependant special status animals and other wildlife.

Four springs occur on public land in this pasture, and were all rated as FAR. One of these was determined to be in upward trend, one in a static trend and three in a downward trend. Although one is improving, all are currently deficient in one or more indicators that are crucial components of habitat for special status species and other dependant wildlife. Four of the five springs lack a diverse composition of vegetation (such as various sedges, rushes, willows and other woody riparian species), three lack a diverse age class of vegetation and three are lacking in riparian plant vigor. Poor water quality and excessive fluctuation of water levels are also adversely affecting habitat quality at four of the five springs.

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General Riparian Habitat

In the present assessment, 8.1 miles of stream riparian habitat were assessed. No riparian areas were rated PFC, 2.6 miles were rated FAR with an upward trend, and 5.5 miles were rated FAR in a static trend (see Standard 2); otherwise, the remaining information above has not changed. Overall conditions along the majority of streams supporting riparian vegetation do not appear to be providing adequate habitat conditions for dependent species, primarily because the

herbaceous understory is lacking or dominated by upland or invasive species. However, along some reaches of Browns and Little Browns Creeks, and a tributary to Buckaroo Creek that were assessed, woody species display diverse species and age-classes with multiple canopies which are providing structurally complex breeding, nesting, and foraging habitat for dependent species, including migratory birds.

Focal Special Status Species

Greater sage-grouse

Habitat Characteristics

Habitat Assessments

Pasture 3 is entirely within the breeding and winter seasonal ranges of the Owyhee Front/Triangle local population. In addition, the higher elevations in the southwestern portion of the pasture (comprising approximately 50 percent of the pasture) are within upland summer seasonal range (Map WDLF-5A). Low sagebrush and mountain big sagebrush ecological sites support breeding (including early brood-rearing), upland summer, and winter sage-grouse habitat. Wyoming big sagebrush ecological sites support breeding and winter habitats and to a lesser extent upland summer habitat where local conditions are favorable due to elevation and aspect. There are several lentic sites in the pasture, and several perennial streams and intermittent washes that provide important early and late brooding-rearing areas.

The majority of sage-grouse habitat within the pasture is considered key habit. However, some areas at higher elevations are classified as juniper encroachment (Map WDLF-4). In addition to these juniper woodlands, mixed Douglas-fir and aspen stands naturally occur at the headwaters of Little Browns and Cat Creeks and discontinuously extend down these drainages for approximately 0.5 miles or more.

Breeding Habitat

Seven SG HAs were used to assess breeding habitat conditions within pasture 3. Three SG HAs were located within the Shallow Claypan ARAR8/FEID Ecological Site (R025XY010ID), two SG HAs were located within the Loamy 8-12" ARTRW8/PSSPS-ACTH7 Ecological Site (R011XY001ID), and two SG HAs were located in the Loamy 13-16" ARTRV/PSSPS-FEID Ecological Site (R011XY011ID). Although some sites were located within inclusions of the surrounding Ecological Site matrix, the majority were representative of the Ecological Site in which they were located.

All SG HAs were conducted in 2012; however, some of the sites were surveyed after the breeding season (see below). Nevertheless, based on a variety of indicators that are not affected by annual variation (i.e., sagebrush components) or that displayed robust representation in the summer that would also be expected earlier in the season (i.e., forb diversity and abundance), results from these surveys provide provisional evidence supporting the breeding habitat suitability rating for the Ecological Site within the pasture (see below).

Although habitat conditions within Ecological Sites were consistent, conditions between Ecological Sites varied from Marginal to Suitable. Issues affecting breeding habitat quality within the pasture included invasive BRTE dominance and the lack of the deep-rooted, tall-

structured perennial herbaceous understory in ARTRW communities, JUOC encroachment in most communities generally and in ARTRV communities in particular, and sagebrush height in ARAR communities. However, because the Ecological Sites that comprised the majority of the pasture (e.g., ARAR and ARTRV communities; approximately 68 percent) were rated as suitable, breeding habitat within pasture 3 merits a Suitable rating overall.

- **06S01W06-2012** and **06S02W11b-2012 (R025XY010ID)**
  Suitable. Breeding habitat in the pasture in this ecological site is rated as suitable because most of the primary and supplementary indicators fall within the suitable ranges (Figure H-3.1). Sagebrush overstory and the perennial herbaceous understory are providing suitable nesting cover. The slightly high sagebrush CC is probably not limiting use due to the species involved (ARAR). Preferred forbs are diverse and abundant. Some vegetation community health issues due to Poa, BRTE, JUOC, and low bare ground are present. Higher representation of these species is occurring at the expense of deep-rooted, tall-structured, perennial bunchgrasses, and is also indicative of a community phase shift from HCPC. An additional assessment (**06S01W07-2012**) that was not conducted at the appropriate time of year resulted in many of the components necessary for suitable breeding habitat falling within the correct ranges (sagebrush CC, height, perennial herbaceous heights, forb abundance), and provides additional support for the suitable breeding habitat rating.
- **05S01W31-2012** and **06S02W01-2012 (R011XY001ID)**
  Marginal. Although the sagebrush height was suitable, CC and growth form fell within the marginal ranges (Figure H-3.2). In combination with the lack of perennial grass and forb cover and height (heavily skewed due to one large forb at one site), breeding habitat is on the lower end of marginal in this Ecological Site. Forb diversity and abundance was variable among the sites; however, overall, diversity was low and abundance was marginal at best based on the ESD. Forbs for early brood rearing appear to be limited. The data displays a thorough BRTE invasion in this ecological site which limits suitability. JUOC at one site also demonstrates an issue with conifer encroachment. Litter (probably due to BRTE) also may be building up and creating a higher risk of wildfire spread. The marginal rating's only merit is the presence of the sagebrush overstory component and also that sage-grouse still appear to be using this ecological site based on sign and the occurrence of several leks located nearby. However, the very low attendance and poor habitat conditions may indicate a downward trend in this ecological site in this pasture.
- **06S02W10a-2012** and **06S02W14-2012 (R025XY011ID)**
  Suitable (*provisionally*). Although assessments were not conducted at the appropriate time of year, many of the components for suitable breeding habitat fall within the suitable ranges (sagebrush height and growth form, and forb diversity and abundance) and would provisionally be rated as suitable if measured during the breeding season (Figure H-3.3). Perennial herbaceous vegetation height provided by grass is providing suitable nesting cover. Although sagebrush CC is high especially in combination with other shrubs CC, these components are probably not excluding sage-grouse nesting locations overall. This ecological site probably is providing suitable breeding habitat assuming these areas are snow-free during the nesting period.

Brood-rearing and Summer Riparian Habitats

Pasture 3 contains several intermittent/ephemeral stream valleys that may support early and late brood-rearing habitat, of which Buckaroo and Cat Creeks and tributaries of Buckaroo and Little Browns Creek have been assessed. With exception of the Buckaroo Creek tributary, the remaining streams have been assessed as FAR with a static trend. In general, most reaches maintain representative riparian shrub/tree communities, but riparian graminoids appear to be underrepresented, while upland and invasive species dominate. Due to relatively narrow floodplains, rather closed canopies, and limited openings were herbaceous vegetation has greater production potential, and a general lack of herbaceous understory forage, most of the streams are only providing marginal habitat for sage-grouse and their broods.

Pasture 3 also contains at least five spring/seep lentic riparian areas all of which have been assessed at some time in the past. With the exception of Alibi Spring, the remaining lentic areas

are located in relatively dense stands of junipers or riparian shrub and tree species which probably limits their use by sage-grouse regardless of the spring's PFC condition. Although juniper encroachment is occurring at Alibi Spring, it appears to be in the initial stages. Unfortunately, although the spring appears usable to sage-grouse, the PFC rating was NF and it is not providing suitable brood-rearing habitat because there is inadequate soil moisture to support riparian vegetation.

In general, the majority of lotic and lentic riparian areas were rated FAR with a downward trend or worse, and the riparian habitats available to and most likely used by sage-grouse are not providing adequate conditions for early and late brood rearing.

Upland Summer Habitat

Four SG HAs were used to assess upland summer habitat conditions within pasture 3. One SG HA was located within the Shallow Claypan ARAR8/FEID Ecological Site (R025XY010ID), one SG HA was located within the Loamy 8-12" ARTRW8/PSSPS-ACTH7 Ecological Site (R011XY001ID), and two SG HAs were located in the Loamy 13-16" ARTRV/PSSPS-FEID Ecological Site (R025XY011ID). All SG HAs were conducted in 2012; however, some of the sites were surveyed before the summer season (see below). Nevertheless, based on a variety of indicators that are not affected by annual variation (i.e., sagebrush components) or that displayed either robust or depauperate representation in the spring (i.e., forb diversity and abundance), results from these surveys provide provisional evidence supporting the upland summer habitat suitability rating for the Ecological Site within the pasture (see below).

Because the Ecological Sites that comprised the majority of the pasture (e.g., ARAR and ARTRV communities; approximately 68 percent) and that typically provide the abiotic and topographic conditions that support upland summer habitat were rated as suitable (albeit provisionally in some instances), upland summer habitat within pasture 3 merits a Suitable rating overall.

- **06S02W11b-2012 (R025XY010ID)**
  Suitable (*provisionally*). Although assessment was not conducted at the appropriate time of year, this ecological site appears to be providing suitable upland summer habitat because many of the primary and supplementary indicators fall within the suitable range (Figure H-3.4). Although sagebrush height is low, the relatively tall heights of perennial herbaceous understory vegetation (grass and forbs) are providing additional concealment cover. Forbs are diverse and abundant and are providing adequate foraging opportunities which probably would persist into the summer considering the elevation (approximately 5975 ft). *Poa* CC is slightly high indicating an issue with vegetation community health. In addition, JUOC are common in the area and encroachment is a management issue and may be limiting sage-grouse use now or in the future.
- **06S02W01-2012 (R011XY001ID)**
  Unsuitable (*provisionally*). This ecological site is rated as unsuitable because, other than sagebrush height, the majority of primary and supplementary indicators fall within the marginal or unsuitable range (Figure H-3.5). Understory cover is not being provided by perennial herbaceous species. Forbs are not diverse or abundant and therefore availability of sage-grouse forage is limited. Excessive BRTE in the understory is probably hindering understory movement and may be preventing sage-grouse from effectively detecting predators as well as enhancing their detection by predators. JUOC is also common at the site and also may be enhancing avian predator perching opportunities. The total absence of deep-rooted, tall-structured perennial grass cover is also a major issue in regards to concealment cover and, with the excessive BRTE cover, community composition and health.
- **06S02W10a-2012** and **06S02W14-2012 (R025XY011ID)**

Suitable. Upland summer habitat in the pasture in this ESD is rated as suitable because the vast majority of primary and supplementary indicators fall within the suitable ranges (Table Figure H-3.6). Forbs are especially diverse and abundant. High sagebrush CC is probably not limiting use by sage-grouse.

Winter Habitat

Seven SG HAs were used to assess winter habitat conditions within pasture 3. Three SG HAs were located within the Shallow Claypan ARAR8/FEID Ecological Site (R025XY010ID), two SG HA were located within the Loamy 8-12" ARTRW8/PSSPS-ACTH7 Ecological Site (R011XY001ID), and two SG HA were located in the Loamy 13-16" ARTRV/PSSPS-FEID Ecological Site (R025XY011ID). Winter habitat in all Ecological Sites within pasture 3 was rated as Suitable.

- **06S01W06-2012**, **06S02W11b-2012**, and **06S01W07-2012 (R025XY010ID)**
  Suitable. Overall the Ecological Site is rated as suitable winter habitat because all the primary and supplementary indicators fall within the suitable range (Figure H-3.7). In general, the amount (CC) and height of sagebrush would provide adequate forage and concealment cover above persistent snow at most sites under average conditions.
- **05S01W31-2012** and **06S02W01-2002 (R011XY001ID)**
  Suitable. Overall the area is rated as suitable winter habitat because the amount (CC) and height of sagebrush would provide forage above persistent snow (which rarely occurs at the sites' elevations (Figure H-3.8). Sagebrush CC would provide adequate concealment and thermal cover also. However, in the absence of management actions to reduce junipers in parts of the allotment/pasture, the area will degrade into marginal habitat primarily due to a future increase of small to medium junipers as evidenced by their current presence and abundant recruitment. Due to juniper encroachment, parts of the pasture appear to be on the lower end of suitable winter habitat and may be limiting sage-grouse use.
- **06S02W10a-2012** and **06S02W14-2012 (R025XY011ID)**
  Suitable. Overall the Ecological Site within the pasture is rated suitable because all primary and supplementary indicators fall within the suitable range (Figure H-3.9). Sagebrush CC and height would provide forage above persistent snow. Sagebrush and other shrub CC provide adequate concealment and thermal cover also. Although JUOC encroachment is occurring in some areas, winter habitat quality is probably not substantially affected because most raptors that would use these trees as perches migrate out of the area during the winter.

General Upland Habitat Assessment

Sagebrush and other shrubs are generally providing good woody cover, structure and forage for sage-grouse and most other sagebrush steppe obligates, although some decadence and mortality is occurring at one location. Western juniper is also providing habitat for a diversity of woodland species within the southwest portion of the pasture while, at the same time, encroaching into habitat for sagebrush steppe species such as sage-grouse and a diversity of migratory birds. A good diversity and abundance of forbs were recorded at the nested frequency site in the south central portion of the pasture where they are adequate for sage-grouse and other wildlife species. Large decreaser bunchgrasses are common and vigorous at two of the four assessment locations and providing good cover, but less abundant and absent at the remaining two ecological sites. The lack of decreaser bunchgrasses, along with the presence of cheatgrass, is providing poor quality habitat for sage-grouse and other ground nesting and foraging species in these two areas.

Several upland habitats and cover types occur within a variety of ecological sites within pasture 3 (Table WDLF-10).

Table WDLF-10: NRCS Ecological Sites[1] within Hart Creek pasture 3

Habitat Type	General Cover Type	Ecological Site Description	Percentage of Allotment	
			Ecological Site Description	General Cover Type
Salt Desert Shrub	Shadscale	Calcareous Loam 7-10 ATCO-PIDE/ACHY-ACTH7	1	1
Shrub Steppe	Big Sagebrush[2]	Sandy Loam 8-12 ARTRW8/ACHY	3	27
		Loamy 8-12 ARTRW8/PSSPS-ACTH7	24	
	Mountain Big Sagebrush	Loamy 12-16 ARTRV/FEID-PSSPS	1	18
		Loamy 13-16 ARTRV/PSSPS-FEID	15	
		South Slope Gravelly 12-16 ARTRV/PSSPS	2	
	Low Sagebrush	Very Shallow Stony 8-12 ARNO4/ACTH7	<1	52
		Shallow Stony Loam 8-16 ARAR8/PSSPS	12	
		Shallow Claypan 11-13 ARAR8/PSSPS	1	
		Shallow Claypan 12-16 ARAR8/FEID	39	
Mountain Shrub	Mountain Mahogany	Mahogany Savanna 16-22 CELE3-SYOR2/FEID-ACHNA	<1	<1

[1]Approximately 3.3 percent of the pasture is classified as an unknown/no data.
[2]Big sagebrush (*Artemisia tridentata*) cover types include communities dominated by the subspecies Wyoming (*wyomingensis*).

In general, upland habitat conditions have not improved since the previous assessment. Although shrub cover has remained consistent and continues to provide adequate woody cover, structure, and forage for shrub-obligate and dependent species, the quality of the herbaceous understory has generally remained static. Herbaceous understory conditions in Wyoming big sagebrush communities continue to limit habitat quality for sage-grouse and other upland species. However, conditions in mountain big sagebrush and low sagebrush ecological sites, which comprise the majority of the pasture, appear to be minimally providing habitat for ground nesting and foraging species.

Fish

Redband Trout: One redband trout was observed in Pickett Creek in Pasture 1 during the riparian inventory in July 2001. This reach of Pickett Creek is rated as functional-at risk with no apparent trend. Approximately 60% of the reach had surface flow and stream water temperature was 24°C (IDEQ cold-water aquatic life maximum temperature is 22°C). Approximately 70% of

the reach is a black cottonwood/oak leaf sumac community type with ~ 90% canopy cover, however, only about 10% of the woody canopy cover was shading the channel. Habitat is riffle dominated (90%), with little in-stream hiding cover. The BLM has not conducted fish surveys in this reach of Pickett Creek or in Hart or Browns Creeks.

Box T Allotment (00534)

Physiography - The Box T Allotment is located approximately 10 miles southwest of Oreana, Idaho in Owyhee County. Elevations range from approximately 5,500 feet to 6,500 feet (Map 1, Map 3). The allotment is part of the West Castle Creek Core Area. The landforms are hills and mountains deeply dissected by drainages. The landform features are the result of volcanic activity, and soils are rhyolitic in origin. The allotment lies within major land resource area, D-25 (Soil Survey Staff, 1981). The majority of the soils in the allotment are shallow to moderately deep and well drained. Soils are clayey to loamy and vary in surface and subsurface rock fragments. These soils formed in residuum and alluvium derived predominantly from welded rhyolitic tuff. The associated ecological sites consist primarily of Shallow-Claypan 12-16" ecological sites (54%), Loamy sites in various precipitation ranges (11%, 21%, 8%), and Mahogany Savanna 16-22" (4%).

The Allotment is divided into four pastures that include federal, state, and private lands totaling approximately 7,566 acres (Table B.0.1). Robert Thomas is the current livestock permittee.

Table B.0.1. Box T allotment acreage* by pasture and land ownership.

Pasture	Federal	State	Private	Total
#1 (Charity Field)	2,797	0	11	2,808
#1A	1,067	7	30	1,104
#2 (Box "T" Field East)	2,317	1	19	2,317
#3 (Meadow Creek or Riparian)	1,255	0	62	1,317
Totals	**7,436**	**8**	**122**	**7,566**

*Acreages represent best available estimates.

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Table ALLOT-2: Updated Box T allotment acreage* by pasture and land ownership

Pasture	Federal	State	Private	Total
#1 (Charity Field)	2,795	0	12	2,807
#1A**	1,068	7	30	1,105
#2 (Box "T" Field East)	2,317	1	15	2,332
#3 (Meadow Creek or Riparian)	1,250	0	66	1,316
Totals	**7,429**	**8**	**123**	**7,561**

*Acreages based on 2013 BLM GIS data.

**Pasture 1A in the Box T allotment was renumbered as pasture 4 to facilitate tracking of pastures.

Livestock Use History

The 1999 Owyhee Resource Management Plan identifies the Box T allotment for intensive management, of medium priority. Active permitted use is allocated for 1,774 animal unit months (AUM's) of cattle. Various grazing rotations have been incorporated in this allotment in recent history (Table 2B). In 1995, the Meadow Creek Riparian Pasture Fence was built to create

pasture 3 (Map 3), which is now managed as a riparian pasture. Grazing in pasture 3 now begins either the last week of May or the first week of June and ends between June 23 and July 7. The Cox Well pipeline has been extended approximately 2 miles into the south and southwest part of pasture 2 to provide water for cattle because the Meadow Creek Riparian Pasture Fence excludes access to Meadow Creek.

From 2001 through 2004, the grazing period for pasture 1 began in late May or early June and ended around the first or second week of July. This allowed for recovery of the riparian areas following grazing, and has resulted in gradual improvement of the North Fork Castle Creek riparian area, and the attainment of stubble height requirements in 2003.

Through 2000, Pasture 1A was grazed in June and July. In 2001, livestock management was adjusted, so that grazing in this pasture begins in mid-July, and ends in September or October, depending on vegetation conditions. Pasture 2 has been grazed for approximately two months each year, with annual variation in turnout dates from June 24 to July 25, and take-off dates ranging from July 20 to November 19. Season of use for each pasture from 1997 to 2004 is presented in Table B.0.2. Actual use and acres/AUM are presented in Appendix F.

Table B.0.2. Grazing Rotation for Box T Allotment

Pasture	1997	1998	1999	2000	2001	2002	2003	2004
#1 Charity	6/30 - 8/13	8/4- 9/20	7/20- 10/2	6/26 - 8/20	6/1 - 7/15	5/15 - 7/6	6/2- 7/8	6/1- 7/5
#1A Shirley Springs	6/29 - 8/11	6/26 - 7/25	7/3 - 8/26	6/24 - 8/25	7/19 - 8/23	7/10- 9/4	7/17 - 9/4	7/25 - 10/2
#2 Cow Valley	8/12 - 10/1	6/22 - 8/4	6/1- 7/20	10/10 - 11/15	9/22 - 11/19	9/10 - 11/14	7/14 - 9/9	7/15 - 9/15
#3 Meadow Creek or Riparian	6/1 - 6/29	5/24 - 6/20	Rest	5/28 - 6/20	6/1 - 7/9	5/24- 6/29	6/1 - 7/2	6/1 - 7/1

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Table LVST-2: Continued Grazing Rotation for Box T allotment

Pasture	2005	2006	2007	2008	2009	2010	2011	2012
#1 Charity	6/2- 7/14	6/1- 7/10	6/2-7/9	6/10- 7/11	6/2-7/9	6/3- 7/12	6/4- 7/12	6/5- 7/11
#4 (1A) Shirley Springs	7/29- 10/25	7/25- 10/18	7/25- 10/26	8/22- 11/3	8/22- 10/30	8/27- 10/30	8/25- 11/10	10/10- 11/30
#2 Cow Valley	7/18- 9/15	7/19- 9/16	10/18- 11/27	7/21- 9/20	10/20- 11/25	10/22- 11/24	6/3-8/1	10/11- 11/29
#3 Meadow Creek or Riparian	6/1-7/6	6/3-7/9	6/4-7/6	10/18- 11/28	6/3-7/7	6/2-6/7	10/21- 11/30	6/8-7/9

In recent years, the planned spring season of use in the riparian pasture 1 has been followed, while the same treatment for the riparian pasture 3 ending approximately July 1 has not been followed, especially in 2008 and 2010 when fall grazing use occurred.

At the same time, planned annual deferment of grazing use in pastures 2 and 4 until after the active growing season (May-June) has been consistently followed except for June use of pasture 2 that occurred in 2011.

Rangeland Health Evaluation Summary - Range Health Evaluation Summary Worksheets (worksheets) were completed at ten sites in this allotment during the 2002 field season. This allotment is dominated by Shallow-Claypan ecological sites mixed and Loamy ecological sites.

Pasture 1
Three worksheets were completed in this pasture: two in Shallow-Claypan 12-16" ecological sites, and one in a Loamy 13-16" ecological site. Soils at the Loamy site are derived from granitic parent materials and appear to be very representative of these ecological sites throughout the pasture.

Pasture 1A
Two worksheets were completed in this pasture, both in Shallow-Claypan 12-16" ecological sites.

Pasture 2
Three Assessments were completed in this pasture: two in Shallow-Claypan 12-16" ecological sites, and one in a Loamy 13-16" ecological site.

Pasture 3
Two assessments were completed in this pasture, one in a Shallow-Claypan 12-16" and the other in a Loamy 13-16" ecological site.

Standard 1: Watersheds

The following is excerpted from the Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management, and pertains to assessment of rangeland health as it relates to riparian and wetland areas:

"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.

Indicators may include, but are not limited to, the following:

1. The amount and distribution of ground cover, including litter, for identified ecological site(s) or soil-plant associations are appropriate for site stability.

2. Evidence of accelerated erosion in the form of rills and/or gullies, erosional pedestals, flow patterns, physical soil crusts/surface sealing, and compaction layers below the soil surface is minimal for soil type and landform."

Table B.1.1 summarizes all Range Health Indicators for the Box T allotment, by degree of departure from reference site conditions. Individual Rangeland Health Indicator ratings by site and pasture are presented in Appendix C.

Table B.1.1. Rangeland Health Indicator rating summary.

^Standard 1-Watersheds	Degree of Departure				
	None-to-slight	Slight-to-moderate	Moderate	Moderate-to-extreme	Extreme
Pasture 1[1]	24	10	2	0	0
Pasture 1A[2]	18	4	2	0	0
Pasture 2[3]	15	17	4	0	0
Pasture 3[4]	7	7	8	1	1

^ See Appendix C for individual RLH indicator ratings.
[1]Summarizes: 2 Shallow-Claypan 12-16" ecological sites and 1 Loamy 13-16" ecological site.
[2] Summarizes: 1 Loamy 13-16" and 1-Loamy 16+" ecological sites
[3] Summarizes: 3 Loamy 13-16" ecological sites
[4] Summarizes: 1 Loamy 12-16", 1 Shallow-claypan 12-16", 1 Very Shallow Stony Loam 10-14" ecological sites

Pasture 1

Site Stability – Site stability in Pasture 1 of the Box T allotment was rated as a moderate departure from expected conditions due to evidence of active and historic erosional processes. Indicators of soil erosion were present at the Loamy site in the form of water flow patterns, which were pronounced with some cut edges, and longer and more common than expected. Pedastaling of plants were also observed; in some areas, where exposed roots and surface flow patterns are evident, this process appears to be ongoing. In other areas, erosional features such as soil loss in interspatial areas appear to be due primarily to older erosional episodes, and are currently in various stages of stabilization. Mechanical damage to the soil surface from livestock trailing is evident at this site.

The Shallow-Claypan sites appear to be stable, with few signs of active erosion. Site stability indicators for both Shallow-Claypan sites in Pasture 1 primarily in the none-to-slight category, with slight-to-moderate degree of departure from reference conditions for water flow patterns and pedastels/terrecettes. In the Loamy site, site stability indicators were in the none-to-slight and slight-to-moderate categories, except for water flow patterns and plant community compostion indicators, which were rated in the moderate degree of departure category. Historic erosional features are present in the form of pedestals, terracette formation, and flow paths.

Hydrologic Function – Soil factors affecting hydrologic function in the Shallow-Claypan sites appear to be adequate. Soil surface organic matter content, soil structure and biotic soil crusts were all appropriate for the site. The plant community indicator, as it relates to hydrologic function, showed a slight-to-moderate departure. The central portion of the pasture rated a slight degree of departure, with many sites still having a good decreaser plant component. The shrub component was adequate at all sites. Overall, the plant community contains the expected

component of decreaser plant species, in balance with increaser plant species and an appropriate shrub component. The plant community in the north central portion of the pasture had relatively fewer increaser species, more decreaser species, and western juniper encroachment on the site.

Soil factors affecting the hydrologic function at the Loamy site appear to be adequate in terms of organic matter and soil structure. There is also an abundance of coarse fragments on the soil surface, mostly due to the nature of the parent material. The plant community indicator, as it relates to hydrologic function, showed a moderate degree of departure from reference site conditions due to a high proportion of increaser species to decreaser species. Decreaser bunchgrass species are very weakly represented in the interspatial areas, and the shrub component is significantly higher than expected. The shrub component was affected by a relatively high proportion of rabbitbrush to big sagebrush. Overall, the plant community contains few interspatial grasses; increaser species dominate the existing bunchgrass component. The shrub overstory is higher than expected for the site, which is also experiencing western juniper encroachment.

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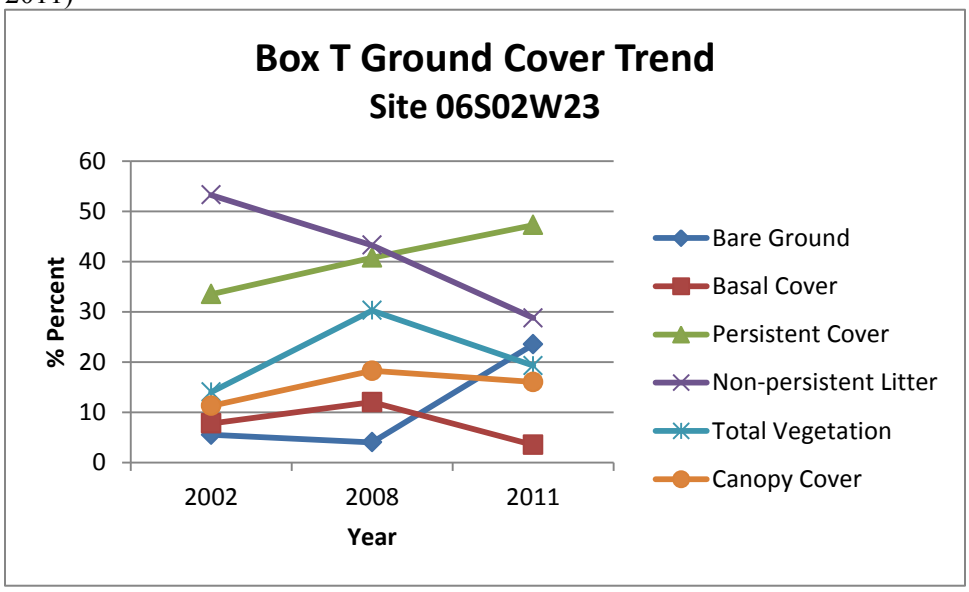
Ground Cover Trend

Ground cover trend data were collected in pasture 3 at the nested plot frequency transect (06S02W23) in 2002, 2008, and 2011 (Figure Soil-4). Bare ground shows a significant (Student's T-test; p-value <0.1) increase short and long-term while significant declines in basal vegetation and non-persistent litter are evident over the short term. Over the long term, persistent cover has been increasing non-significantly. Canopy cover has been static over the short-term though a slight long term increase is evident. Total vegetation shows significant changes that decrease short term and increase long term.

Figure Soil-4: Ground Cover data from trend site 06S02W23 for the Box T allotment (2002, 2008, and 2011)



Despite some values showing improvements between 2002 and 2011, the site reflects an overall downward trend, especially over the most recent years, with all but persistent cover declining. A

sharp increase in bare ground is apparent after 2008 and appears to be related to the overall decline in ground cover. The increase in persistent cover may also be related to an accumulation of gravel and rocks as bare ground is exposed because of a decrease in the remaining cover types. Unfortunately, persistent cover readings cannot be relied on too heavily since several indicators are combined within this cover type.

The variability of recorded shrub density (see Standard 4) does not provide meaningful data to reach any conclusion, although frequency shows an increase in low sagebrush and a decline in mountain big sagebrush that has provided for continuous canopy ground cover.

Grass frequency (see Standard 4) varied widely, with no conclusive indication of trend. Overall interpretations of trend data suggest that ground cover conditions reflect a downward trend over the short term since 2008, especially for bare ground. This coincides with a static to downward trend for biotic conditions due to a steady decline in deep-rooted perennial bunchgrasses and an increase in invasive annuals.

Pasture 1A

Site Stability – Few signs of active erosion were noted at sites in Pasture 1A. Active pedestaling is apparent at the site in the northeast portion and is correlated with degree of slope. Historic erosional features are present at both sites, and include plant pedestals, weak terracette formation, and flow paths. These site stability indicators rated a slight-to-moderate departure from expected conditions.

Hydrologic Function – Soil factors affecting hydrologic function appear to be adequate. Organic matter, structure, and presence of biotic soil crusts at the soil surface are all appropriate to the site. The indicator for plant community composition and distribution showed a slight-to-moderate departure, except the northwest portion of the pasture, which rated a slight degree of departure, with a good decreaser plant component. The main visual feature of the plant community is decreaser species in proper proportion with increaser species and an adequate shrub component. The northeast portion of the pasture appears to have an imbalance of increaser to decreaser species, and shrub density appears to be higher than expected. Photos taken at this site show weak representation of bunchgrasses in the interspatial areas.

Pasture 2

Site Stability – Indicators of soil erosion are present at the Loamy site in the form of water flow patterns which are mostly short and sporadic, and pedestaled plants associated with the flow paths. These processes rate a slight-to-moderate departure from expected conditions, the amount of bare ground rates in the moderate range due to the size and connectivity of the areas.

The Shallow-Claypan sites exhibits signs of active erosion in the form of water flow patterns and plant pedestals in the slight-to-moderate range of departure from reference conditions. Water flow patterns at the site range from short to long and connected, and are associated with pedestaled bunchgrasses.

Hydrologic Function – The majority of soil condition indicators relating to hydrologic function rated in the slight-to-moderate degree of departure from reference conditions. At the Loamy site, soil surface resistance to erosion rated as a moderate degree of departure due to poor organic matter content in surface soil layers, weak surface structure, and poor representation of biotic soil crusts. The interspatial areas are particularly weak in these areas and physical soil crusting was documented at two sites. The indicator for plant community composition and distribution showed a slight-to-moderate degree of departure, with many sites still having a decreaser grass component that is weakly represented in interspatial areas. The shrub component appears to be appropriate at all sites. However, rabbitbrush density is greater than expected at the Loamy site. Overall, the plant community has an adequate shrub component with some decreaser grasses and a slightly higher proportion of increaser species. Perennial grasses tend to be found under the protection of shrubs, and are lacking in the interspaces in many areas.

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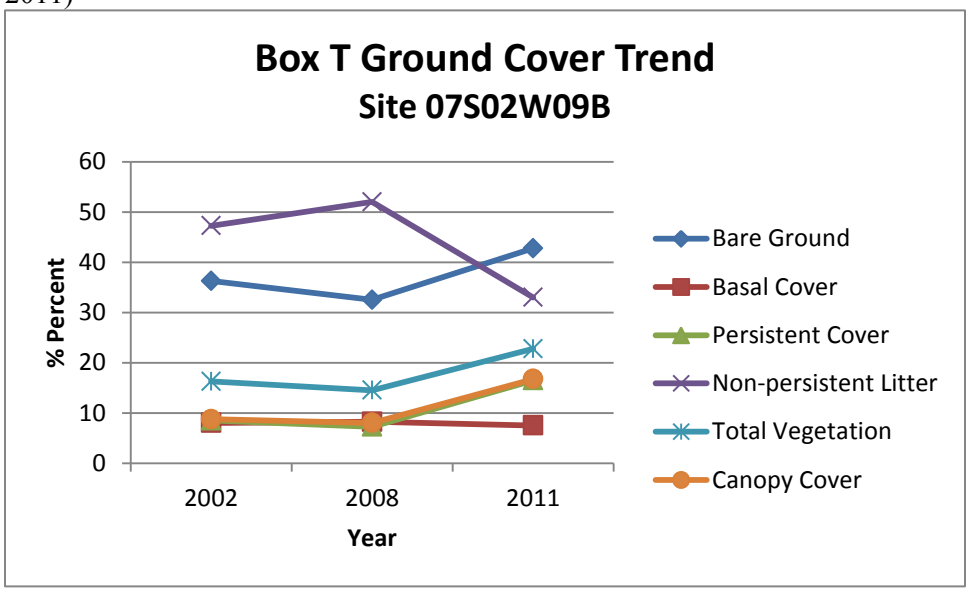
Ground Cover Trend

Ground cover trend data were collected in pasture 2 at the nested plot frequency transect (07S02W09B) in 2002, 2008, and 2011 (Figure Soil-5). Bare ground, persistent cover, total vegetation, and canopy cover show a primarily significant (Student's T-test; p-value <0.1) increase both over the short and long term. Basal vegetation remains static throughout, while non-persistent litter is declining significantly over the short term and non-significantly over the long-term.

Figure Soil-5: Ground Cover data from trend site 07S02W09B for the Box T allotment (2002, 2008, and 2011)



The site is showing a general improvement from 2008 to 2011 following a static trend during the early years. However, bare ground has significantly increased and is near the expected upper range of 25 to 45 percent for a Loamy 13-16" ecological site. At the same time, this increase may be related to the inverse relationship displayed by a decline in non-persistent litter. Shrub density trend data (see Standard 4) show a decline in mountain big sagebrush and an increase in yellow rabbit brush that may coincide with a significant long- and short-term increase in canopy cover.

The reduced ground cover and litter provided from the dominating rabbitbrush that established due to a burn in 1994 may also contribute to an increase in bare soil.

Grass frequency data (see Standard 4) display fluctuating bunchgrass frequency. Overall interpretations of trend data suggest that ground cover reflects a general static to upward trend, especially over the most recent years since 2008; however, the significant increase in already high levels of bare ground increases the risk for erosion. Frequency data suggest a short-term static to upward trend for biotic conditions. Taken together, the overall improvement of ground cover values along with an upward trend in grass frequency is positive though the recent increase in bare ground suggests that soil stability is impaired.

Pasture 3

Site Stability – Indicators of active soil erosion are present at the Loamy site, and were rated as a moderate departure from reference conditions. In particular, water flow patterns are longer and more pronounced than expected. Pedestaled plants are associated with the water flow paths, and terrecettes are also present. In the interspatial areas, there is widespread physical crust formation attributed to raindrop impact and soil sealing. The amount of bare ground is a concern with a moderate departure rating due to the size and extent of the bare areas.

The Shallow-Claypan site exhibits indicators of erosion rated in the moderate-to-extreme and extreme categories. Water flow paths are long and connected, with cut edges and physical soil crusts. Plant pedestaling is common on all species including shrubs, and terracette formation is evident. Much of this soil movement is due to historic episodes; however some active erosion is occurring. The amount of bare ground in pasture 3 rated a moderate degree of departure, and is attributed to extensive livestock trailing.

Hydrologic Function – Soil factors affecting hydrologic function at these sites include poor organic matter content in surface soil layers, weak surface structure at the Loamy site, and few biologic soil crust. At both sites, soil conditions in interspatial areas are particularly poor; biotic crusts are very poorly represented, and physical soil crusting was documented. The plant community composition and distribution indicator showed a moderate degree of departure, with sites having a weak decreaser grass component, particularly in the interspatial areas where vegetation for site stabilization is sparse. The shrub component is greater than expected at all sites. Rabbitbrush density is higher than expected at the Loamy site. Overall, the plant community contains few interspatial bunchgrasses, and decreaser species are present in reduced numbers under a dense shrub overstory.

Standard 2: Riparian Areas and Wetlands

Stream Inventories/Assessments

Stream-associated riparian inventories were conducted by Riparian Resources in 2000 and 2003. Inventories included descriptions of vegetative community composition and cover, stream channel conditions, and riparian proper functioning condition assessments. BLM conducted riparian proper functioning condition assessments in 2003 and 2004. Appendix D-1 summarizes the BLM riparian proper functioning condition (PFC) checklist elements specific to Standard 2. The standard checklist has 17 items and items 6-12 and 14 describe features associated with

riparian vegetation (Appendix B (Methods) describes the PFC ratings). Map 3 shows the locations of stream segments.

BLM reviewed the following internal data for Meadow Creek: water quality sample results (8/14/96), riparian greenline reconnaissance data (8/14/96), rapid riparian reconnaissance (6/25/92), riparian aquatic data sheet (8/12/96), riparian vegetation inventory (8/12/96), riparian/water quality monitoring results (6/25/92), stream survey forms (6/29/78). BLM also reviewed the State of Idaho's Beneficial Use Reconnaissance Protocol database (IDEQ 2004b) for Meadow, Alder and North Fork Castle Creeks.

PFC assessments were conducted along 5.3 of 5.3 known stream miles with the potential to support riparian vegetation. The overall ratings are summarized as follows:

Table B.2.1. Box T allotment riparian PFC results.

Condition Rating	Miles	Percent of total
Proper Functioning Condition	0.3	06
Functional-At Risk (Upward)	1.9	36
Functional-At Risk (Static)	1.2	23
Functional-At Risk	0.7	13
Functional-At Risk (Downward)	1.2	22

Pasture 1

Table B.2.2 summarizes key findings from the stream inventory related to riparian vegetation and stream bank stability.

Table B.2.2. Riparian community types and stream bank stability

Stream Segment (length, miles)	**Riparian Community Type**	**Deep Binding Root Mass (% of banks)**	**Bed Material**	**Bank Material**	**Stream banks covered-stable[1] and uncovered –stable[2] (%)**	**Active Bank Erosion (%)**
Alder Creek ALD004 (0.4)	Yellow Willow Rose Mountain Maple	65-85	Gravel to cobble	Silt to cobble	60	10
Charity Spring Creek CHA001 (0.1)	Kentucky Bluegrass Juniper	< 35	Sand to Gravel	Sand to Gravel	40	30
Charity Spring Exclosure CHA002 (0.3)	Willow/Sedge	> 85	Silt-Clay	Silt-Clay	80	< 5
NF Castle Creek NFC005 (0.6)	Kentucky Bluegrass Redtop	< 35	Silt to gravel	Silt to gravel	20	20

[1]Covered and Stable banks are defined as having over 50 percent of the streambank surfaces covered by vegetation in vigorous condition, or the banks are OVER 50 percent covered by materials (large cobble, boulders or anchored rock) that prevent bank erosion. Streambanks are stable; that is, they do not show indications of alteration such as breakdown, erosion, tension cracking, shearing or slumping.

Stream Segment (length, miles)	Riparian Community Type	Deep Binding Root Mass (% of banks)	Bed Material	Bank Material	Stream banks covered-stable[1] and uncovered –stable[2] (%)	Active Bank Erosion (%)
[2]Uncovered and Stable banks are defined as having less than 50 percent of the streambank surfaces covered by vegetation in vigorous condition, or the banks are LESS THAN 50 percent covered by materials that do not allow bank erosion. Streambanks do not show indications of alteration such as breakdown, erosion, tension cracking, shearing or slumping.						

Alder Creek maintains diverse and healthy riparian communities that are stabilizing banks, although whitetop is present along parts of this reach. Within the exclosure, Charity Spring is functioning properly, while the adjacent reaches upstream and downstream are dominated by upland species that provide poor bank protection. Riparian areas along North Fork Castle Creek are dominated by upland grasses and species indicative of disturbance. Although obligate riparian species occur along this reach, their abundance and vigor are not adequate for stream bank protection.

Pasture 1A

Table B.2.3 summarizes key findings from the stream inventory related to riparian vegetation and stream bank stability.

Table B.2.3. Riparian community types and stream bank stability

Stream Segment (length, miles)	Riparian Community Type	Deep Binding Root Mass (% of banks)	Bed Material	Bank Material	Stream banks covered-stable and uncovered - stable (%)	Active Bank Erosion (%)
NF Castle Creek NFC005 (0.2)	Kentucky Bluegrass Redtop	< 35	Silt to gravel	Silt to gravel	20	20
NFC006 (1.2)	Riparian inventory not conducted (PFC data only)					
NF Castle Ck Tributary NCT001 (0.3)	Riparian inventory not conducted (PFC data only)					

Riparian areas along North Fork Castle Creek (NFC005) are dominated by upland grasses and species indicative of disturbance. Although obligate riparian species occur along this reach, their abundance and vigor are less than that required to adequately protect stream banks.

North Fork Castle Creek segment NFC006 (upstream of the State section) is an intermittent stream rated as functional-at-risk with a downward trend. Four discrete, off-channel springs enter the main channel, but flow only a short distance before dissipating. The lower several hundred feet maintains perennial flow through a degraded meadow system. One of several active head cuts on North Fork Castle Creek occurs at the upper end of this meadow. The channel contains discontinuous willow-dominated reaches. The riparian/non-riparian ratio is approximately 65:35. Herbaceous riparian species occur mainly near the springs and are under-represented along the remainder of the channel, where they should occupy at least 30% of streambed and banks.

An unnamed tributary to North Fork Castle Creek (NCT001) is a willow-dominated, intermittent

flow channel that has downcut, but appears stable at its current elevation.

Pasture 2
There are no stream channels in Pasture 2 that have the potential to support riparian plant communities.

Pasture 3
Meadow Creek contains expanding populations of sedges and rushes. Riparian shrubs are dominated by older growth form willows that occur primarily on floodplains and terraces. Some willow recruitment is occurring, but banks are still vulnerable to erosion from high runoff events.

The predominant bank-stabilizing vegetation on Meadow Creek consists of obligate riparian species. Table B.2.4 summarizes stream inventory data related to riparian vegetation and stream bank stability.

Table B.2.4. Riparian community types and stream bank stability-Meadow Creek

Site ID Location Date	Riparian Community Type	Deep Binding Root Mass (% of banks)	Bed Material	Bank Material	Stream banks covered-stable[1] and uncovered – stable[2] (%)	Active Bank Erosion (%)
MEA001 T7S R2W S07 NWSW 10/02/01	Geyer Willow/ Rush	65-84	Silt to gravel	Silt to gravel	75	10
MEAO5120 T7S R3W S12 SESE 8/14/96	Sedge/Rush/ Spike Rush	---	Silt to gravel	---	65	---
1996SBOIA019 T7S R3W S12 SESE 6/18/96	---	---	---	---	73	---
MEAO003.0 T7S R2W S07 SWSW 6/25/92	Sedge/ Willow	---	Silt to gravel	---	50	---
Above Spencer Res. T7S R3W S13 NWNE 6/29/78	---	---	Silt to gravel	---	40% cover (>20% bare soil)	10-20

--- = Not measured/no data available.

[1]Covered and Stable banks are defined as having over 50 percent of the streambank surfaces covered by vegetation in vigorous condition, or the banks are OVER 50 percent covered by materials (large cobble, boulders or anchored rock) that prevent bank erosion. Streambanks are stable; that is, they do not show indications of alteration such as breakdown, erosion, tension cracking, shearing or slumping.
[2]Uncovered and Stable banks are defined as having less than 50 percent of the streambank surfaces covered by vegetation in vigorous condition, or the banks are LESS THAN 50 percent covered by materials that do not allow bank erosion. Streambanks do not show indications of alteration such as breakdown, erosion, tension cracking, shearing or slumping.

Spring Inventories/Assessments
BLM conducted riparian proper functioning condition assessments on seep/spring associated riparian areas in 2003 and 2004. Appendix D-2 summarizes the BLM riparian proper functioning condition (PFC) checklist elements for lentic systems. The standard checklist has 20 items that

describe hydrologic, vegetative and erosion/deposition features associated with riparian-wetland areas (Appendix B, Methods, describes the PFC ratings). Maps 1 and 2 show the locations of known springs. Table B.2.5 summarizes riparian proper functioning condition ratings for 16 of 19 known springs.

Table B.2.5 Functional condition rating of known springs

Condition Rating	Number of Springs
Proper Functioning Condition	1
Functional-At Risk (Upward)	0
Functional-At Risk (Static)	3
Functional-At Risk (Downward)	8
Non-Functional	4
Not Rated	3

Pasture 1

BLM conducted riparian proper functioning condition assessments for 9 of 10 known lentic riparian-wetland areas in Pasture 1 of the Box T allotment (Table B.2.6). Six springs have been developed: four with troughs, one with a stock pond, and one with a trough and stock pond. Water from a spring along the Bachman Grade Road is being captured by the road ditch. Part of Charity Spring has been fenced and is functioning properly. There is an active headcut on Charity Springs Creek, just upstream of the confluence with North Fork Castle Creek. The other springs are either functional-at risk with a downward trend, or nonfunctional. The abundance and vigor of riparian species at these springs are low because most of the flow has been diverted to troughs.

Pasture 1A

BLM conducted riparian proper functioning condition assessments on 7 of 9 known springs in Pasture 1A (Table B.2.7). Several springs occur at the headwaters of North Fork Castle Creek. Three springs have been developed into troughs; two are fenced into exclosures, though one exclosure fence is currently down. These spring systems have become channeled by historic and current livestock trailing, and flow paths have been altered. Riparian species present are indicative of disturbance and have low vigor.

Table B2-6: Springs in Box T Allotment, Pasture 1

Name	Location	PFC	Comment
Charity Spring	T06S R02W S14 SWSW	PFC	Inside exclosure
Charity Spring	T06S R02W S15 SESE	FAR-Static	Active headcut downstream of exclosure
Charity Spring	T06S R02W S14 NWSW	FAR-Downward	Source - upstream of exclosure
Charity Spring 2	T06S R02W S14 SWSW	Non-functional	3 troughs
Lineham Spring	T06S R02W 23 NESW	FAR-Downward	Trough
5341_A	T06S R02W S26 SENW	Non-functional	Trough
5341_B	T06S R02W S35 NENE	Non-functional	Stock pond
5341_C	T06S R02W S35 NESE	Non-functional	Trough and stock pond

Name	Location	PFC	Comment
5341_Z	T06S R02W	FAR-Downward	Trough
5341_D	T06S R02W S22 SENW	Not Rated	Along road; flows to ditch

Table B.2.7. Springs in Box T allotment Pasture 1A

Name	Location	PFC	Comment
5341A_B (Broken Trough Spring)	T06S R02W S09 NESE	FAR-Downward	Fence down; trough not working
5341A_C	T06S R02W S09 SENW	FAR-Downward	Livestock trailing
5341A_D	T06S R02W S09 NWSE	FAR-Downward	Livestock trailing
5341A_E (2)	T06S R02W S09 SWSE	FAR-Downward	Old wooden troughs
5341A_F	T06S R02W S15 NWNE	FAR-Static	Trough –dry (from Shirley Spring)
5341A_G	T06S R02W S15 NENW	FAR-Static	Livestock Trailing
5341A_H (2) (Shirley Spring)	T06S R02W S15 NWNE	Not Rated	Exclosure

Riparian Utilization Monitoring Results

Table B.2.8 summarizes herbaceous riparian vegetation stubble height monitoring data. Stubble height measurements are a simple and effective tool to monitor rangeland use in key areas. Individual plant measurements are collected from herbaceous vegetation such as grasses, sedges, and rushes to obtain an estimate of average stubble height after grazing. Generally stubble heights of 4 to 6 inches are an acceptable standard for effective streambank protection, prevention of sedimentation, and maintenance of plant communities (USDI, BLM 1999).

Pastures 2 and 3
Pastures 2 and 3 do not contain any known spring-associated riparian-wetland areas.

Table B.2.8. Riparian vegetation utilization in Box T Allotment

Pasture	Stream Segment ID Number	Date	Stubble Height (inches)
5341	NF Castle Creek NFC005	9/28/05	6.5
		11/20/03	6.5
		10/23/02	3.5
		10/16/01	2.5
		9/14/00	3.0
5343	Meadow Creek MEA001	9/28/05	6.0
		7/25/00	9.0

Photo Trend Monitoring Results
Pasture 1

Photograph analysis along North Fork Castle Creek in Pasture 1 since 2000 (2000-2005) reveals an increase in the amount and vigor of herbaceous riparian species (primarily Nebraska sedge and Baltic rush) since 2003. However, the plant community is still dominated by grasses and willow recruitment remains very low. Stream channel morphology remains over-widened for the environmental setting (gradient and valley bottom width).

Pasture 3
Analysis of repeat photography along Meadow Creek in Pasture 3 since 1991 (1991, 1996, 1997, 2000, 2003, 2004, 2005) reveals a noticeable increase in the amount and vigor of herbaceous riparian species (primarily Nebraska sedge and Baltic rush). Willows appear to be increasing, but at a much slower rate than the herbaceous species. Stream channel morphology has shown noticeable changes along some reaches, as width is decreasing. Other reaches, however, still appear to be over-widened for the gradient and valley bottom width.

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Table RIPN-3: Riparian information for the Box T allotment

	Allotment, Pasture Name, and Miles Assessed				
Stream Name	**Box T- 01**	**Box T-03**	**Box T-04 (1A)**	**Assessment Issues/ Impacts Identified**	**Total Miles *Assessed***
Alder Creek	0.3 (FAR-2000)			vertical and lateral instability, high use of stream bank with erosion/deposition occurring	0.3
NF Castle Creek lower	0.8 (FAR-2004) (FAR-2008) (photos-2013)			incised channel/ high use of herbaceous veg./ upland contribution and excessive sediment 2013- vegetation heavily impacted	0.8
NF Castle Creek upper (assessed a lentic spring series in 2010 with names: SpringSeries_5341A "C"; SpringSeries_5341A "D"; and Unnamed Spring "5341A E"			1.5 (FAR-2004) (FAR-2008)	2008: 2 headcuts present/ lack of riparian veg.	1.5
NF Castle Trib			0.3 (FAR-2003)	lack of plant age-class/ lack of hydric plant cover to protect banks	0.3
Meadow Creek		1.5 (FAR-2001) (NF-2004) (FAR-2007)		excessive sediment/ incised channel & cutbanks/ high use of veg.	1.5
Charity Spring Trib	0.3 (PFC-			vegetation inside exclosure was	0.3

(in exclosure)	2003) (photos-2013)			robust and woody species were diverse	

MIM Site Metrics

Stream Name/ Year/ Pasture	Median SH (inches)	Bank Alteration (%)	Woody Use (%)	Bank Stability (%)	Bank Cover (%)	% Mature	% Seedlings & young	Ecological Status	Greenline Stability Rating	Site Wetland Rating
Meadow Creek 2010/ 3	9.0	22	19.3	98	99	8	92	PNC (91)	High (8.5)	Very good

Springs Assessed, Condition, & Issues Identified

Spring Name -Miles *Assessed*	**Pasture/Assessment Year**	**PFC Condition**	**Assessment Issues/ Impacts Identified**
Charity Spring (outside exclosure)	1/2003 & 2002 & 2013	FAR & NF & photos	2003- shrinking area/ altered flow patterns/ inadequate riparian veg., vigor & composition 2008: non-functioning trough below a heavily impacted wetland area with no riparian vegetation present 2013- minimal vegetation/ excessive trampling
Linehan Spring	1/2003 & 2008	FAR & FAR	shrinking area/ inadequate stabilizing root mass/ inadequate cover/ presence of noxious weeds
Unnamed Spring "5341B"	1/2003 & 2010 2012 & 2013- photos and notes	NF & FAR	2003 & 2010- area shrinking/ inadequate rip. veg. & stabilizing root mass/ lack of species composition and plant vigor/ presence of noxious weeds 2013- appears to be on downward trend
Unnamed Spring "5341C"	1/2003	NF	area shrinking/ inadequate stabilizing rip. veg & root mass/ lack of species composition and plant vigor/ presence of noxious weeds
Unnamed Spring "5341Z"	1/2003	FAR	lack of flood plain/ inadequate stabilizing rip. veg & root mass/ lack of species composition and plant vigor/ drying soils/ presence of noxious weeds

Roadside Spring (5341A)	1/2003 & 2010	NF & FAR	lack of flood plain/ area shrinking/ lack of plant composition/ lack of hydric soils
Unnamed Spring "5341A E"	4/2003 & 2010	FAR & PFC	2003: altered flow patterns/ lack of plant diversity and vigor
Unnamed Spring (5341A "G")	4/2003	FAR	altered flow patterns/ inadequate veg. cover, composition and vigor
Unnamed Spring (SpringSeries_5341A "C")	4/2003 & 2010	FAR & PFC	2003: altered flow patterns/ lack of age plant age class, composition & vigor
Unnamed Spring (SpringSeries_5341A "D")	4/2003 & 2010	FAR & PFC	2003: area shrinking/ altered flow patterns/ lack of plant age-class, composition and vigor
Broken Trough Spring	4/2008 & 2010	PFC &PFC	

Greenline Ecological Status Rating

Summary Value	Condition Rating
0-15	Very Early
16-40	Early
41-60	Mid
61-85	Late
85+	PNC

Vegetation-Erosion Resistance Status Rating (Greenline Stability rating)

Summary Value	Condition Rating
0-2	Very Low
3-4	Low
5-6	Moderate
7-8	High
9-10	Very High

Site Wetland Status Rating

Summary Value	Condition Rating
0-15	Very Poor
16-40	Poor
41-60	Fair
61-85	Good
85+	Very Good

Standard 3: Stream Channel/Floodplain

Stream Inventories/Assessment Summary

Riparian stream inventories for most of the intermittent and perennial channels in this allotment were conducted by Riparian Resources in 2000 and 2001. BLM conducted riparian proper functioning condition assessments in 2003 and 2004. Appendix D-2 summarizes the BLM riparian proper functioning condition checklist elements specific to Standard 3. The standard checklist has 17 items and items 1-5, 12, and 14-17 describe features associated with soil erosion-deposition, channel form and hydrology.

BLM reviewed the following internal data for Meadow Creek: water quality sample results (8/14/96), riparian greenline reconnaissance data (8/14/96), rapid riparian reconnaissance (6/25/92), riparian aquatic data sheet (8/12/96), riparian vegetation inventory (8/12/96), riparian/water quality monitoring results (6/25/92), stream survey forms (6/29/78). BLM also reviewed the State of Idaho's Beneficial Use Reconnaissance Protocol database (IDEQ 2004b) for Meadow, Alder and North Fork Castle Creeks.

Pasture 1

Alder Creek is an intermittent tributary to Castle Creek. Hydrologically, the channel is passing

the range of flow and sediment without downcutting or aggrading. North Fork Castle Creek is incised, although a floodplain is present and continuing to develop. Flow from high runoff events is routed into the channel from the Bachman Grade Road, exacerbating downstream conditions. Just upstream of the confluence with North Fork Castle Creek, an active headcut is slowly migrating toward Charity Spring.

Pasture 1A
North Fork Castle Creek segment NFC006 (upstream of the State section) is an intermittent stream rated as functional-at risk with a downward trend. The lower several hundred feet maintains perennial flow and occurs in a degraded meadow system. Beginning at the upper end of the meadow is the first of several active headcuts. The channel receives a high amount of sediment from the adjacent hill slopes, which may actually be filling in behind the headcuts as they advance.

An unnamed tributary to North Fork Castle Creek (NTC001) is a willow-dominated, intermittent-flow channel. This reach has downcut, but appears stable at its current elevation.

Pasture 2
Ephemeral stream channels in pasture 2 have not been evaluated to determine if they are passing the range of flow and sediment without either aggrading or downcutting.

Pasture 3
Meadow Creek is recovering from past disturbance. The channel had become straightened and incised, but a floodplain is developing. The channel is becoming narrower, deeper and more sinuous, but is still evolving toward a more stable condition. Streambank and floodplain features are not yet adequate to dissipate erosional energy generated during high flow events. Extent of streambank alteration is summarized in Table B.3.1.

Table B.3.1. Streambank Alteration Monitoring in Box T Allotment.

Pasture	Stream Segment ID Number	Date	Percent Streambank Altered
5341	NF Castle Creek NFC005	9.28.05	< 10
		10.23.01	23
		9.14.00	83
5343	Meadow Creek MEA001	9.28.05	< 10

Photo Trend Monitoring Results
Photograph analysis along Meadow Creek since 1991 shows noticeable changes in morphology along some reaches, as width is decreasing. Other reaches, however, still appear to be over-widened for the gradient and valley bottom width.

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See table above under Standard 2 for a comprehensive table of BLM riparian information associated with Standards 2 and 3.

Standard 4: Native Plant Communities

The following is excerpted from Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management, and pertains to assessment of rangeland health for the native plant communities standard:

> 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.
>
> Indicators may include, but are not limited to, the following:
>
> 1. Native plant communities (flora and microbiotic crusts) are maintained or improved to ensure the proper functioning of ecological processes and continued productivity and diversity of native plant species.
>
> 2. The diversity of native plant species is maintained.
>
> 3. Plant vigor (total plant production, seed and seedstalk production, cover, etc.) is adequate to enable reproduction and recruitment of plants when favorable climatic events occur.
>
> 4. Noxious weeds are not increasing.
>
> 5. Adequate litter and standing dead plant material are present for site protection and for decomposition to replenish soil nutrients relative to site potential.

Rangeland Health Evaluations on the Box T allotment were conducted in June of 2002. Table B.4.1 summarizes ratings of Rangeland Health Indicators related to the Native Plant Communities standard from Rangeland Health Evaluation Worksheets in each pasture. Conditions at each site were compared to appropriate nearby reference areas, or to ecological site guides when reference areas were not available.

Table B.4.1. Rangeland Health Indicator rating summary.

^Standard 4-Native Plant Communities	Degree of Departure				
	None-to-slight	Slight-to-moderate	Moderate	Moderate-to-extreme	Extreme
Pasture 1	14	10	1	2	0
Pasture 1A	11	3	2	2	0
Pasture 2	9	15	3	0	0
Pasture 3	2	9	6	1	0

^ See Appendix C for RLH Indicator ratings.
*1 Summarizes: 2 Shallow-Claypan 12-16" ecological sites and 1 Loamy 13-16" ecological site.
*2 Summarizes: 1 Loamy 13-16" and 1-Loamy 16+" ecological sites
*3 Summarizes: 3 Loamy 13-16" ecological sites
*4 Summarizes: 1 Loamy 12-16", 1 Shallow-Claypan 12-16", 1 Very Shallow Stony Loam 10-14" ecological sites

Nested plot frequency transect studies are established in Pasture 1 and Pasture 2. Chi-square statistical analysis was performed on frequency data (Appendix B), and the significance level for testing frequency data was set at P=0.05. The P-value reports the likelihood that the observed difference between two measurements was due to chance alone. A P-value of 0.05 (5%) indicates that there is a 5% chance of obtaining the observed result even when is no actual change in species frequency. Conversely, when P=0.05 there is a 95% probability that the difference between the two frequency measures represents a true change in plant species frequency (USDI, BLM 1998-1). The P-value is a measurement of statistical probability and does not necessarily reflect biological significance. Nested plot frequency data are presented in Appendix E.

Pasture 1

Rangeland Health Evaluation Summary
In the Shallow-Claypan 12-16" ecological site at T 06S R 02W Sec 35, seven of the nine indicators related to Standard 4 rated in the none-to-slight range of departure from expected conditions for this ecological site, and two indicators rated in the slight-to-moderate range. Low sagebrush and Idaho fescue are the dominant plant species at this site. Plant mortality was noted, due primarily to pedestaling and uprooting of perennial grasses.

In a Loamy 13-16" site at T 06S R 02W Sec 26 indicators for the reproductive capability of perennial plants were in the moderate range of departure from expected conditions for this ecological site. Indicators for plant mortality, plant decadence, and invasive plants were rated in the moderate-to-extreme range. Perennial grasses exhibit low vigor, reducing reproductive capability. Decadent shrubs are common, as is crown die-out on Idaho fescue plants. Western juniper occurs commonly at this site and cheatgrass is scattered throughout the area. The site has a reduced perennial grass component, with a concomitant increase in shrubs.

Assessments completed at T 06S R 02W Sec 23 in a Shallow-Claypan 23-16" site reported all nine indicators in the none-to-slight, or slight-to-moderate ranges. Perennial decreaser grasses are present in slightly reduced numbers, and microbiotic crusts are present, but occur mostly under shrub canopies. Western juniper is present in the area, but not common.

Nested Plot Frequency
A nested plot frequency transect and photo-plot were established at T 07S R 02W Sec23 in 1985 and were re-read in 1996 and 2002 (Table B.4.2). Photographs were taken in 2002, but due to camera malfunction were retaken in 2003. Analysis of repeat photography reveals increase in grass cover between 1985 and 1996 and a decrease between 1996 and 2003. Grass cover changes appear to be attributed to a reduction of biomass and basal girth of the plants. Monitoring data shows the frequency of bluebunch wheatgrass increased significantly from 10% in 1985, to l5% in 1996, and to 55% in 2002 (P< 0.001). Squirreltail frequency declined significantly over the monitoring period from 78% in 1985, 68% in 1996 and 37% in 2002 (P< 0.001). Bulbous bluegrass frequency varied significantly over time, from 83% in 1985, 67% in 1996, and 89% in 2002 (P-value 0.001). Sandberg bluegrass decreased significantly from 100% in 1985 to 96% in 1996 and to 76% in 2002 (P< 0.001). Shrub frequency at the site appears to have declined slightly, however these changes were not statistically significant. Forb frequency

was collected sporadically over the monitoring period, according to protocol at the time. Appendix E graphs include forb frequency in 2002. Shrub density data were collected at the monitoring site, but no statistical analysis has been performed on these data. Low sagebrush density declined from 100 plants per acre in 1996 to 50 plants per acre in 2002. Mountain big sagebrush density decreased from 1500 plants per acre in 1996 to 750 plants per acre in 2002. Percent ground cover for the monitoring period is shown in Table B.4.3. Graphs of frequency data are presented in Appendix E.

Table B.4.2. Box T Pasture 1 frequency data.

	1985 (%)	1996 (%)	2002 (%)	P-Value
Bluebunch Wheatgrass	10	15	55	<0.001
Idaho Fescue	--	28	22	0.327
Squirreltail	78	68	37	<0.001
Bulbous bluegrass	83	67	89	0.001
Sandberg bluegrass	100	96	76	<0.001
Low Sagebrush	8	1	5	0.130
Mt. Big Sagebrush	23	17	12	0.281
-- = Not measured/no data available.				

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Data were collected at the pasture 1 nested plot frequency transect (T 06S, R 02W, Sec 23) in 2011. The trend site in pasture 1 of the Box T allotment is within T.6S., R.2W and not in T.7S., R.2W, as identified in the 2006 write-up. Deep-rooted bunchgrass species that have potential to be co-dominant perennial species in these shrub-steppe vegetation communities (Idaho fescue and bluebunch wheatgrass) remained static in frequency between 2008 and 2011. The increase in frequency of bluebunch wheatgrass that was noted in the 2006 Assessment was followed by an equal decline between 2002 and 2008. At the same time, frequency of Idaho fescue increased slightly, though not significantly (Student's T-test; p-value >0.1).

The frequency of shallow-rooted and short-lived bunchgrass at the trend plot in pasture 1, including Sandberg bluegrass, bulbous bluegrass, and squirreltail, varied widely with no conclusive indication of trend. While a recorded decrease in frequency of squirreltail occurred between 1996 and 2002, continuing to decrease through 2008, its frequency increased by 2011. At the same time, Sandberg bluegrass showed an inconsistent but overall downward trend between 1997 and 2011. No change in frequency recorded between 2008 and 2011 was statistically significant (Student's T-test; p-value <0.1). In total, these data identify a short-term static to downward trend at this transect site.

The variability of recorded trend in the density of shrub species at the trend plot for pasture 1 does not provide meaningful data to reach any conclusion.

Figure VEG-7: Frequency of grass species at the trend transect (T. 06S., R. 02W., Sec 23) in pasture 1 of the Box T allotment

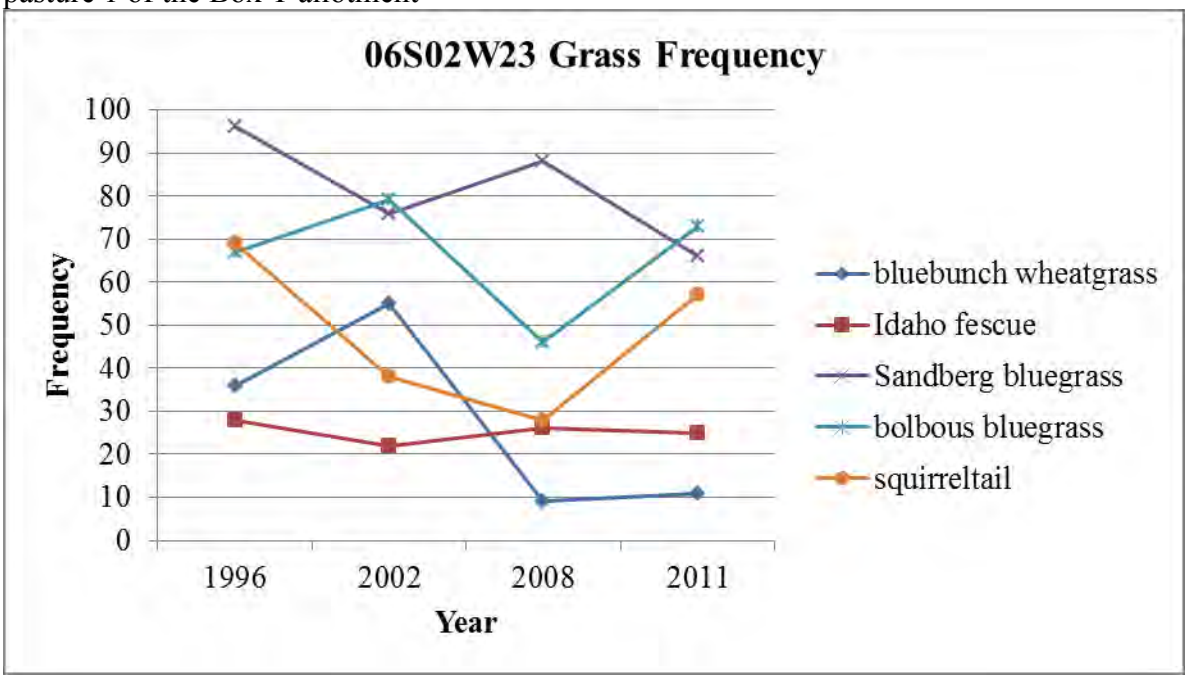
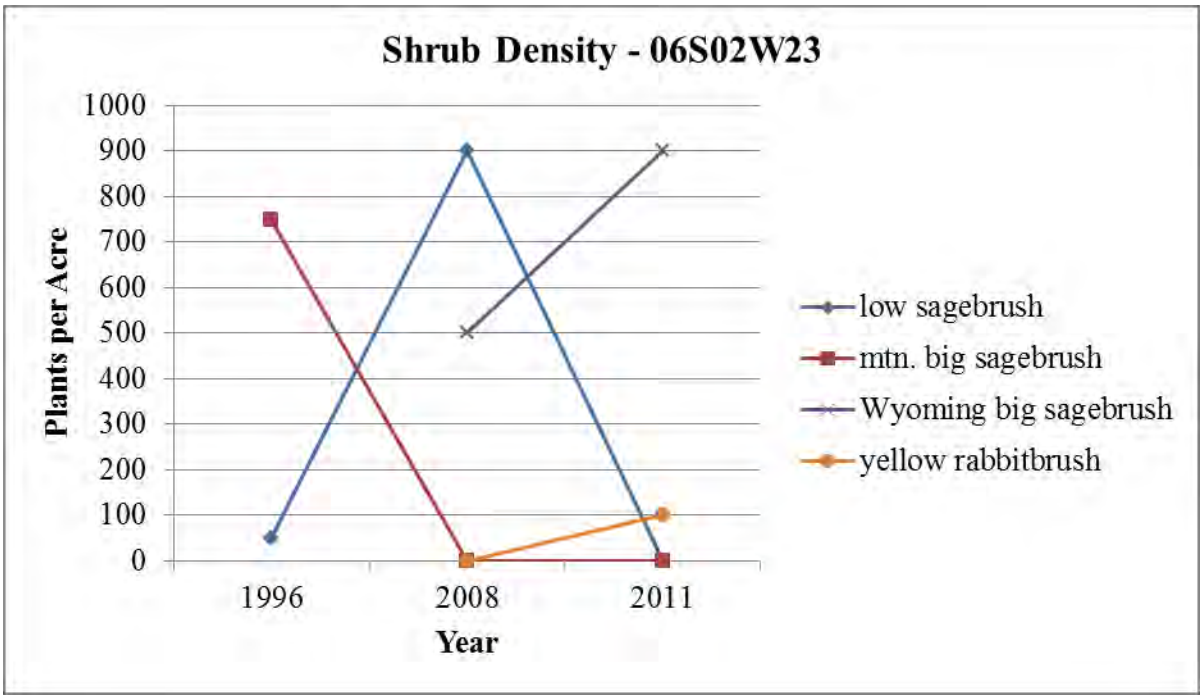


Figure VEG-8: Density of shrubs at the trend transect (T. 06S., R. 02W., Sec 23) in pasture 1 of the Box T allotment



These data are consistent with 2012 sage-grouse habitat assessment data that recorded cover of native perennial bunchgrass in mountain big sagebrush vegetation communities between 6 and 14 percent at three sites.

Table B.4.3. Box T allotment Pasture 1 ground cover.

Year	Vegetation (%)	Plant Litter (%)	Microbiotic crusts (%)	Rock / gravel (%)	Bare Ground (%)
1985	11	75	Not recorded	9	5
1996	4	62	3	29	3
2002	8	70	1	16	5

Utilization of key perennial grasses was measured in Pasture 1 in 9 of 12 years, from 1993 through 2004 (Table B.4.4). Utilization was not measured on all species in all years.

Table B.4.4. Box T allotment Pasture 1 key forage utilization.

Pasture 1	Bluebunch wheatgrass	Idaho fescue	Bulbous bluegrass	Thurber's needlegrass	Kentucky bluegrass	Squirreltail
1993	35 %	36 %	--	--	--	--
1994	--	--	55 %	--	--	--
1995	--	--	--	--	--	--
1996	--	51 %	--	--	--	--
1997	--	51 %	--	--	--	--
1998	--	--	--	--	--	--
1999	--	50 %	--	--	--	--
2000	42 %	56 %	--	--	--	--
2001	--	58 %	70 %	--	--	--
2002	--	--	--	--	--	--
2003	--	56 %	31 %	54 %	82 %	--
2004	--	--	--	45 %	--	32%
-- = Not measured/no data available.						

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Table VEG-4: Box T allotment pasture 1 key forage utilization

Year	Bluebunch wheatgrass	Idaho fescue
2005		
2006		
2007	66%	68%
2008	31%	34%
2009		
2010	31%	
2011		27%
2012	22%	28%

Pasture 1A

Rangeland Health Evaluation Summary

At the Shallow-Claypan 12-16" site located at 06S02W09, eight of the nine plant community indicators were rated in the none-to-slight or slight-to-moderate range of departure from

expected conditions for this ecological site. The indicator for invasive species was in the moderate-to-extreme range due to the distribution and abundance of various age classes of western juniper in this pasture.

The indicator for invasive species for the Shallow-Claypan 12-16" ecological site at 06S02W15, was in the moderate-to-extreme range of departure due to western juniper invasion. Indicators for plant mortality and decadence, and reproductive capability of perennial plants rated in the moderate range of departure. Crown die-out is occurring on pedestaled perennial grasses including Idaho fescue and Sandberg bluegrass. Perennial grasses exhibit low vigor, including increased decadence and mortality, and decreased reproductive capability.

Nested Plot Frequency
No nested plot frequency transects or photo-plots are established in this pasture.

Utilization of key perennial grasses was measured in 1993, 1994, 1998, and 1999. Utilization data are summarized in Table B.45.

Table B.4.5. Box T Pasture 1A key forage utilization.

Year	Bluebunch wheatgrass	Idaho fescue	Crested wheatgrass	Year	Bluebunch wheatgrass	Idaho fescue	Crested wheatgrass
1993	49 %	--	--	1997	--	--	--
1994	31 %	--	24 %	1998	--	10 %	--
1995-96	--	--	--	1999	--	57 %	--
-- = Not measured/no data available.							

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VEG-5: Box T allotment pasture 1A key forage utilization (Pasture 4 in 2013 GIS data)

Year	Bluebunch wheatgrass	Idaho fescue
1997-2007	No Data	
2008	3%	21%
2009	43%	
2010-2012	No Data	

Pasture 2
Rangeland Health Indicators
At the Loamy 13-16" ecological site at T 07S R 02W Sec 09, seven of the nine plant community indicators were rated in the non-to-slight or slight-to-moderate range of departure from reference conditions. Indicators for invasive plants and soil surface resistance to erosion rated in the moderate category. The plant community at this site is dominated by rabbitbrush, with widely scattered western juniper. Some crown die-out was noted on Idaho fescue plants.

At the Shallow-Claypan 12-16" ecological site at T 07S R 03W Sec 08, all nine indicators relating to Standard 4 were rated in the none-to-slight or slight-to-moderate range of departure. The plant community at this site is dominated by Idaho fescue and low sagebrush. Rabbitbrush

is present in slightly higher amounts than expected for this ecological site. Western juniper are scattered across the landscape in relatively low densities.

At the Shallow-Claypan 12-16" ecological site at T 06S R 02W Sec 05, eight of the nine plant community indicators were in the none-to-slight or slight-to-moderate range of departure from reference conditions. The indicator for invasive plants was in the moderate range of departure from reference site conditions, due rabbitbrush density at the site.

Nested Plot Frequency
A nested plot frequency transect and photo-plot monitoring site is located in this pasture at T 07S R 02W Sec 09B. Study site was established in 1985 and re-read in 1996 and 2002. Chi-square statistical analysis was performed on frequency data (See Appendix B).

Western wheatgrass frequency fluctuated significantly during the monitoring period, decreasing from 73% in 1985 to 61% in 1996, and increasing to 67% in 2002 (P-value 0.013). Sandberg bluegrass declined significantly from 55% in 1985 to 35% in 1996, and again to 31% in 2002 (P-value 0.026). Squirreltail frequency decreased significantly from 48% in 1985 to 28% in 1996 and again in 2002 to 15% (P< 0.001). Prairie junegrass was first reported in 1996 at 7% frequency and increased significantly in 2002 to 26% (P< 0.001). Mountain big sagebrush decreased significantly from 40% frequency in 1985 to 3% in 1996, then increased slightly in 2002 to 7% (P< 0.001). All frequency data for Pasture 2 are presented in Table B.4.6. Graphs of nested plot frequency data are presented in Appendix E.

Table B.4.6. Box T allotment Pasture 2 species frequency.

	1985 (%)	1996 (%)	2002 (%)	P-Value
Western wheatgrass	73	61	67	0.013
Idaho fescue	83	60	79	0.230
Sandberg bluegrass	55	35	31	0.026
Squirreltail	48	28	15	<0.001
Prairie junegrass	--	7	26	<0.001
Mt. big sagebrush	40	3	7	<0.001
Green rabbitbrush	50	45	50	--
-- = Not measured/no data available.				

A photo-plot monitoring study was established in Pasture 2 at T 07S R 02W Sec 09A in 1972. This site was re-read in 1975, 1983, 1996, and 2002. Photographs taken in 2002 did not develop correctly and were retaken in 2003. Landscape and close-up photographs show changes in the plant community over time, with the most obvious effects following a 1994 wildfire. Before the fire, the area had a well-developed plant community and balanced ratio of shrubs and grasses. In 1996, grasses clearly dominated the plant community. By 2003, rabbitbrush had become the dominant species and grass plants are difficult to distinguish in a photograph.

Data were collected at the pasture 2 nested plot frequency transect (T 07S, R 02W, Sec 9) in 2011. As noted in the 2006 assessment, bunchgrass frequency continued to fluctuate through 2011. Indications of a trend in the reduction in frequency of shallow and mid-rooted bunchgrasses (Sandberg bluegrass and squirreltail) present in the 2002 data did not carry through to the 2011 data. While the frequency of Sandberg bluegrass continued to decline slowly through 2008, the frequency of squirreltail increased between 2002 and 2008, and again through 2011. This occurred at the same time Idaho fescue frequency continued to increase and exceed the frequency recorded in 1985. The increase in frequency of western wheatgrass recorded between 1996 and 2002 decreased dramatically by 2008, though increased again by 2011. All short-term change in frequency recorded (between 2002 and 2011), except the recent increase in frequency for Idaho fescue, was statistically significant (Student's T-test; p-value <0.1). In total, although with a focus on the increase in frequency of Idaho fescue, these data identify a short-term static to upward trend at this transect site.

The trend in the density of shrub species at the trend plot for pasture 2 identifies a consistent increase in yellow rabbitbrush between 1996 and 2011, including the recorded data from 2002 and 2008. At the same time, mountain big sagebrush has decreased in density at the trend plot.

Figure VEG-9: Frequency of grass species at the trend transect (T. 07S., R. 02W., Sec 9) in pasture 2 of the Box T allotment

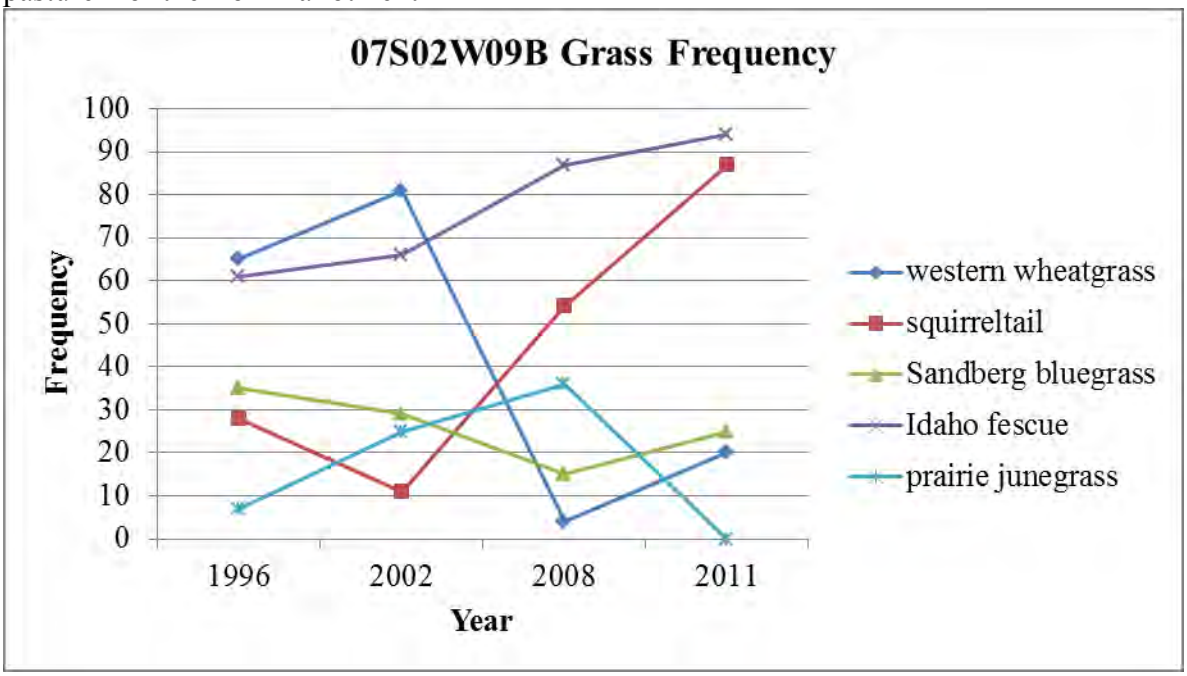
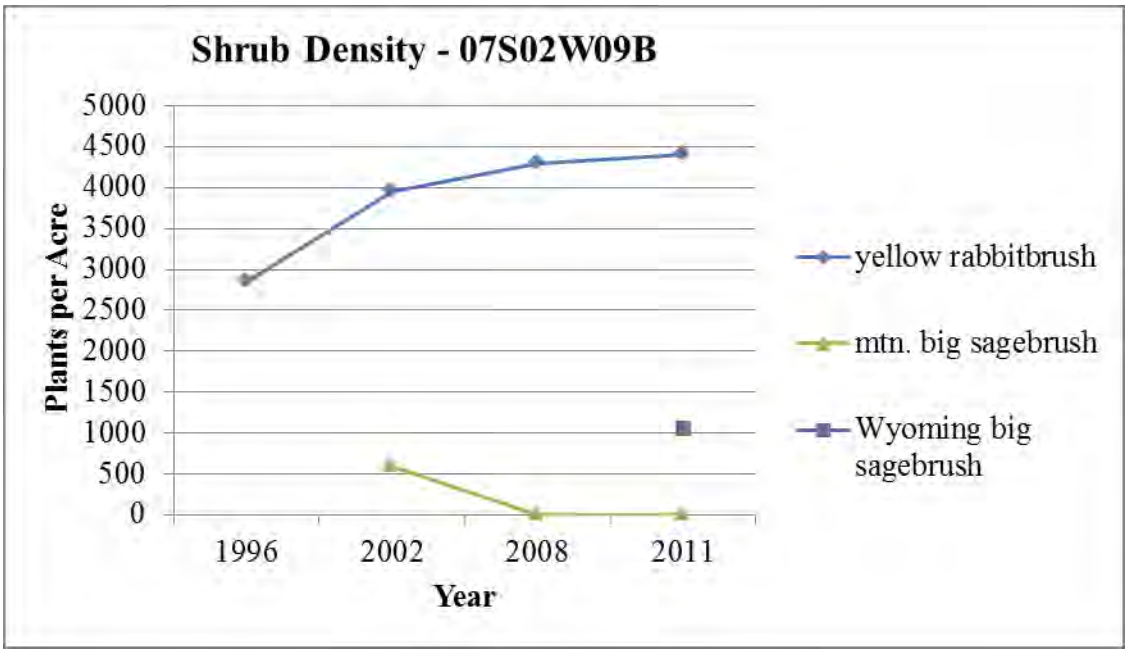


Figure VEG-10: Density of shrubs at the trend transect (T. 07S., R. 02W., Sec 9) in pasture 2 of the Box T allotment



These data are consistent with 2012 sage-grouse habitat assessment data that recorded 8 and 34 percent cover of mid to deep-rooted perennial bunchgrass at two sites.

Utilization of Idaho fescue has been monitored in eight of eleven years from 1992 through 2004. These utilization data are presented in Table B.4.7.

Table B.4.7. Box T allotment Pasture 2 Idaho fescue utilization.

Year	Percent Use	Year	Percent Use
1992	55 %	2000	44 %
1993	47 %	2001	44 %
1994	54 %	2002	No data
1995-1997	No data	2003	68 %
1998	48 %	2004	66 %
1999	No data		

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Table VEG-6: Box T allotment pasture 2 utilization

Year	Bluebunch wheatgrass	Idaho fescue
2005		
2006		
2007		7%
2008	28%	43%

2009			
2010			
2011	23%		
2012			

Pasture 3

Rangeland Health Indicators

At the Loamy 13-16" ecological site located at 07S02W06, indicators for soil surface loss or degradation, soil surface resistance to erosion, plant mortality and decadence, and litter amount are all in the moderate range of departure for expected conditions in this ecological site. Extensive livestock trailing is occurring at this site, resulting in a reduction in microbiotic crusts and organic matter in the soil surface, and an increase bare ground. The indicator for soil surface loss or degradation was rated as slight-to-moderate range due to these factors. The plant mortality/decadence, and invasive plants indicators rated in the moderate range of departure from reference conditions. Western juniper and rabbitbrush are both common at this site. Six of the seven remaining indicators for Standard 4 rated in the slight-to-moderate category, and one indicator rated in the none-to-slight degree of departure from reference conditions.

At the Shallow-Claypan 12-16" site at 07S03W12, indicators for soil surface loss or degradation, soil surface resistance to erosion, plant mortality and decadence, and litter amount are all in the moderate range of departure for expected conditions in this ecological site. Mortality is evidenced by uprooting of perennial grass plants, crown die-out and pedestaling. The invasive plants indicator rating is due to widely scattered western juniper and common rabbitbrush. All other indicators are in the none-to-slight or slight-to-moderate categories.

Nested Plot Frequency

No nested plot frequency transects or photo-plots are established in this pasture.

Available utilization data for this pasture are presented in Table B.4.8.

Table B.4.8. Box T allotment Pasture 3 Idaho fescue utilization.

Year	Percent Use	Year	Percent Use
1992	No data	1996	15 %
1993	58 %	1997-1999	No data
1994	66 %	2000	33 %
1995	No data	2001-2004	No data

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Table VEG-7: Box T allotment pasture 3 utilization

Year	Bluebunch wheatgrass	Idaho fescue
2005		
2006		

2007			
2008	28%		
2009	38%		
2010		22%	
2011			
2012	23%	18%	

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

Surface Water Monitoring

This assessment includes a review of known data collected by BLM and Idaho Department of Water Quality (IDEQ). Data are evaluated to maintain consistency with current State of Idaho water quality standards and total maximum daily load (TMDL) assessments and allocations.

IDEQ reports water quality data differently than it has in the past. Prior to 2002, IDEQ prepared and submitted to EPA two separate documents. The first of these was a list (called a "§303(d) list") of all impaired waters in the state, as required under Section 303(d) of the Clean Water Act (IDEQ 1998). The second was a report (called a "§305(b) report") that summarized the status of all of Idaho's waters, as required under Section 305(b) of the Clean Water Act. IDEQ now prepares one report called The Integrated 303(d)/305(b) Report, which is a combination of these two documents. The §303(d) lists and §305(b) reports identified "water quality limited segments" for streams and portions of streams that were impaired, while the Integrated Report identifies "assessment units." Assessment units are groups of similar streams within a sub-basin with similar land use practices, ownership, or land management.

Table B.7.1 lists the beneficial use support status for waters within the Box T Allotment. All waters are also assumed to support agriculture, industrial water supply, wildlife habitats and aesthetics, but none of the waters within the Box T Allotment have been assessed for these uses.

Beneficial use/TMDLs

Table B.7.1. Designated and existing beneficial use support status (IDEQ 2004a)

Name (Assessment Unit)	CWAL	SS	PCR	SCR
North Fork Castle Creek -2nd order (ID17050103SW014_02)	Not Supporting	---	---	---
North Fork Castle Creek-2nd order (ID17050103SW014_02a)	Not Supporting	---	---	---
Alder Creek-2nd order (ID17050103SW014_02)	Not Supporting	---	---	---
Meadow Creek-3rd order	Not Supporting	---	---	---

Name (Assessment Unit)	CWAL	SS	PCR	SCR
(ID17050103SW015_03)				

CWAL=Cold Water Aquatic Life; SS=Salmonid Spawning; PCR=Primary Contact Recreation; SCR=Secondary Contact Recreation; N/A=Not Applicable --- = Not Assessed

Alder and North Fork Castle Creeks are located in the Mid Snake River/Succor Creek Sub basin (Hydrologic Unit Code # 17050103). North Fork Castle Creek is listed on the IDEQ 1998 303(d) list for temperature. The Mid Snake River/Succor Creek Sub basin Assessment and Total Maximum Daily Load (IDEQ 2003) delayed the temperature TMDL for North Fork Castle Creek to collect additional data. Meadow Creek is located in the Jordan Creek Sub basin (Hydrologic Unit Code # 17050108) and is listed on the IDEQ 1998 303(d) list for flow alteration and temperature. The Jordan Creek Sub basin Assessment and Total Maximum Daily Load was scheduled to begin in 2004. BLM has conducted limited water quality monitoring in Alder Creek, North Fork Castle Creek and Meadow Creek in this allotment.

Water Temperature

The sub basin assessment and TMDL process generally addresses only those streams that have been identified on the IDEQ 303(d) list. Table B.7.2 summarizes BLM water quality monitoring for streams in the Box T Allotment. The beneficial use support status is based on the IDEQ analysis of water quality data from various sources. Water temperatures were monitored using automatic continuous-recording thermographs. Water temperature data are adjusted according to the 10% exceedence policy and the temperature exemption (IDEQ 2002 and ID APA 58.01.02). Table B.7.3 summarizes instantaneous grab temperatures.

Table B.7.2. Stream temperature monitoring summary for Box T allotment.

Stream	Dates Sampled	Max T (^oC)	Max Avg T (^oC)	CWAL	SS
Alder Creek (05341) 5341/6391 fence	7/01 – 9/02/03	19.1/ND	14.2/ND	FS	ND
N.F. Castle Creek (05341) Downstream of Charity Spring confluence	6/20-9/21/02	24.8/ND	18.0/ND	NS	ND
Meadow Creek (05343) 4741766N/ 530791E	7/19-8/31/00	23.4/ND	20.1/ND	NS	ND
Meadow Creek (05343) 4740620N/ 529726E	6/14-9/21/02	22.3/19.6	19.2/16.6	FS	NS

CWAL=Cold Water Aquatic Life (water temp. $\leq 22^o$ C, with a maximum daily average of $\leq 19^o$C);
SS=Salmonid Spawning (water temp. $\leq 13^o$ C, with a maximum daily average of $\leq 9^o$C)
FS=Fully Supports beneficial use; NS=Does Not Support beneficial use; ND=No Data
22.3/19.6 = CWAL/SS

Table B.7.3. Stream temperature instantaneous grab samples for Box T allotment.

Stream	Date Sampled	Temp (^oC)	Source
Pasture 1			
North Fork Castle Creek (T6S R2 W S22 NENE)	9/28/05	14.0	BLM
North Fork Castle Creek (T6S R2 W S15 SESE)	8/26/03	14.7	BLM
Alder Creek (T6S R2 W S24 SENE)	9/03/03	12.9	BLM

Stream	Date Sampled	Temp (°C)	Source
Pasture 3			
Meadow Creek (T7S R3W S7 NWSW)	9/28/05	17.0	BLM
Meadow Creek (MEADO5120) (T7S R3W S12 SESE)	8/14/96	22	BLM
Meadow Creek (1996SBOIA019)	6/18/96	12.5	IDEQ
Meadow Creek (T7S R3W S13 NWNE)	6/29/78	13.3	BLM

The amount of stream channel shading provided by topography (eg. canyon walls) and vegetation is important in regulating the amount of direct solar radiation that reaches the water surface. While topography generally remains constant, activities that occur in and near the riparian areas may affect the amount and type of vegetation. The potential or capability for a stream system to support riparian shrubs and trees depends on the stream type (gradient, stream bed and bank materials, valley bottom width, flow regime, etc) and landscape setting. Table B.7.4 summarizes shade measurements at discrete sites for streams in the Box T Allotment. BLM data were measured with a Solar Pathfinder™ and IDEQ data were collected with a spherical densiometer. The Solar Pathfinder™ data estimate the average daily shade for July (typically the hottest month of the year), while the densiometer readings are a point-in-time measurement.

Table B.7.4. Stream shade monitoring in Pasture 3

Stream	Date	Shade (%)	Source
Meadow Creek (MEADO003.3) (T7S R2W S07 SWSW)	6/25/92	11	BLM
Meadow Creek (1996SBOIA019) (T7S R3W S12 SESE)	6/18/96	< 1	IDEQ

Fecal Coliform

The current standard for primary contact recreation beneficial use designation is 406 Escherichia coli organisms/100 ml for a single sample and 576 E. coli organisms/100 ml for a single sample for secondary recreational contact (IDAPA 58.01.02). Exceedence of these standards for a single sample does not necessarily constitute a violation of water quality standards. When a single sample exceeds the limit, additional samples must be collected over a specified time frame.

The data presented in Table B.7.5 and Table B.7.6 are for total fecal coliform, including E. coli. Older analyses reported only fecal coliform and total coliform counts, rather than E. coli, specifically, in accordance with previous water quality standards that only specified standards for total fecal coliform counts (for primary contact recreation the standard was 500 colonies/100 ml and for secondary contact recreation the water quality standard was 800 fecal coliform colonies/100 ml).

Table B.7.5. Box T allotment Pasture 1 Coliform bacteria counts.

Stream	Date	Total Coliform	Fecal Coliform	E. coli	Beneficial Use Criteria Status
N.F. Castle Creek	9/28/05	---	10	10	Meets criteria for SCR
N.F. Castle Creek	8/26/03	---	20	14	Meets criteria for SCR
Alder Creek Pasture	9/03/03	---	170	160	Meets criteria for SCR

SCR-Secondary Contact Recreation
--- = Not measured/no data available.

Table B.7.6. Box T allotment Pasture 3 Coliform bacteria analyses.

Stream	Date	Total Coliform	Fecal Coliform	E. coli	Beneficial Use Criteria Status
Meadow Creek	9/28/05	---	< 10	< 10	Meets criteria for SCR

SCR-Secondary Contact Recreation
--- = Not measured/no data available.

Sediment

Water quality criteria for sediment are determined on a case-by-case basis (IDAPA 58.01.02.250.05). In the absence of specific criteria, sediment shall not exceed quantities that impair designated uses. Table B.7.7 summarizes stream bed substrate monitoring conducted by BLM. BLM also conducted ocular estimates of substrate composition in 1996, but these data are not presented in this analysis because the accuracy of the data cannot be determined.

Table B.7.7. Box T allotment Pasture 3 stream bed substrate composition (%).

Stream	Date	Fines (1)	Gravel			Cobble		Boulder		
			Sm	Med	Lrg	Sm	Lrg	Sm	Med	Lrg
Meadow Creek (MEADO003.3) (T7S R2W S07 SWSW)	6/25/92 (2)	34	17	18	17	8	2	2	2	0

(1) Fines = sand/silt/clay = < 0.1 inch (< 2 mm)
(2) * = average of 10 cross sections

Water Chemistry

Table B.7.8 summarizes water chemistry monitoring for streams in the Box T Allotment.

Table B.7.8. Box T allotment water chemistry monitoring.

Stream	Date	pH	Cond. (uS/cm)	D.O. (mg/L)	Instant. Temp (^oC)
Pasture 1					
North Fork Castle Creek (T6S R2 W S22 NENE)	9/28/05	8.3	80	7.2	14.0
North Fork Castle Creek (T6S R2 W S15 SESE)	8/26/03	6.9	---	---	14.7
Alder Creek (T6S R2 W S24 SENE)	9/03/03	6.7	---	---	12.9
Pasture 3					
Meadow Creek (T7S R3W S7 NWSW)	9/28/05	9.7	90	8.8	17.0

Stream	Date	pH	Cond. (uS/cm)	D.O. (mg/L)	Instant. Temp (^oC)
Meadow Creek (MEADO5120) (T7S R3W S12 SESE)	8/14/96	8.8	90	8.3	22.0
Meadow Creek (T7S R3W S13 NWNE)	7/29/78	7.5	---	---	13.3
Water Quality Standard		6.5 – 9.0	---	>6	≤ 22
--- = Not measured/no data available.					

Ground Water
BLM has not conducted ground water quality monitoring within the Box T Allotment.

Other Data Reviewed
BLM reviewed the following internal data for Meadow Creek: water quality sample results (8/14/96), riparian greenline reconnaissance data (8/14/96), rapid riparian reconnaissance (6/25/92), riparian aquatic data sheet (8/12/96), riparian vegetation inventory (8/12/96), riparian/water quality monitoring results (6/25/92), stream survey forms (6/29/78). BLM also reviewed the State of Idaho's Beneficial Use Reconnaissance Protocol database (IDEQ 2004b) for Meadow Creek, Alder Creek, and North Fork Castle Creek.

Standard 8: Threatened and Endangered Plants and Animals

Botany
Special-Status plants with the potential to occur within the Box T allotment are summarized in Table B.8.1. Inventories for special status species have been conducted for mud flat milkvetch (*Astragalus yoder-williamsii*), a Type 3 BLM sensitive species, known to occur in Pasture 2 and Pasture 3. This is a very large population (>1500 plants) and occurs throughout Pasture 2 and Pasture 3, which were surveyed for this plant in 1994. Reports from the 1994 surveys described land use, but not specific impacts to the plant population. The population was monitored in 2005, and found to be intact with no identified threats.

One-flowered goldenweed (*Pyrrocoma howellii*), a Type 4 BLM Sensitive species, was reported in pasture 2 in 1992. Cattle grazing was reported but not quantified.

Table B.8.1. BLM Special-Status plant species within the Box T allotment.

Allot/ Pasture	Species	BLM Status[1]	Type	Habitat
0534-2,3	*Astragalus yoder-williamsii* Mud Flat milkvetch	Sensitive Type 3	mid elev. perennial	Loose, fine loamy soils in low sage, mountain big sage, or rabbitbrush vegetation
0534-2	*Pyrrocoma howellii* One-flowered goldenweed	Sensitive Type 4	mid elev. perennial	Grassy springs or streambanks; wet or dry, often alkaline meadows

[1]BLM Status definitions
Sensitive: Species on the Idaho State Director's list. The plant is of conservation concern.
Type 1: Species listed by the FWS as threatened or endangered, or proposed or candidates for listing under the Endangered Species Act

Type 2: Species with a high likelihood of being listed in the foreseeable future due to global rarity and significant endangerment factors.
Type 3: Species globally rare with moderate endangerment factors
Type 4: Species generally rare in Idaho, small populations or localized distribution may currently have low threat levels
Type 5: Species that may be added to the BLM Sensitive species list pending new information

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Botany

Information sources

Elemental Occurrences (EOs) for special status plant (SSP) species populations is recorded in the new Idaho Fish and Wildlife Information System (IFWIS) Species Diversity database (IDFG, 2011). EOs are derived by completion and review of an Idaho Rare Plant Observation Report through the Idaho Natural Heritage Program. Other sources that were used to assess and evaluate the composition and condition SSP habitats within the Box T allotment include RHAs, photographs, field notes, Plants database (USDA NRCS, 2013), literature search and information summarized above in Standards 1, 2, 3, 4, and 7 in this document.

Two SSPs within the Box T allotment are summarized in Table B.8.1. Inventories for special status species have been conducted for Mud Flat milkvetch (*Astragalus yoder-williamsii*), a Type 3 BLM sensitive species, known to occur in Pasture 2 and Pasture 3. This is a very large population (>1500 plants) and occurs throughout Pasture 2 and Pasture 3, in 1994. Reports from the 1994 surveys described land use, but not specific impacts to the plant population. The population was monitored in 2005, and found to be intact with no identified threats.
A population of Stiff milkvetch (*Astragalus conjunctus*) was reported north of triangle (EO 13407) but is actually located on private land. However, since it is in close proximity to this allotment there is potential for this plant to have a population within the allotment on rocky slopes and hilltops throughout the sagebrush habitat.

Plantain goldenweed (*Pyrrocoma uniflora* var. *uniflora*)[1], a Type 4 BLM Sensitive species, was reported in pasture 2 in 1992 and appeared to be intact during monitoring in 2005. The Plants were found along an ephemeral stream, from a tributary of Meadow Creek. This perennial forb flowers from May to September in montane pine forests, alkaline meadows, and around hot springs. (eFloras, 2013)

Table VEG-8: BLM special status plant species within the Box T allotment

Allot/Pasture	Species	BLM Status[1]	Type	Habitat
2 and 3	Mud Flat milkvetch (Astragalus yoder-williamsii)	Sensitive Type 3	mid elev. perennial	Loose, fine loamy soils in low sage, mountain big sage, or rabbitbrush vegetation
2	Plantain goldenweed (Pyrrocoma uniflora var. uniflora)	Sensitive Type 4	mid elev. perennial	Grassy springs or streambanks; wet or dry, often alkaline meadows

[1] Synonym: *Pyrrocoma howellii*

[1]BLM Status definitions
Sensitive: Species on the Idaho State Director's list. The plant is of conservation concern.
Type 1: Species listed by the FWS as threatened or endangered, or proposed or candidates for listing under the Endangered Species Act.
Type 2: Species with a high likelihood of being listed in the foreseeable future due to global rarity and significant endangerment factors.
Type 3: Species globally rare with moderate endangerment factors .
Type 4: Species generally rare in Idaho, small populations or localized distribution may currently have low threat levels.

Wildlife

A summary of threatened and sensitive species is included in Appendix H.

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Wildlife Habitats

Information Sources

Information sources that were used to assess and evaluate the composition and condition of wildlife habitats within the Box T allotment include sage-grouse habitat assessments (SG HA; 2002, 2008, and 2012), land cover classification (2002), aerial imagery (2011), photographs (2000, 2002, 2004, 2007, 2008, 2010, 2012, and 2013), and field visits (2012 and 2013), in addition to information summarized above in Standards 1, 2, 3, 4, and 7 in this document.

Landscape Setting

Two Level IV Ecoregions of Idaho are represented within the present allotment and include the Owyhee Uplands and Canyons (80f) and Semiarid Uplands (80j) (Map WDLF-1) (McGrath, et al., 2002). Although these ecoregions are relatively similar, they are distinguished by differences in physiography, precipitation, and elevation. The Owyhee Uplands and Canyons ecoregion occurs at mid to high elevations and is characterized by a volcanically-derived landscape of lava fields, tuffaceous outcrops dissected by deep, sometimes precipitous canyons. Vegetation communities in this ecoregion include mesic shrub steppe, mountain shrub, and woodlands. The Owyhee Uplands and Canyons ecoregion is best represented in Box T pastures 2, 3, and the northeastern portion of pasture 1 (Map WDLF-1). The Semiarid Uplands ecoregion is characterized by mountains, hills, and valleys that ascend out of the surrounding uplands; these areas typically are dominated by mesic shrub steppe, mountain shrub, woodland, and forest communities (Map WDLF-1). The Semiarid Uplands ecoregion in the allotment is represented primarily in the southern portion of Box T pasture 1 and is characterized by windswept low sage mountain ridges and mountain slopes with juniper woodland and mountain big sagebrush mesic shrub steppe vegetation communities.

Habitat, Cover Types, and Ecological Sites

A variety of major habitats and general cover types occur within the allotment (Table WDLF-11; Map WDLF-2). These upland and riparian habitats and cover types occur within a variety of ecological sites that will be discussed by pasture in more detail below.

Table WDLF-11: Major habitat and general cover types within the Box T allotment.

Habitat Type	General Cover Type	Percentage of Allotment	
		General Cover Type	Habitat Type
Salt Desert Shrub	salt desert shrub	<1	<1
Grassland	bunchgrass	12	12
Shrub Steppe[1]	big sagebrush	13	55
	mountain big sagebrush	21	
	low sagebrush	21	
Mountain Shrub	mountain shrub	6	6
Forest	aspen	<1	14
	juniper	14	
	Douglas-fir	<1	
Riparian	wet meadow	2	2
Non-native/Disturbed	exotic annuals	12	11

[1]Shrub steppe habitat type includes the predominant big and low sagebrush communities in the area. Big sagebrush (*Artemisia tridentata*) cover types include communities dominated by the subspecies Wyoming (*wyomingensis*) and Basin (*tridentata*) and mixed communities of both species. Mountain big sagebrush (*A. tridentata vaseyana*) and low sagebrush (*A. arbuscula*) cover types comprise the remaining sagebrush communities.

Focal Special Status Species

Greater sage-grouse

Population Ecology

No fewer than seven leks (occupied or active) are located in or near the allotment. In addition, the allotment is located within several 75 percent breeding bird density (BBD) lek buffers (4 mile; Table WDLF-12 and below).

Table WDLF-12: Attendance at occupied leks[1] in or within 4 miles of the Box T allotment, 2007-2012

Lek[2]	Pasture/s	Survey Year[3]					
		2012	2011	2010	2009	2008	2007
2O642*	1, 4	50	41	40	--	0	--
2O196*	1	23	16	11	8	4	16
2O541	2, 3	0	--	--	11	19	--
2O705	1	7	8	6	11	12	--

[1]A traditional display area where two or more male sage-grouse have attended in 2 or more of the previous 5 years (Idaho Sage-grouse Advisory Committee 2006).
[2]Leks with 75 percent BBDs are designated by an asterisk.
[3]Surveys were not conducted in years indicated by dashes (--).

Several additional leks that occur within or in proximity (≤4 miles) to the allotment that have

been active within the last five years but that do not qualify as occupied include 2O557 (located within pasture 2 and pasture 2 and 3 are within BBD), 2O619 (located in pasture 2), and 2O548 (pastures 1 and 4 are within BBD).

Habitat Characteristics

Northern Great Basin Population/Owyhee Subpopulation Mid-Scale

Recently, Idaho BLM initiated a modeling effort to identify preliminary priority sage-grouse habitat (PPH) within the Snake River Plain MZ (Makela and Major 2012). Priority habitat includes breeding, late brood-rearing, and winter concentration areas. Because priority habitat areas have the highest conservation value for maintaining the species and its habitat, it is BLM policy (as per WO IM 2010-071) to identify these areas in collaboration with respective state wildlife agencies. With the exception of a very small portion of PGH in pasture 4, the remainder of allotment is comprised entirely of PPH (Map WDLF-3).

Owyhee Front/Triangle Local Population Fine-scale

A review of the 2012 PPH output revealed that the area around the Toy Mountain group allotments in one of the critical input data layers (i.e., Idaho Sage-grouse Key Habitat Planning Map) had for the most part not been refined since its initial creation in the early 2000s. Much of the area was coarsely classified as Conifer Encroachment (R3). Review of recent (2012) aerial imagery and a OFO land cover classification (Bunting and Strand 2008) of the area have provided better habitat information and edits to be incorporated into the 2013 Greater Sage-grouse Habitat Planning Map (as per IM ID-2013-010). The update identifies large areas of currently Key Habitat (K) that were misclassified as R3 across the OFO, especially in the Toy Mountain group area. The update reveals that the allotment pastures have varying amounts of key habitat, conifer encroachment, and perennial grassland areas (Map WDLF-4).

Allotment/Pasture Site-scale

Based on a telemetry study of sage-grouse from the Owyhee Front/Triangle local population, seasonal locations show that the allotment contains differing amounts of breeding, upland summer, early and late brood-rearing riparian summer, and winter seasonal habitats (Table WDLF-13; Map WDLF-5b; also see narrative under each allotment pasture).

Table WDLF-13: Seasonal habitat types within the Box T allotment on BLM lands

Pasture	Seasonal Habitat			
	Breeding	Upland Summer	Early/Late Brood-rearing Lentic/Lotic Areas	Winter
1	X	X	X	X
2	X	X	X	X
3	X	X	X	X
4	X	X	X	X

Habitat Assessments

The current conditions of sage-grouse seasonal habitats were assessed following protocols outlined in the Sage-grouse Habitat Assessment Framework (SG HAF; (Stiver, Rinkes, & Naugle, 2010)). The primary habitat indicators and habitat suitability ranges within the SG HAF are consistent with sage-grouse habitat management guidelines provided by Connelly et al.

(2000), the State of Idaho's sage-grouse management alternative (The State of Idaho, 2012), and interim BLM sage-grouse habitat management guidance as per WO-IM 2012-043. Habitat indicators and suitability ranges should not be viewed independently but rather as an assembly of vegetation components that contribute to providing for sage-grouse seasonal habitat requirements.

Pasture 1

General Riparian Habitat

Of the 1.3 miles of assessed stream riparian habitat in this pasture, approximately 0.3 miles are rated in properly functioning condition (PFC), 0.4 miles are rated as functioning-at-risk (FAR) with an upward trend and 0.6 miles are FAR with a static trend. The PFC reach is located within the Charity springs livestock exclosure. Within this reach and the FAR (upward trend) reach that is located along Alder Creek, structural diversity, composition and vigor of hydric vegetation are all as expected, resulting in habitat that is at least marginally suitable for most dependant special status animals and other wildlife. Structural diversity, composition and vigor of hydric vegetation are all partially lacking on the North Fork of Castle Creek, resulting in less than suitable habitat for a diversity of species, including the Columbia spotted frog, and redband trout. This reach is also lacking adequate hydric vegetation cover (such as various sedges, rushes, willows and other woody riparian species) to protect banks and dissipate energy, leaving habitat vulnerable to loss or further degradation of during high flow events.

Six springs were evaluated for functioning condition in this pasture. A portion of one, Charity Spring, is rated in properly functioning condition (PFC) and is providing good habitat for special status species and other dependant wildlife. This portion of the spring is located within a livestock exclosure. Habitat below the exclosure, along with three other springs rated as non-functioning (NF) while the Charity spring source and two other springs are rated as FAR with downward trends. All of the NF and FAR springs are partially deficient in some or all of the indicators that directly or indirectly effect habitat suitability for riparian dependant special status species and other wildlife. These indicators include a diverse age class and composition of vegetation, riparian plant vigor, adequate water quality, natural surface and subsurface flow patterns, vegetation with stabilizing root masses and others.

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General Riparian Habitat

In the present assessment, 1.2 miles of stream riparian habitat were assessed for PFC, and approximately 0.6 miles were rated as FAR with an upward trend (Alder Creek and Charity Spring tributary) and 0.6 miles were rated as FAR with a static or downward trend (North Fork Castle Creek lower; see Standard 2 also); otherwise, the remaining lotic information above is consistent with current conditions.

Six springs were also evaluated in the present assessment. All assessed springs were not located within exclosures. Five springs were rated as FAR and one spring was rated as NF (see Standard 2). Issues affecting spring functionality included lack of hydric soils, shrinking riparian areas, inadequate vegetation vigor and composition, and presence of noxious weeds. The remaining lentic information above is consistent with current conditions.

Focal Special Status Species

Greater sage-grouse

Habitat Characteristics

Habitat Assessments

Pasture 1 is entirely within the breeding, summer, and winter seasonal ranges of the Owyhee Front/Triangle local population (Map WDLF-5b). To differing degrees, the dominant mountain big sagebrush and low sagebrush ecological sites support breeding (including early brood-rearing), upland summer (including late-brood rearing), and winter sage-grouse habitat. In addition, a variety of lentic and lotic sites throughout the pasture provide riparian summer habitat. The pasture contains key habit, conifer encroachment areas, and perennial grasslands with high restoration potential (Map WDLF-4).

Sage-grouse Habitat Assessments

Breeding Habitat - Three breeding habitat assessments were conducted in Pasture 1. Two of the three sites received suitable habitat ratings while one received a marginal habitat rating primarily due to the widespread encroachment of western juniper in this portion of the pasture. Sagebrush canopy cover, height, and growth form were the only indicators that were rated less than suitable at any of the three sites, although vigor of desirable grasses was reduced at the site in section 23, and contributed to the marginal habitat rating. Table B.8.2 summarizes data collected at these sites.

Table B.8.2. Summary of Sage-grouse Breeding Habitat Assessments within the Box T Allotment, Pasture 1. Assessment A - (06S02W23), B - (06S02W35-B), C -(06S02W35-C), 2002

Habitat Indicator	**Suitable Habitat**	**Marginal Habitat**	**Unsuitable Habitat**
Average Sagebrush Canopy Cover	B, C	A	
Average Sagebrush Height	C	A,B	
Sagebrush Growth Form	C	A, B	
Average Grass and Forb Height	A, B, C		
Average Perennial Grass Canopy Cover	A, B, C		
Average Forb Canopy Cover	A, B, C		
Preferred Forb Abundance and Diversity	A, B, C		
Overall Site Assessment	**B, C**	**A**	
Refer to Appendix H for specific habitat rating criteria as included Habitat Assessment Worksheets.			

Late brood-rearing habitat - Two late brood-rearing habitat assessments were conducted in Pasture 1. The first (T.06S R.02W Sec.14) was conducted below the Charity Spring exclosure in the northern portion of the pasture. Two of the four indicators, including riparian and wet meadow plant community and forb availability, were rated in the suitable habitat category, while both riparian and wet meadow stability and proximity of sagebrush cover were in the marginal habitat category (Table B.8.3). Juniper is very common at this location. The area outside of the exclosure is heavily impacted by livestock, and there is an active headcut and incised channel

immediately below the site. For these reasons, the site was given an overall rating of marginal habitat.

Table B.8.3. Sage-grouse Late Brood-Rearing Habitat Assessment, Box T Allotment, Pasture 1 (T.06S R.02W Sec.14), 2002

Habitat Indicator	Suitable Habitat	Marginal Habitat	Unsuitable Habitat
Riparian and Wet Meadow Plant Community	X		
Riparian and Wet Meadow Stability		X	
Forb Availability	X		
Proximity of Sagebrush Cover		X	
Overall Late Brood-rearing Habitat Assessment		**X**	
Refer to Appendix H for specific habitat rating criteria as included Habitat Assessment Worksheets.			

The second late brood-rearing assessment (T06 R02 Sec. 35) was conducted at a spring in the southeast portion of the pasture. One of the four indicators, proximity of sagebrush cover was rated in the suitable habitat category while two indicators including riparian and wet meadow plant community and forb availability were rated in the marginal habitat category and one indicator, riparian and wet meadow stability was rated in the unsuitable habitat category (Table B.8.4). Juniper is scattered to common and the spring and associated pond are heavily utilized by livestock. Sage-grouse were observed at this site. The site was given an overall rating of marginal habitat.

Table B.8.4. Box T allotment, Pasture 1 Sage-grouse late brood-rearing habitat suitability, (T.06S R.02W Sec.35), 2002.

Habitat Indicator	Suitable Habitat	Marginal Habitat	Unsuitable Habitat
Riparian and Wet Meadow Plant Community		X	
Riparian and Wet Meadow Stability			X
Forb Availability		X	
Proximity of Sagebrush Cover	X		
Overall Late Brood-rearing Habitat Assessment		**X**	
Refer to Appendix H for specific habitat rating criteria as included Habitat Assessment Worksheets.			

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Breeding Habitat

Six SG HAs were used to assess breeding conditions within pasture 1 (Map WDLF-6). Five SG HAs were located within the Loamy 13-16" ARTRV/PSSPS-FEID Ecological Site and one SGHA was conducted within the Mountain Ridge 14-18" ARAR8/FEID Ecological Site. Although only two breeding SG HAs in the pasture were conducted in 2008, a review of the results from four SG HAs conducted in the same and an additional Ecological Site in 2012 (see below) reveal that measurements of most indicators remain consistent with 2008 results and

provide validation for the current rating of sage-grouse breeding conditions within the pasture as Suitable.

Mountain big sagebrush ecological sites constitute a substantial portion of the usable sage-grouse habitat (based on cover types/ecological sites) within the pasture (approximately 41 percent of shrub steppe acres; see Table WDLF-14 below), and therefore the present results are generally representative of the conditions that predominate within pasture 1.

- **06S02W23a-2008** and **06S02W35-2008 (R025XY011ID)**
  Suitable. Sagebrush cover and height fell within the suitable range; however, sagebrush form was noted as a mix of spreading and columnar (Table WDLF-14). Although perennial herbaceous understory vegetation cover (grass and forbs) also was suitable, average height was in the marginal range. Preferred forb species were diverse and abundant. Other shrub species within these communities include bitterbrush and rabbitbrush. Although junipers were present in the general area and noted as not affecting the suitability of the site, they could be an issue in the future. The vegetation community appeared to be within the Reference Plant Community Phase (i.e., State 1 Phase A).
- **06S02W14a-2012, 06S02W23b-2012** and **06S02W35c-2012 (R025XY011ID)**
  Suitable (*provisionally*). Although assessment was not conducted at the appropriate time of year, many of the components necessary for suitable breeding habitat fall within the correct ranges (sagebrush CC, height, growth form, and forb diversity and abundance; Table WDLF-14, Figure H-3.10). Although perennial herbaceous vegetation understory height is in the marginal height range, vigorous, tall, and abundant *Poa* species under favorable conditions are providing additional nesting cover. Juniper encroachment is occurring in the pasture and may be an issue in the future.
- **06S02W23c-2012 (R025XY042ID)**
  Suitable (*provisionally*). Although assessment was not conducted at the appropriate time of year, many of the components necessary for suitable breeding habitat fall within the correct ranges (sagebrush height, growth form, perennial herbaceous understory vegetation CC, and forb diversity and abundance; Table WDLF-14, Figure H-3.11). Although sagebrush and perennial herbaceous vegetation understory heights are at the threshold of suitability, this may be due to small sample size. Nevertheless, heights are adequate for all intents and purposes. However, in combination with sagebrush CC that is lower than adequate, sagebrush nest site opportunities might be somewhat limited. Juniper encroachment is occurring in the pasture and may be an issue in the future.

Table WDLF-14: Summary of breeding SG HAs[1] in pasture 1 of the Box T allotment (2008 and 2012)

Habitat Indicator	Ecological Sites[2]		
	R025XY011ID-2008	**R025XY011ID-2012**	**R025XY042ID-2012**
	n=2	**n=3**	**n=1**
Sagebrush Canopy Cover (%)	23 (S)	24 (S)	10 (M)
Sagebrush Height (cm)	55 (S)	74 (S)	30 (S)
Sagebrush Growth Shape	Mixed (M)	Spreading (S)	Spreading (S)
Grass and Forb Height (cm)	14 (M)	15 (M)	18 (S)
Perennial Grass Canopy Cover (%)	29 (S)	11 (M)	26 (S)
Forb Canopy Cover (%)	35 (S)	6 (M)	10 (S)
Preferred Forb Availability	8 sp./abundant (S)	15 sp. abundant (S)	11 sp. /abundant (S)

Overall Site Evaluation[3]	**Suitable**	**Suitable***	**Suitable***

[1]Individual habitat indicator suitability ranges are given in parentheses and include Suitable (S), Marginal (M), and Unsuitable (U).
[2]Ecological sites include Loamy 13-16" ARTRV/PSSPS-FEID (R025XY011ID) and Mountain Ridge 14-18" ARAR8/FEID (R025XY042ID).
[3]Provisional ratings are designated by an asterisk.

Brood-rearing and Summer Riparian Habitats

Pasture 1 contains various stream valleys that support early and late brood-rearing lotic habitats. Lotic riparian habitats are located on portions of perennial North Fork Castle and Alder Creeks and several of their tributaries (Map WDLF-6). In addition, no less than six lentic riparian areas occur throughout pasture 1 and are located on several of these streams.

Three lotic and six lentic systems were used to assess riparian summer habitat within pasture 1 (Table H-3.12). Two formal SGHAs were conducted at two of the lentic sites within the pasture. Information from proper functioning condition assessments and site photos were used to assess conditions for sage-grouse at the remaining seven riparian areas.

In general, the riparian habitats available to and most likely used by sage-grouse only appear to be providing marginal conditions for early and late brood rearing and summer habitat. Besides the predominant riparian functional condition (FAR), juniper encroachment at all sites is likely limiting habitat suitability for sage-grouse and provides additional rationale for the Marginal rating.

Lotic

- **Alder Creek PFC 2000**
  Marginal. The stream reach was inventoried and assessed in 2000 as FAR. Forb species diversity and abundance was low. In places, the stream does appear to be maintaining sufficiently saturated soils to support succulent vegetation into the summer and fall. In other places the stream goes underground before resurfacing farther down the channel. Sagebrush cover is within 100 m from the stream. The stream reach is in a relatively narrow steep valley, and woody riparian vegetation (aspen and willow) is abundant and dense; these factors may be reducing visibility and limiting predator detection.
- **Charity Spring Tributary PFC 2003**
  Marginal. The stream reach was assessed in 2003 as PFC. The stream does appear to be maintaining sufficiently saturated soils to support succulent vegetation into the summer and fall. Sagebrush cover is within 100 m from the stream. Because junipers are dominant in the draw and may be reducing visibility and limiting predator detection, habitat quality is reduced and provides the rationale for less than suitably rating.
- **North Fork Castle Creek PFC 2008**
  Marginal. The stream reach was assessed in 2008 as FAR. The stream does appear to be maintaining sufficiently saturated soils to support succulent vegetation into the summer and fall. Vegetation species diversity and composition is low. Sagebrush cover is within 100 m from the stream. Junipers are dominant in the draw and may be reducing visibility and limiting predator detection.

Lentic

- **06S02W14-2002** and **Charity Spring PFC 2008**
  Marginal. This assessment was conducted at Charity Spring. A portion of the lentic area is protected by a small exclosure, and the spring has been modified to supply water to3 troughs. Succulent herbaceous forage was diverse and abundant, and sagebrush cover was within 100 m from the lentic area. Some minor erosion was noted and bare ground was evident. In 2008 this spring was assessed as NF which indicates a downward

trend. The FAR rating was due to shrinking area, altered flow patterns, and inadequate riparian vegetation, vigor, and composition. Hoof impaction was evident throughout the entire wetland and had greatly decreased the wetland area, and riparian plants were absent. The site does appear to be maintaining sufficiently saturated soils to support succulent vegetation into the summer and fall. In addition, junipers are abundant in the draw and surrounding area which may be limiting sage-grouse use. No sign of sage-grouse was observed.

- **06S02W35b-2002** and **Obsidian Spring-Unnamed Spring 5341B PFC 2010**
  Marginal. This assessment was conducted at Unnamed Spring 5341B. The spring feeds a small pond with a road crossing the dam. The dam spillway is eroding and lowering the level of the pond. The area is influenced by the road and large patches of bare ground were evident along edges of spring. Species diversity of preferred forbs was low but they were available. Sagebrush cover is less than 100 m from the lentic area. Sage-grouse were present a few days after the assessment indicating use of the area. In 2010 this spring was assessed as FAR due to shrinking area, inadequate riparian vegetation and stabilizing root mass, lack of species composition and plant vigor, and the presence of noxious weeds. Mesic grass dominated the site and no obligate species were present. In addition, junipers are abundant in the surrounding area. The site does appear to be maintaining sufficiently saturated soils to support succulent vegetation into the summer and fall. Photos of the area taken in 2012 display static conditions that are consistent with those described in 2010.
- **Linehan Spring PFC 2008**
  Marginal. This spring has been modified to provide water to a trough. In addition, junipers are relatively dense in the draw and extend to approximately 100 m surrounding the lentic area. In 2008 this spring was assessed as FAR due to shrinking area, inadequate riparian vegetation and stabilizing root mass, lack of species composition and plant vigor, and the presence of noxious weeds. Disturbance from hoof action was present; however, no excessive erosion or deposition was noted. Although riparian plants were re-establishing and appeared to be new at the site, very few species were observed and most were young plants. The site does appear to be maintaining sufficiently saturated soils to support succulent vegetation into the summer and fall.
- **Roadside Spring-Unnamed Spring 5341A PFC 2010**
  Marginal. This assessment was conducted at Roadside Spring/Unnamed Spring 5341A. This spring has been modified to supply water to 3 troughs. The area has no flood plain and is apparently shrinking, and the saturated area supports mesic grasses but obligate riparian species are lacking. Junipers are common within the draw, but sagebrush cover is located less than 100 m from the lentic area. In 2010 this spring was assessed as FAR after post-assessment review of the field form and photos. The site does not appear to be maintaining sufficiently saturated soils to support succulent vegetation into the summer and fall.
- **Unnamed Spring 5341C PFC 2003**
  Marginal. This assessment was conducted at Unnamed Spring 5341C. This spring has been modified to supply water to a small pond and a trough. In 2003 this spring was assessed as NF due to shrinking area, inadequate riparian vegetation and stabilizing root mass, lack of species composition and plant vigor, and the presence of noxious weeds. Although junipers are present at the site, they are few and widely scattered. Sagebrush cover is immediately adjacent to the lentic site. The site does not appear to be maintaining sufficiently saturated soils to support succulent vegetation into the summer and fall.
- **Unnamed Spring 5341Z PFC 2003**
  Unsuitable. This assessment was conducted at Unnamed Spring 5341Z. This spring has been modified to supply water to a trough. In 2003 this spring was assessed as FAR due to lack of floodplain, inadequate riparian vegetation and stabilizing root mass, lack of species composition and plant vigor, drying soils, and the presence of noxious weeds. Although junipers are present at the site, they are few and widely scattered. Sagebrush cover is immediately adjacent to the lentic site. The site does not appear to be maintaining sufficiently saturated soils to support succulent vegetation into the summer and fall.

Upland Summer Habitat

Four SG HAs were used to assess upland summer conditions within pasture 1. Three SG HAs were located within the Loamy 13-16" ARTRV/PSSPS-FEID Ecological Site and one SG HA was located in the Mountain Ridge 14-18" ARAR8/FEID Ecological Site. Although some issues were noted (see narrative below and specific table), overall upland summer habitat within the pasture was rated as Suitable.

Mountain big sagebrush ecological sites constitute a substantial portion of the usable sage-grouse habitat (based on cover types/ecological sites) within the pasture (approximately 41 percent of shrub steppe acres; see Table WDLF-15 below), and therefore the present results are generally representative of the conditions that predominate within pasture 1.

- **06S02W14b-2012, 06S02W23b-2012** and **06S02W35c-2012 (R025XY011ID)**
  Suitable. Upland summer habitat in the pasture in this ESD is rated as suitable because all of the primary indicators and most of the supplementary indicators fall within the suitable ranges (Table H-3.13). Forbs are especially diverse and abundant. Marginal perennial understory herbaceous vegetation heights are supplemented by cover provided by tall, vigorous *Poa* species. However, the higher representation of *Poa* species canopy cover is probably occurring at the expense of deep-rooted, tall structured, perennial bunchgrasses that have lower canopy cover representation than expected for the ecological site. The vegetation community appeared to be within the Reference Plant Community Phase (i.e., State 1 Phase A), but the prevalence of *Poa* species provides evidence of a community transition occurring from State 1A to 1C or 1A to 1F (each the result of lack of fires or improper grazing). The dominance of the invasive *Poa bulbosa* in some areas is an issue for the future health of pasture. Although junipers were present in the general area and noted as not affecting the suitability of the site, they could be an issue in the future.
- **06S02W23c-2012 (R025XY042ID)**
  Suitable. Upland summer habitat in the pasture in this ecological site is rated as suitable because most of the primary indicators and most of the supplementary indicators fall within the suitable ranges (Table H-3.14). Forbs are especially diverse and abundant. Marginal sagebrush heights are supplemented by other shrub heights and perennial herbaceous vegetation understory heights which are providing additional and adequate concealment cover.

Winter Habitat

Four SG HAs were used to assess winter conditions within pasture 1. Three SG HAs were located within the Loamy 13-16" ARTRV/PSSPS-FEID Ecological Site and one SG HA was located in the Mountain Ridge 14-18" ARAR8/FEID Ecological Site. Although some issues were noted within one of the ESDs (which probably has limited potential to provide suitable winter habitat; see narrative below and specific table), overall winter habitat within the pasture was rated as Suitable.

Mountain big sagebrush ecological sites constitute a substantial portion of the usable sage-grouse habitat (based on cover types/ecological sites) within the pasture (approximately 41 percent of shrub steppe acres; see Table WDLF-15 below), and therefore the present results are generally representative of the conditions that predominate within pasture 1.

- **06S02W14a-2012, 06S02W23b-2012** and **06S02W35c-2012 (R025XY011ID)**
  Suitable. Overall the ecological site within the pasture is rated as suitable winter habitat because the amount (CC) and height of sagebrush would provide forage above persistent snow. Sagebrush and other shrub CC provide adequate concealment and thermal cover also (Table H-3.15).
- **06S02W23c-2012 (R025XY042ID)**
  Marginal. Overall the ecological site within the pasture may be limiting the potential to provide suitable winter habitat. This ecological site is found on mountain ridges above 6000 feet where snow accumulations may far exceed the height of most medium sized shrubs (approximately 60 cm). Nonetheless, based on the indicators this site is rated as marginal winter habitat because sagebrush heights may not be tall enough to emerge from deep snow and provide available forage for sage-grouse (Table H-3.16). The mountain ridge setting is probably windswept which may prevent deep snow accumulations making sagebrush forage available; however, this may only apply to areas near the top of the ridge leaving areas downslope with much deeper snow especially considering the elevation.

General Upland Habitat
Sagebrush and other shrubs are generally providing good woody cover, structure and forage for sage-grouse and most other sagebrush steppe obligates throughout much of the pasture. However, sagebrush has shown a moderate decline since 1985 and decadent shrubs within the Loamy 13-16" site result in reduced habitat quality. Western juniper is also common throughout much of the pasture, and provides habitat for a diversity of migratory birds and other species adapted to woodlands and mixed shrub and open woodland habitats. At the same time, increases in juniper adversely affect habitat for sagebrush steppe species such as sage-grouse, pygmy rabbit and a diversity of other migratory birds. Nested frequency monitoring shows a modest increase in forb frequency since 1985. Forb cover, diversity and abundance were also determined to be adequate and providing suitable habitat components at sage-grouse habitat Assessment sites throughout this pasture. Large decreaser bunchgrasses are generally as expected at both assessed low sagebrush sites, and provide adequate cover within these areas. However, within the big sagebrush (Loamy 13-16") assessment site, perennial grass occurrence is less than expected, plants are exhibiting crown die-out and cover for sage-grouse and other ground nesting and foraging species is reduced.

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General Upland Habitat Assessment

Several upland habitats and cover types occur within a variety of ecological sites within pasture 1 (Table WDLF-15).

Table WDLF-15: NRCS Ecological Sites[1] within Box T allotment pasture 1

Habitat Type	General Cover Type	Ecological Site Description	Percentage of Allotment	
			Ecological Site Description	General Cover Type
Shrub Steppe	Mountain Big Sagebrush	Loamy 13-16 ARTRV/PSSPS-FEID	41	51
		Loamy 16+ ARTRV/FEID	<1	
	Low Sagebrush	Shallow Claypan 12-16 ARAR8/FEID	52	52
Mountain Shrub	Mountain Mahogany	Mahogany Savanna 16-22 CELE3-SYOR2/FEID-ACHNA	7	7

[1]Approximately 0.01 percent of the pasture is classified as an unknown/no data.

Based on the most current information, improvements in upland habitat noted in the previous assessment have been lost and conditions have declined to reveal a static to downward trend for most indicator species over the long term (see Standard 4 above). Although shrub cover has remained consistently higher than expected, sagebrush continues to provide adequate woody cover, structure, and forage for shrub-obligate and dependent species. However, the quality of the herbaceous understory has not improved. Deep-rooted, tall-statured perennial bunchgrasses remain at lower than expected levels and mid-statured squirreltail and short-statured bluegrasses (*Poa* sp.) remain at higher than expected levels; conditions that are indicative of a departure from reference conditions. Although these understory conditions are minimally providing for the needs of most dependent special status species, the low occurrence of desirable bunchgrasses

(FEID and PSSPS) probably is limiting habitat quality for many ground-nesting and foraging species.

The conversion of shrub steppe habitats to juniper woodlands is also a rangeland health issue in loamy mountain big sagebrush ecological sites, and is probably affecting habitat suitability for obligate and dependent species.

Redband Trout
An ocular survey along North Fork Castle Creek on 9/28/05 found adults and young-of-the-year in this reach. Riparian condition along this reach has improved from functional-at-risk with a downward trend in 2000 to functional-at-risk with no apparent trend in 2003. Stream water temperatures did not support the cold water aquatic life criteria in 2002, but an instantaneous grab temperature in August 2003 was within water quality standards. Dissolved oxygen and pH also met water quality criteria when sampled in 2005. BLM has not conducted redband trout surveys in Alder Creek. Alder Creek is functional-at risk with an upward trend and fully supported the cold water criteria for temperature and pH in 2003.

Pasture 1A

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Pasture 1A has been renamed pasture 4.

General Riparian Habitat
All 1.7 miles of assessed stream riparian habitat in Pasture 1A are located along the North Fork of Castle Creek and are rated as functioning-at-risk (FAR). Of these, 0.5 miles display a static trend and 1.2 display a downward trend. Structural diversity, composition, and vigor of hydric vegetation are all key components of habitat for most riparian dependant species and all three are at least partially inadequate. This reach is also lacking adequate hydric vegetation cover to protect banks and dissipate energy, leaving habitat vulnerable to loss or further degradation during high flow events.

Six springs were evaluated for functioning condition in this pasture. All six are rated as FAR - four display a downward trend, two display static trends. All six springs are partially deficient in indicators that directly or indirectly effect habitat suitability for riparian dependant special status species and other wildlife, including diverse age class and composition of vegetation, riparian plant vigor, adequate water quality, natural surface and subsurface flow patterns, vegetation with stabilizing root masses and others.

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General Riparian Habitat Assessment In the present assessment, 2.0 miles of stream riparian habitat were assessed for PFC, and all were rated as FAR with a static or downward trend (North Fork Castle Creek lower, upper, and trip; see Standard 2); otherwise, the remaining lotic information above is consistent with current conditions. Six springs were also evaluated in the present assessment. Except for Shirley Spring, the

remaining assessed springs were not located within exclosures. Five springs were rated as PFC (or considered so due to exclosure protection) and one spring was rated as FAR (see Standard 2). Issues affecting spring functionality included altered flow patterns and inadequate vegetation vigor and composition. The presence of noxious weeds was noted at some sites. Based on past surveys, conditions appear to be improving and are probably providing minimally adequate habitat for many dependent special status species.

Focal Special Status Species

Greater sage-grouse

Habitat Characteristics

Habitat Assessments

Pasture 4 is almost entirely within the breeding, summer, and winter seasonal ranges of the Owyhee Front/Triangle local population (Map WDLF-5b). It appears that the pasture is at the periphery of the local population's winter range with a small area in the western portion of the pasture outside of winter range. Although the dominant mountain big sagebrush and low sagebrush ecological sites could support breeding (including early brood-rearing), upland summer (including late-brood rearing), and winter sage-grouse habitat, dense juniper woodlands currently have invaded the majority of the mountain big sagebrush sites thoroughly and reduced the amount and diminished the quality of breeding and uplands summer habitats in particular. Low sagebrush sites are also experiencing juniper encroachment and probably lack the proper sagebrush characteristics (canopy cover and height) to provide suitable winter habitat cover and forage in typical snow accumulation years. In addition, a few lentic and lotic sites provide riparian summer habitat. The pasture contains key habit, but the majority is classified as conifer encroachment areas (Map WDLF-4).

Breeding, Upland Summer, and Winter Habitat

No formal SG HAs were conducted in pasture 4. One site was visited in 2012 within an undescribed ecological site but no quantitative data was collected (see below). Suitability of sage-grouse habitats within the pasture are based on site photos and information collected in 2002 (two RHFAs) and 2012 in the Shallow Claypan 12-16" ARAR8/FEID Ecological Site. Although shrubs and herbaceous understory vegetation (perennial bunchgrass and forb diversity) cover and composition were generally as expected in relation to site potential and reference conditions (Appendix C-2), breeding, upland summer, and winter habitat within the pasture appear to be in a Marginal condition overall primarily because the extent of juniper encroachment throughout the pasture and lack of sagebrush height (and cover at one location) in low sagebrush sites.

Because mountain big sagebrush and low sagebrush ecological sites constitute the majority of usable sage-grouse habitat (based on cover types/ecological sites) within the pasture (approximately 90 percent of shrub steppe acres; see Table WDLF-16 below), the present results are generally representative of the conditions that predominate within pasture 4.

- **06S02W10-2012 (Undescribed Ecological Site)**
  Unsuitable. This site is located on a very rocky ridgeline that is dominated by short-statured perennial grasses and matt-forming forbs. Rock cover is the dominant feature of the site and soils do not appear to be

developed. Photos of the site were taken on September 24, 2012 but no quantitative data was collected. The site is representative of approximately 3 acres. Although a few very short shrubs (possibly rabbitbrush) are scattered across the site, shrub cover suitable for sage-grouse breeding, summer, or winter habitat is absent. In addition, it does not appear that perennial herbaceous vegetation CC or height is suitable for concealment of any seasonal habitat type.

Brood-rearing and Summer Riparian Habitats

Pasture 4 contains various stream valleys and their headwaters that support early and late brood-rearing lotic habitats. Lotic riparian habitats are located on portions of perennial North Fork Castle and many of its intermittent tributaries (Map WDLF-6). In addition, no less than six lentic riparian areas occur throughout pasture 4 and are located on several of these streams.

Three lotic and six lentic riparian areas were used to assess riparian summer habitat within pasture 4 (Table H-3.17). Information from proper functioning condition assessments and site photos were used to assess conditions for sage-grouse at riparian areas.

In general, the actual riparian habitats available to and most likely used by sage-grouse appear to be providing suitable to marginal conditions for early and late brood rearing and summer habitat. The functional condition of assessed riparian areas is split evenly between PFC and FAR. However, an additional lentic area (Shirley Springs) that was not assessed is protected by an exclosure and is most likely in PFC and thus slightly tips the overall balance toward the desired functionality. Nevertheless, juniper encroachment at all sites is likely limiting habitat suitability for sage-grouse and is the overriding reason for the Marginal rating.

Lotic

North Fork Castle Creek lower PFC 2008

Marginal. The stream reach was assessed in 2008 as FAR. The stream does appear to be maintaining sufficiently saturated soils to support succulent vegetation into the summer and fall. Vegetation species diversity and composition is low. Sagebrush cover is within 100 m from the stream. Junipers are dominant and dense in the draw and may be reducing visibility and limiting predator detection.

- **North Fork Castle Creek upper PFC 2008**

  Suitable. The stream reach was assessed in 2008 as FAR. With the exception of several vegetated headcuts, the large wet meadow complex where the assessment was conducted would rate PFC. The stream/meadow is maintaining sufficiently saturated soils to support succulent vegetation into the summer and fall. Sagebrush cover is within 100 m from the stream. Junipers are dominant in the surrounding area, but not as dense as the other lotic riparian habitats within the pasture. Although junipers in the surrounding area may be limiting use, the meadow complex is large and open patches of shrub steppe occur in sufficient amounts and in proper juxtaposition in the surrounding area to provide access for sage-grouse use.
- **North Fork Castle Creek Tributary PFC 2003**

  Marginal. The stream reach was assessed in 2003 as FAR. There is a lack of plant age-class diversity and hydric cover to protect stream banks. Small patches of sagebrush are within 100 m from the stream, but junipers are dominant and dense in the draw and may be reducing visibility and limiting predator detection.

Lentic

- **Broken Trough Spring PFC 2010**

  Marginal. This assessment was conducted at Broken Trough Spring. A portion of the lentic area was protected by an exclosure in disrepair. Succulent herbaceous forage was diverse and abundant, and sagebrush cover was within 100 m from the lentic area. Some hoof impaction was evident though not extensive. The site does appear to be maintaining sufficiently saturated soils to support succulent vegetation into the summer and fall. However, junipers are abundant in the draw and surrounding area which may be limiting sage-grouse

use.

- **Unnamed Spring 5341AC PFC 2010, 5341AD PFC 2010,** and **5341AE PFC 2010**
  Marginal. These springs occur along the NF Castle Creek. Diverse plant age-classes of obligate and facultative species were present, and vegetation was abundant with high vigor. Although rated PFC, issues noted include flow alteration patterns due to pugging at one site which may be dewatering the system at an increased rate. Nevertheless, junipers were abundant and dense in the draw and surrounding area which is probably limiting sage-grouse use.
- **Unnamed Spring 5341A G PFC 2003**
  Marginal. This spring was found to have altered flow patterns and inadequate vegetation cover, composition, and vigor. The site does appear to be maintaining sufficiently saturated soils to support succulent vegetation into the summer and fall. However, junipers are abundant in the draw and surrounding area which may be limiting sage-grouse use.

General Upland Habitat Assessment
Several upland habitats and cover types occur within a variety of ecological sites within pasture 4 (Table WDLF-16).

Table WDLF-16: NRCS Ecological Sites[1] within Box T allotment pasture 4

Habitat Type	General Cover Type	Ecological Site Description	Percentage of Allotment	
			Ecological Site Description	General Cover Type
Shrub Steppe	Mountain Big Sagebrush	Loamy 13-16 ARTRV/PSSPS-FEID	50	50
	Low Sagebrush	Shallow Claypan 12-16 ARAR8/FEID	40	40
Mountain Shrub	Mountain Mahogany	Mahogany Savanna 16-22 CELE3-SYOR2/FEID-ACHNA	10	10

[1] Other Ecological Sites <0.1 percent of the pasture includes Loamy 16+ ARTRV/FEID.

In general, upland habitat conditions are near reference conditions for most indicators (see Standard 4). However, mortality, decreased reproductive capability, and low vigor was noted for perennial grasses in particular. In addition, invasive species (i.e., juniper) were noted as exhibiting a moderate-to-extreme departure from ecological site reference conditions. The conversion of shrub steppe habitats to juniper woodlands is also a rangeland health issue in loamy mountain big sagebrush ecological sites, and is probably affecting habitat suitability for obligate and dependent species.

Redband Trout
Fish surveys have not been conducted in North Fork Castle Creek in pasture 1A. Redband trout were observed in the downstream reach in pasture 1 in 2003 and 2005. Riparian condition has improved from functional-at risk with a downward trend in 2000 to functional-at risk with no apparent trend in 2003. In the downstream reach (pasture 1), stream water temperatures did not support the cold water aquatic life criteria in 2002, but an instantaneous grab temperature in August 2003 was within water quality standards. Dissolved oxygen and pH also met water quality criteria when sampled in 2005. Surveys for redband trout have not been conducted in North Fork Castle Creek upstream of the State section in pasture 1A. Late season flow is limited in this upstream reach, but spring runoff would provide suitable flows during the spawning period.

Pasture 2

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General Riparian Habitat There are no streams or springs in pasture 2 that have the potential to support riparian plant communities. **Focal Special Status Species** ***Greater sage-grouse*** Habitat Characteristics *Habitat Assessments* Pasture 2 is entirely within the breeding, summer, and winter seasonal ranges of the Owyhee Front/Triangle local population (Map WDLF-6). The dominant low sagebrush ecological site supports breeding (including early brood-rearing), upland summer (including late-brood rearing), and winter sage-grouse habitat especially in mountain big sagebrush inclusions. Lentic and lotic riparian habitat is absent on the BLM-managed portion of the pasture though shallow swales may provide some succulent vegetation when soil moisture in adequate. The pasture contains key habit with several small conifer encroachment areas (Map WDLF-4).

Sage-grouse Habitat Assessments
Breeding Habitat – One breeding habitat Assessment (T.07S R.02W Sec.4) was conducted within a mountain big sagebrush/bluebunch wheatgrass/Idaho fescue community in the northeast portion of Pasture 2. All seven indicators were in the "suitable habitat" category and the site was given an overall rating of "suitable habitat" (Table B.8.5). Big sagebrush sites are patchy but still fairly common within the pasture that is largely dominated by low sagebrush. Vigor, abundance, and cover of desirable grasses and forbs are good. There is an active lek within a mile of the site.

Table B.8.5. Box T Allotment, Pasture 2 sage-grouse breeding habitat suitability, (T.07S R.02W Sec.4), 2002.

Habitat Indicator	Suitable Habitat	Marginal Habitat	Unsuitable Habitat
Average Sagebrush Canopy Cover	X		
Average Sagebrush Height	X		
Sagebrush Growth Form	X		
Average Grass and Forb Height	X		
Average Perennial Grass Canopy Cover	X		
Average Forb Canopy Cover	X		
Preferred Forb Abundance and Diversity	X		
Overall Site Assessment	**X**		

Habitat Indicator	Suitable Habitat	Marginal Habitat	Unsuitable Habitat
Refer to Appendix H for specific habitat rating criteria as included Habitat Assessment Worksheets.			

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Breeding Habitat

Two SG HAs was used to assess breeding conditions within pasture 2 (Map WDLF-6). Both SG HAs were located (at least partially) within the Loamy 13-16" ARTRV/PSSPS-FEID Ecological Site as inclusions within the dominant Shallow Claypan 12-16" ARAR8/FEID Ecological Site. An additional SGHA was conducted in an undescribed ecological site that was dominated by fourwing saltbush (*Atriplex canescens*) and for the most part constitutes unsuitable sage-grouse breeding habitat and will not be discussed further. Although the most recent breeding SG HA in the pasture was conducted in 2008, a review of the results from the SG HA conducted in the dominant Ecological Site in 2012 (see below) reveal that measurements of most indicators have remained consistent and provide validation for the current rating of sage-grouse breeding conditions within the pasture as Suitable.

Mountain big sagebrush inclusions are common within pasture 2 and along with the dominant low sagebrush sites constitute nearly all of the usable sage-grouse habitat (based on cover types/ecological sites) within the pasture (approximately 99 percent of shrub steppe acres; see Table WDLF-18 below), and therefore the present results are generally representative of the conditions that predominate within pasture 2.

- **07S02W04-2008 (R025XY011ID)**
  Suitable. Sagebrush cover and height fell within the suitable range, and sagebrush form was spreading. Although perennial herbaceous understory vegetation cover (grass and forbs) also was suitable, average height was in the marginal range. Nevertheless, perennial grass heights did average over 18 cm and is providing sufficient nesting cover. Preferred forb species were diverse and abundant. Other shrub species within these communities include bitterbrush. The vegetation community appeared to be within the Reference Plant Community Phase (i.e., State 1 Phase A; Table WDLF-17).
- **07S02W04b-2012 (R025XY010ID)**
  Suitable (*provisionally*). Although assessment was not conducted at the appropriate time of year, some of the components necessary for suitable breeding habitat fall within the correct ranges (sagebrush CC, height, growth form, and perennial herbaceous CC) and this site would provisionally be rated on the lower end of suitable (Table WDLF-17 and Table H-3.18). Perennial forb species diversity and abundance is adequate. Perennial herbaceous vegetation understory height is in the unsuitable range and is affecting the quality of the site by not providing that component of nesting cover. However, perennial bunchgrass canopy cover is high and has the potential to provide greater heights on an annual basis which would provide sufficient vertical nesting cover.

Table WDLF-17: Summary of breeding SG HAs[1] in pasture 2 of the Box T allotment (2008 and 2012)

Habitat Indicator	Ecological Sites[2]	
	R025XY011ID-2008	R025XY010ID-2012
	n=1	n=1
Sagebrush Canopy Cover (%)	20 (S)	18 (S)
Sagebrush Height (cm)	48 (S)	39 (S)

Sagebrush Growth Shape	Spreading (S)	Spreading (S)
Grass and Forb Height (cm)	13 (M)	7 (U)
Perennial Grass Canopy Cover (%)	24 (S)	34 (S)
Forb Canopy Cover (%)	30 (S)	4 (M)
Preferred Forb Availability	8 sp./abundant (S)	8 sp./ common (S)
Overall Site Evaluation[3]	**Suitable**	**Suitable***

[1]Individual habitat indicator suitability ranges are given in parentheses and include Suitable (S), Marginal (M), and Unsuitable (U).
[2]Ecological sites include Loamy 13-16" ARTRV/PSSPS-FEID (R025XY011ID) and Shallow Claypan 12-16" ARAR8/FEID (R025XY010ID).
[3]Provisional ratings are designated by an asterisk.

Brood-rearing and Summer Riparian Habitats
Although pasture 2 contains several intermittent/ephemeral stream valleys that may support early brood-rearing habitat, none have been assessed for PFC primarily because they do not support woody, and in most cases, herbaceous riparian vegetation communities. At best these areas may support succulent vegetation in the early spring.

Pasture 2 does not contain any known spring-associated lentic riparian/wetland areas.

In general, the riparian habitats available to and most likely used by sage-grouse are probably not providing adequate conditions for early brood rearing. Flowing water and moist conditions are restricted to a short period in the early spring, and hydric, succulent vegetation is probably sparse if it exists at all.

Upland Summer Habitat
Two SG HAs were used to assess upland summer habitat conditions within pasture 2. One SG HA was located within the Shallow Claypan 12-16" ARAR8/FEID Ecological Site and other was located in an inclusion consisting of an undescribed ecological site that is dominated by silty soils and a homogeneous stand of *Atriplex canescens*. This restricted and anthropogenically created site appears to have been formed in the recent past by the periodic inundation of a dammed shallow basin; suitability of this site seems to be limited by the ecological site potential. Proper sagebrush and shrub cover was also an issue among the indicators. Forb availability during the late-summer and fall was a limiting habitat component. Nevertheless, the majority of indicators in the low sagebrush sites appear to be minimally providing concealment cover and adequate forage (see narrative below). Upland summer habitat in pasture 2 was therefore rated as Suitable.

Information from 2002 (three RHFAs) within mountain big sagebrush inclusions and the low sagebrush ecological site were generally consistent with the present SGHA results. Although sagebrush and perennial herbaceous vegetation canopy cover were found to be adequate, sagebrush heights and forb cover were low, and rabbitbrush cover was higher than expected. These factors indicate that there were some issues with concealment cover as provided by sagebrush and a lack of forbs for forage. However, photos also reveal that perennial bunchgrass heights were suitable during the survey year. In general, this supplementary information provides

additional support for the present Suitable rating.

With the exception of mountain big sagebrush inclusions, the dominant low sagebrush site constitutes the majority of usable sage-grouse habitat (based on cover types/ecological sites) within the pasture (approximately 99 percent of shrub steppe acres; see Table WDLF-18 below), and therefore the present results are generally representative of the conditions that predominate within pasture 2.

- **07S02W04b-2012 (R025XY010ID)**
  Suitable. Although sagebrush and perennial herbaceous vegetation CC were suitable, sagebrush and perennial herbaceous vegetation heights may be limiting the ability of sage-grouse to conceal themselves (Table H-3.19). Nevertheless, forb diversity and abundance are providing available forage and indicators do not reveal a community composition issue.
- **07S02W08-2012 (Undescribed Ecological Site)**
  Marginal. This site was rated as marginal because no primary indicators fell within the suitable range (Table H-3.20). Although perennial herbaceous CC and forb availability fell within the marginal range, the lack of sagebrush and the excessive shrub CC more than likely limits extensive sage-grouse use of this vegetation community type.

Winter Habitat
Two SG HAs were used to assess winter habitat conditions within pasture 2. Issues include absence of sagebrush and inadequate sagebrush height for two of the ecological sites which probably have limited potential to provide suitable winter habitat (see below). Nevertheless, mountain big sagebrush inclusions had appropriate sagebrush canopy cover and heights to provide available forage and concealment and thermal cover. Because mountain big sagebrush inclusions are common within the dominant low sagebrush ecological site, and although some issues were noted regarding the marginal suitability of winter habitat in the low sagebrush matrix, winter habitat within pasture 2 was rated as Suitable overall.

- **07S02W04b-2012 (R025XY010ID)**
  Marginal. Overall the ecological site within the pasture may be limiting the potential to provide suitable winter habitat. The short-statured low sage is probably unavailable where snow accumulations exceed the height of most shrubs. Based on the indicators this site is rated as marginal winter habitat because sagebrush heights may not be tall enough to emerge from deep snow and provide available forage for sage-grouse (Table H-3.21).
- **07S02W08-2012 (Undescribed Ecological Site)**
  Unsuitable. Overall this vegetation community may be limiting the potential to provide suitable winter habitat. Although ATCA would provide concealment and thermal cover, critical winter forage would be absent within these stands without sagebrush present. It is important to note that this undescribed ecological site is restricted in extent to one locale within the allotment and is only indicative of highly localized conditions. (Table H-3.22).
- **07S02W04-2008 (R025XY011ID)**
  Suitable. This ecological site occurs as a common inclusion within the low sagebrush matrix and is not limiting the potential to provide suitable winter habitat. Sagebrush CC and height fell within the suitable range, and would provide available forage and concealment and thermal cover above typical snow accumulations (Table WDLF-17).

General Upland Habitat
Much of Pasture 2 burned in 1994, resulting in the loss of most sagebrush and other shrubs. Although some sagebrush is beginning to reestablish, it is still generally lacking, and provides

little forage, cover or structure for dependant sagebrush steppe species including sage-grouse, pygmy rabbit and a diversity of migratory birds. Rabbitbrush has become the dominant shrub within the burned area, and provides cover and structure for some species, but provides inferior habitat for most of the sagebrush dependant species (USDA, Soil Conservation Service, 1981). Widely scattered western junipers provide some habitat for species associated with open woodland habitat. However, due to its sparse distribution outside of the burned area, juniper is generally not adversely impacting habitat for sage-grouse or other sagebrush steppe species at this time. Forb cover, diversity and abundance were appropriate, and provide suitable habitat at the one sage-grouse habitat assessment site. Desirable bunchgrasses are generally abundant and vigorous throughout the pasture, and provide adequate cover and structure for sage-grouse and other ground-nesting and foraging species. Idaho fescue is experiencing some crown die-out at one of the three assessment locations which is reducing available cover to some degree. Current trend is upward for the larger bunchgrasses grasses, yielding a gradual increase in cover and overall habitat conditions.

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General Upland Habitat Assessment
Several upland habitats and cover types occur within a variety of ecological sites within pasture 2 (Table WDLF-18).

Table WDLF-18: NRCS Ecological Sites[1] within Box T allotment pasture 2

Habitat Type	General Cover Type	Ecological Site Description	Percentage of Allotment	
			Ecological Site Description	General Cover Type
Grassland	Grassland	Dry Meadow PONE3-PHAL2	<1	<1
Shrub Steppe	Low Sagebrush	Shallow Claypan 12-16 ARAR8/FEID	99	99

[1]Approximately 0.6 percent of the pasture is classified as an unknown/no data. Other Ecological Sites <0.1 percent of the pasture includes Loamy Bottom 12-16 ARTRT/LECI4.

In general, upland habitat conditions have improved substantially since the previous assessment. Shrub cover has increased consistently in previously burned areas and currently is providing adequate woody cover, structure, and forage for shrub-obligate and dependent species. The deep-rooted, tall-statured Idaho fescue is the dominant grass and remains on an upward trend. These upland habitat conditions are providing adequate habitat quality for many ground-nesting and foraging species.

Redband Trout
Redband trout habitat does not occur in pasture 2.

Pasture 3
General Riparian Habitat
All 1.5 miles of stream riparian habitat in this pasture are located along Meadow Creek and are rated as functioning-at-risk (FAR) with an upward trend. Structural diversity and composition of hydric vegetation are both adequate, but plant vigor is lacking. This stream reach has been included in a spring-use riparian pasture since the early 1990s and habitat has improved

significantly for Columbia spotted frogs, which are not as dependant upon woody riparian vegetation. Willows and other woody species are still lacking in the upper portion of this reach, which affects the quality and quantity of habitat for a diversity of Neotropical migratory birds. In places, hydric vegetation cover (such as various sedges, rushes, willows and other woody riparian species) in inadequate to protect banks and dissipate energy, leaving this reach vulnerable to habitat loss or degradation during high flow events.

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General Riparian Habitat In the present assessment, 1.5 miles of stream riparian habitat along Meadow Creek was assessed as FAR with an upward trend. The reach of Meadow Creek is displaying continued improvement and is dominated by a variety of woody and herbaceous riparian species, which appear to be currently expanding along the reach. These increases in riparian vegetation indicate habitat improvement for Neotropical migratory birds and other dependent species. However, vegetation is not yet adequate to stabilize banks during episodic high runoff events, which may be limiting habitat quality for aquatic and other in-stream fauna. **Focal Special Status Species** ***Greater sage-grouse*** <u>Habitat Characteristics</u> *Habitat Assessments* Pasture 3 is entirely within the breeding, summer, and winter seasonal ranges of the Owyhee Front/Triangle local population (Map WDLF-6). The dominant low sagebrush ecological site supports breeding (including early brood-rearing), upland summer (including late-brood rearing), and winter sage-grouse habitat especially in mountain big sagebrush inclusions. Although lentic riparian habitat is absent on the BLM-managed portion of the pasture, several perennial and intermittent lotic systems support riparian habitats. In addition, shallow swales probably provide some succulent vegetation when soil moisture in adequate. The pasture contains key habit with a very small conifer encroachment area (Map WDLF-4).

Sage-grouse Habitat Assessments
Breeding Habitat – One breeding habitat Assessment (T.07S R.02W Sec.7) was conducted within a mountain big sagebrush/antelope bitterbrush/bluebunch wheatgrass/Idaho fescue community near the center of the pasture. One of the seven indicators, average sagebrush canopy cover, was in the "marginal habitat" category, while one indicator, average forb canopy cover, was in the "unsuitable habitat" category and the remaining five were in the "suitable habitat" category. Sagebrush cover was slightly higher than desirable and did not distract from site suitability. Even though few forbs were encountered along the transect, forb abundance was good. Western juniper is scattered along adjacent ridges and low sage is dominant throughout portions of the pasture. Vigor, abundance, and cover of desirable bunchgrasses is generally adequate, but is reduced in shrub interspaces. Consequently, the site was given an overall rating of "suitable habitat" that is bordering on marginal habitat (Table B.8.6).

Late brood-rearing habitat – No formal late brood-rearing habitat assessment were conducted within this pasture, but suitable habitat is known to occur along Meadow Creek. This pasture has

been managed as a riparian pasture since the early 1990s in order to improve riparian and stream channel characteristics along Meadow Creek. This has resulted in a dramatic improvement in overall riparian conditions including conditions contributing to sage-grouse late brood-rearing habitat. All indicators of late brood-rearing habitat suitability would likely fall in the suitable habitat category.

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Breeding Habitat

Three SG HAs was used to assess breeding conditions within pasture 3 (Map WDLF-6). Two SG HAs were located within the Loamy 13-16" ARTRV/PSSPS-FEID Ecological Site as inclusions and one SGHA was located within the dominant Shallow Claypan 12-16" ARAR8/FEID Ecological Site. Although the most recent breeding SG HA in the pasture was conducted in 2008, a review of the results from the SG HA conducted in the dominant ecological sites in 2012 (see below) reveal that measurements of most indicators have remained consistent and provide validation for the current rating of sage-grouse breeding conditions within the pasture as Suitable.

Mountain big sagebrush inclusions are common within pasture 3 and along with the dominant low sagebrush sites constitute nearly all of the usable sage-grouse habitat (based on cover types/ecological sites) within the pasture (approximately 95 percent of shrub steppe acres; see Table WDLF-10 below), and therefore the present results are generally representative of the conditions that predominate within pasture 3.

- **07S02W07-2008 (R025XY011ID)**
  Suitable. Although sagebrush cover was barely in the marginal range, height and growth form were suitable. Although perennial herbaceous understory vegetation cover (grass and forbs) also was suitable, average height was in the marginal range. Nevertheless, perennial grass heights did average 18 cm and are providing sufficient nesting cover. Preferred forb species were relatively diverse and abundant. Other shrub species within these communities include bitterbrush and rabbitbrush. The vegetation community appeared to be within the Reference Plant Community Phase (i.e., State 1 Phase A; Table WDLF-19).
- **07S02W06-2012 (R025XY011ID)**
  Suitable (*provisionally*). Although assessment was not conducted at the appropriate time of year, many of the components necessary for suitable breeding habitat fall within the correct ranges (sagebrush CC and height, perennial herbaceous vegetation CC, forb diversity and abundance) and the ecological site would provisionally be rated suitable (Table WDLF-19, Table H-3.23). Some issues may arise due to the mixed spreading/columnar sagebrush form and the marginal perennial herbaceous vegetation heights, and perennial grass CC which in combination may be limiting nesting cover. Forb diversity and abundance is expected to be similar during the breeding season especially considering that more moisture will be available. Considering how close the transect is to several disturbance features (road and livestock resting area), herbaceous vegetation heights seem to be faring well. Bitterbrush and rabbitbrush are additional major shrub species in the area.
- **07S02W07b-2012 (R025XY010ID)**
  Suitable (*provisionally*). Although assessment was not conducted at the appropriate time of year, most of the components necessary for suitable breeding habitat fall within the correct ranges (sagebrush CC, height, growth form, perennial herbaceous CC, forb diversity and abundance) and the ecological site would provisionally be rated suitable (Table WDLF-19, Table H-3.24). Perennial herbaceous vegetation height was in the marginal range due to the inclusion of short-statured *Phlox*, however, perennial bunchgrasses are providing suitable nesting cover. The presence of the noxious week *Ranunculus testiculatus*, although scarce currently, could be an issue in the future should it expand.

Table WDLF-19. Summary of breeding SG HAs[1] in pasture 3 of the Box T allotment (2008 and 2012)

Habitat Indicator	Ecological Sites[2]		
	R025XY011ID-2008	**R025XY011ID-2012**	**R025XY010ID-2012**
	n=1	**n=1**	**n=1**
Sagebrush Canopy Cover (%)	26 (M)	22 (S)	16 (S)
Sagebrush Height (cm)	53 (S)	67 (S)	37 (S)
Sagebrush Growth Shape	Spreading (S)	Mixed (M)	Spreading (S)
Grass and Forb Height (cm)	12 (M)	12 (M)	14 (M)
Perennial Grass Canopy Cover (%)	16 (S)	10 (M)	10 (S)
Forb Canopy Cover (%)	20 (S)	12 (S)	6 (S)
Preferred Forb Availability	5 sp./abundant (S)	12 sp. abundant (S)	7 sp. /abundant (S)
Overall Site Evaluation[3]	**Suitable**	**Suitable***	**Suitable***

[1]Individual habitat indicator suitability ranges are given in parentheses and include Suitable (S), Marginal (M), and Unsuitable (U).
[2]Ecological sites include Loamy 13-16" ARTRV/PSSPS-FEID (R025XY011ID) and Shallow Claypan 12-16" ARAR8/FEID (R025XY010ID).
[3]Provisional ratings are designated by an asterisk.

Brood-rearing Riparian Habitats

Meadow Creek in pasture 3 supports early brood-rearing lotic habitats (Map WDLF-6). Meadow Creek is a perennial stream that was assessed as FAR with an upward trend. Meadow Creek is a perennial stream that varies in geomorphology within the pasture. The upper portion of Meadow Creek in the pasture has a relatively wider floodplain than the lower portion which narrows into a steeper sided canyon. Although the entire length of Meadow Creek within the pasture could potentially be used by sage-grouse, the greater openness of the upper portion is providing an opportunity for higher quality brood-rearing/summer riparian habitat due to the wider floodplain that supports herbaceous vegetation and the greater visibility afforded by the more open landscape setting which increases the ability of sage-grouse to detect predators.

Pasture 3 does not contain any known spring-associated lentic riparian/wetland areas.

Upland Summer Habitat

Two SG HAs were used to assess upland summer habitat conditions within pasture 3. One SG HA was located within the Loamy 13-16" ARTRV/PSSPS-FEID Ecological Site as an inclusion and one SGHA was located within the dominant Shallow Claypan 12-16" ARAR8/FEID Ecological Site. The majority of indicators in both ecological sites are providing adequate concealment cover and abundant forbs for forage (see narrative below); therefore, upland summer habitat in pasture 3 was rated Suitable.

Mountain big sagebrush inclusions are common within pasture 3 and along with the dominant

low sagebrush sites constitute nearly all of the usable sage-grouse habitat (based on cover types/ecological sites) within the pasture (approximately 95 percent of shrub steppe acres; see Table WDLF-20 below), and therefore the present results are generally representative of the conditions that predominate within pasture 3.

- **07S02W06-2012 (R025XY011ID)**
  Suitable. Upland summer habitat in the pasture in this ecological site is rated as suitable because all of the primary indicators and most of the supplementary indicators fall within the suitable ranges (Table H-3.25). Forbs are adequately diverse and abundant. Marginal perennial grass CC is lower than expected at HCPC reference conditions which might be indicative of some community health issues but is not limiting sage-grouse use or compromising concealment cover.
- **07S02W07b-2012 (R025XY010ID)**
  Suitable. Although sagebrush CC and perennial herbaceous vegetation understory heights were suitable, sagebrush heights may be limiting the ability of sage-grouse to conceal themselves. However, because forbs were relatively diverse and abundant, and perennial grasses are providing additional and adequate concealment cover, the site is rated suitable (Table H-3.26). Although not consistent across the landscape, in this setting the ecological site does not appear to be limiting the potential to provide adequate sagebrush concealment cover.

Winter Habitat

Two SG HAs were used to assess winter habitat conditions within pasture 3. One SG HA was located within the Loamy 13-16" ARTRV/PSSPS-FEID Ecological Site as an inclusion and one SGHA was located within the dominant Shallow Claypan 12-16" ARAR8/FEID Ecological Site. Inadequate sagebrush height for one of the ecological sites is an issue and probably limits the potential to provide suitable winter habitat (see below). Nevertheless, the mountain big sagebrush inclusion had appropriate sagebrush canopy cover and heights to provide available forage and concealment and thermal cover. Because mountain big sagebrush inclusions are common within the dominant low sagebrush ecological site, and although some issues were noted regarding the marginal suitability of winter habitat in the low sagebrush matrix, winter habitat within pasture 3 was rated as Suitable overall.

- **07S02W06-2012 (R025XY011ID)**
  Suitable. Overall the ecological site within the pasture is rated as suitable winter habitat because the amount (CC) and height of sagebrush would provide forage above persistent snow (Table H-3.27). Sagebrush and other shrub CC provide adequate concealment and thermal cover also.
- **07S02W07b-2012 (R025XY010ID)**
  Suitable. Overall the ecological site within the pasture may be limiting the potential to provide suitable winter habitat. The short-statured low sage at times may be unavailable where snow accumulations exceed the height of most shrubs. Based on the indicators this site is rated as marginal winter habitat because sagebrush heights may not be tall enough to emerge from deep snow and provide available forage for sage-grouse (Table H-3.28). The site also does not appear to be on a windswept ridge (i.e., less snow accumulation) either, which also is maintaining the unavailability of forage.

General Upland Habitat

Sagebrush and other shrubs are generally providing good woody cover, structure and forage for sage-grouse and most other sagebrush steppe obligates throughout much of Pasture 3. Western juniper is widely scattered to common throughout much of the pasture and provides habitat for a diversity of migratory birds and other species adapted to woodlands, mixed shrub, and open woodland habitats. Where junipers are encroaching into sagebrush steppe communities, they are

affecting habitat for sagebrush steppe species including sage-grouse, pygmy rabbit and a diversity of migratory birds. Perennial bunchgrasses are generally as expected at both upland assessment locations and provide marginally adequate cover. However, some plant mortality and crown die-out is occurring, leading to a reduction in herbaceous cover and structure for sage-grouse and a diversity of other species. Reductions in herbaceous cover also affect populations of rodents, small birds and insects that are prey for a diversity of raptors and other predatory species.

Table B.8.6. Box T Allotment, Pasture 3 sage-grouse breeding habitat suitability, (T.07S R.02W Sec.7), 2002

Habitat Indicator	Suitable Habitat	Marginal Habitat	Unsuitable Habitat
Average Sagebrush Canopy Cover		X	
Average Sagebrush Height	X		
Sagebrush Growth Form	X		
Average Grass and Forb Height	X		
Average Perennial Grass Canopy Cover	X		
Average Forb Canopy Cover			X
Preferred Forb Abundance and Diversity	X		
Overall Site Assessment	**X**		
Refer to Appendix H for specific habitat rating criteria as included Habitat Assessment Worksheets			

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General Upland Habitat Assessment
Several upland habitats and cover types occur within a variety of ecological sites within pasture 3 (Table WDLF-20).

Table WDLF-20: NRCS Ecological Sites[1] within Box T allotment pasture 3

Habitat Type	General Cover Type	Ecological Site Description	Percentage of Allotment	
			Ecological Site Description	General Cover Type
Shrub Steppe	Mountain Big Sagebrush	Loamy 13-16 ARTRV/PSSPS-FEID	<1	<1
	Basin Big Sagebrush	Loamy Bottom 16+ ARTRT/LECI4	<1	<1
	Low Sagebrush	Shallow Claypan 12-16 ARAR8/FEID	94	94

[1]Approximately 5.8 percent of the pasture is classified as an unknown/no data.

Redband Trout
Redband trout were observed in Meadow Creek in Pasture 3 during a August 2003 riparian assessment, and during an ocular survey on 9/28/05. Meadow Creek is recovering from past disturbance, with a PFC rating of functional-at risk, with an upward trend. Analysis of

photographs from 1991 to the present indicates that habitat conditions are improving as the channel becomes narrower and deeper. Willows occur on the floodplain and terraces, but are limited along much of the channel margins. Stream water temperature monitoring during the end of the salmonid spawning period exceeded water quality standards in 2002. Stream water temperature monitoring during the summer months has shown that temperatures did not support cold water aquatic life criteria in 2000, and were within the 10% exceedence criteria in 2002. Dissolved oxygen met water quality criteria in 1996 and 2005. However, pH met standards in 1996, but was higher than the acceptable range of established water quality standards in 2005.

Alder Creek FFR Allotment (00639)

The Alder Creek FFR Allotment is located approximately 10 miles southwest of Oreana, Idaho in Owyhee County (Appendix I). Elevations range from approximately 4,200 feet to 6,300 feet. The allotment is part of the West Castle Creek Core Area. The landforms are hills and mountains deeply dissected by drainages. The landform features are the result of volcanic activity and soils are granitic and rhyolitic in origin.

The allotment is within major land resource area, D-25. The majority of the soils in the allotment are shallow to moderately deep and well drained. Soils are sandy, clayey, and loamy and vary in surface and subsurface rock fragments. These soils formed in mostly residuum and alluvium that was derived predominantly from welded rhyolitic tuff and granite. Approximately 80% of the public land in this allotment is characterized by Loamy 12-16" and Loamy 13-16" ecological sites.

The Alder Creek FFR Allotment encompasses approximately 1,808 acres, including 571 federal acres and 1,236 private acres.

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BLM 2013 GIS data identify that the Alder Creek FFR allotment encompasses 1,808 acres, including 568 federal acres and 1,240 private acres. The allotment is categorized as a low priority I allotment for management in the ORMP.

Livestock Use History

The Alder Creek FFR Allotment is allocated for 60 AUMs of active permitted use. Grazing generally occurs between April 15 and June 15. Robert Thomas holds the current livestock-grazing permit.

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Table LVST-3: Reported actual use within the Alder Creek FFR allotment 2005 to 2012

Year	Dates of reported use	AUMs*
2005	4/23-6/17	215
2006	4/20-6/17	165
2007	4/21-6/12	235
2008	4/29-6/9	145
2009	5/9-6/22	148
2010	4/27-6/30	256
2011	5/22-7/1	216
2012	4/18-7/5 11/1-11/15	550

*Reported actual use includes grazing on both public lands and private lands and therefore reported use for the allotment results in calculated AUMs in excess of the authorized active use.

These reported data are consistent with the reported dates of grazing use in the 2006 assessment, mid-April to mid-June, although additional fall use was taken in 2012.

Standard 1: Watersheds

The following is excerpted from the Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management, and pertains to assessment of rangeland health as it relates to riparian and wetland areas:

> "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.
>
> Indicators may include, but are not limited to, the following:
>
> 1. The amount and distribution of ground cover, including litter, for identified ecological site(s) or soil-plant associations are appropriate for site stability.
>
> 2. Evidence of accelerated erosion in the form of rills and/or gullies, erosional pedestals, flow patterns, physical soil crusts/surface sealing, and compaction layers below the soil surface is minimal for soil type and landform."

One Rangeland Health Evaluation Summary Worksheet was completed for this allotment in a Loamy 13-16" ecological site in 2002 (Table C.1.1, Map 2). The majority of indicators associated with the watershed standard rated in the none-to-slight or slight-to-moderate range of departure from conditions at reference sites or the applicable ecological site guide (USDA, Soil Conservation Service, 1981).

Table C.1.1. Alder Creek FFR allotment Rangeland Health Indicator summary.

Standard 1-Watersheds	Degree of Departure				
	None-to-slight	Slight-to-moderate	Moderate	Moderate-to-extreme	Extreme
Pasture 1	5	5	2	0	0

Site Stability

Indicators of soil erosion were present in the form of terracette formation and pedestaled plants, although the terrecettes appear to be historic in nature active cutting of terracettes is evidence of recent movement. The indicator for pedestals and terracettes rated in the moderate range of departure from expected conditions. Many erosional features documented appear to be more a result of older erosional episodes, such as soil loss in the interspatial areas, in various stages of stabilization. There is ongoing mechanical damage to the soil surface by hoof action at this site where livestock trail.

Hydrologic Function

Soil factors affecting hydrological function appear to be adequate in terms of organic matter and soil structure. There is an abundance of coarse fragments on the soil surface which is due mostly to the nature of the parent material. The plant community indicator, as it relates to hydrologic function showed a moderate degree of departure, due to a decrease of larger perennial bunchgrasses and an increase of the smaller, more disturbance-tolerant species. Shrub density is much higher than expected for the site. At this site, the overall health and vigor of bunchgrasses is low, relative to grasses in similar ecologic sites in nearby allotments. Overall, the plant community consists of a shrub-dominated site with encroaching juniper and few interspatial grass species. Increaser species dominate the bunchgrass component, and are found primarily under shrubs.

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An additional Rangeland Health Evaluation Summary Worksheet was completed for this allotment in 2005. Although the monitoring sheet indicated this site to be a Shallow Claypan 12-16", it fit the South Slope Gravelly 12-16" ecological site description in 2005. The majority of indicators associated with the watershed standard rated in the moderate range of departure from conditions at reference sites for the applicable ecological site.

Table SOIL-1: 2005 Alder Creek FFR allotment Rangeland Health Indicator summary for Standard 1 Watersheds

	Degree of Departure				
	None-to-slight	**Slight-to-moderate**	**Moderate**	**Moderate-to-extreme**	**Extreme**
Pasture 1	3	1	8	0	0

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Site Stability – Indicators of soil erosion were present and were rated at a moderate departure from reference conditions. In particular, water flow patterns, pedestals, and bare ground showed increased values. Additional instability was reflected in a loss of soil surface resistance to erosion and a moderate level of soil surface loss and degradation.

Hydrologic Function – Soil factors affecting hydrologic function at the site includes litter amount and movement that was rated at moderate levels. The plant community composition and distribution indicator also showed a moderate degree of departure and is related to a decrease in functional/structural groups.

2013 Site Visit (field report available in Project File)

A site visit in the spring of 2013 confirmed the 2005 observations at the RHA site and adjacent areas. While the lower elevations of the allotment contain a high rock content that stabilizes soils, upper elevations are primarily granitic with weathered outcrops along much of the main drainage of upper Castle Creek and some rhyolite intermingled on opposing slopes. The slopes leading into the drainage show cattle use evidenced by heavy side trailing, mechanical hoof damage, pedestaling, collapsed upper banks, and trampled soils. Along the adjacent small terraces and uplands, soils contain spotty vegetation with bare interspaces and apparent flow

patterns. No water was flowing in the small tributary to Castle Creek and conditions were already very dry. The existing roads are clogged with sediment and grus (weathered granite), while the surrounding slopes are very erosive, contain lots of pedestals, and connected water flow patterns and are on occasion stabilized by soil crusts.

Standard 2: Riparian Areas and Wetlands

The following is excerpted from the Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management, and pertains to assessment of rangeland health as it relates to riparian and wetland areas:

> "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.
>
> Indicators may include, but are not limited to, the following:
>
> 1. The amount and distribution of ground cover, including litter, for identified ecological site(s) or soil-plant associations are appropriate for site stability.
>
> 2. Evidence of accelerated erosion in the form of rills and/or gullies, erosional pedestals, flow patterns, physical soil crusts/surface sealing, and compaction layers below the soil surface is minimal for soil type and landform."

Stream Inventories/Assessments

Stream associated riparian inventories were conducted by Riparian Resources in 2000. Inventories included descriptions of vegetative community composition and cover, stream channel conditions, and riparian proper functioning condition assessments. Appendix D-1 summarizes the BLM riparian proper functioning condition (PFC) checklist elements specific to Standard 2. The standard checklist has 17 items and items 6-12 and 14 describe features associated with riparian vegetation (B-2 (Methods) describes the PFC ratings). Map 2 shows the location of stream segments.

Table C.2.1 summarizes key findings from the stream inventory related to riparian vegetation and stream bank stability.

Table C.2.1. Riparian community types and stream bank stability

Stream Segment ID (length, miles)	Riparian Community Type	Deep Binding Root Mass (% of banks)	Bed Material	Bank Material	Stream banks covered-stable[1] and uncovered –stable[2] (%)	Active Bank Erosion (%)
Alder Creek ALD003 (0.5)	Yellow Willow	65-85	Gravel to boulder	Silt to cobble	60	20
Alder Creek ALD004 (0.1)	Yellow Willow /Rose	65-85	Sand to cobble	Silt to cobble	80	10

[1]Covered and Stable banks are defined as having over 50 percent of the streambank surfaces covered by vegetation in vigorous condition, or the banks are OVER 50 percent covered by materials (large cobble,

boulders or anchored rock) that prevent bank erosion. Streambanks are stable; that is, they do not show indications of alteration such as breakdown, erosion, tension cracking, shearing or slumping.
[2]Uncovered and Stable banks are defined as having less than 50 percent of the streambank surfaces covered by vegetation in vigorous condition, or the banks are LESS THAN 50 percent covered by materials that do not allow bank erosion. Streambanks do not show indications of alteration such as breakdown, erosion, tension cracking, shearing or slumping.

Alder Creek maintains diverse and healthy riparian shrub communities that are capable of stabilizing banks. Understory riparian herbaceous vegetation (such as sedges and rushes) are under-represented along this reach. The noxious weed, whitetop, was noted in small amounts in 2000.

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The following information was collected for the Alder Creek FFR allotment in 2008 & 2013 subsequent to the initial assessment.

Table RIPN-4: Watershed information for the Alder Creek FFR allotment

	Allotment & Pasture Name		
Stream Name	**Alder Creek FFR- 01**	**Assessment Issues/ Impacts Identified**	**Total Miles *Assessed***
Alder Creek	0.5 (FAR-2000) (PFC-2008)	bank disturbance and instability where accessible to livestock/ stream is rock armored and willowed providing vertical and lateral stability	0.5

MMIM Metrics			
Stream Name/Assess Yr/ Pasture	**Median Stubble Height (inches)**	**Bank Alteration (%)**	**Woody Use (%)**
Alder Creek/2008/1	4.0	37	75

Springs Assessed, Condition, & Issues Identified			
Spring Name	**Assessment Year**	**PFC Condition**	**Assessment Issues/ Impacts Identified**
Unnamed Seep	2013	FAR	flow alteration from trampling/ excessive removal of riparian veg/

Standard 3: Stream Channel/Floodplain

The following is excerpted from Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management, and pertains to the assessment of rangeland health standards and guidelines related to stream channels and floodplains:

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.

Indicators may include, but are not limited to, the following:

1. Stream channels and floodplains dissipate energy of high water flows and transport sediment. Soils support appropriate riparian-wetland species, allowing water movement, sediment filtration, and water storage. Stream channels are not entrenching.

2. Stream width/depth ratio, gradient, sinuosity, and pool, riffle and run frequency are appropriate for the valley bottom type, geology, hydrology, and soils.

3. Streams have access to their floodplains and sediment deposition is evident.

4. There is little evidence of excessive soil compaction on the floodplain due to human activities.

5. Streambanks are within an appropriate range of stability according to site potential.

6. Noxious weeds are not increasing.

Stream Inventories/Assessments
Riparian stream inventories in this allotment were conducted by Riparian Resources in 2000. Appendix D-2 summarizes the BLM riparian proper functioning condition checklist elements specific to Standard 3. The standard checklist has 17 items and items 1-5, 12, and 14-17 describe features associated with soil erosion-deposition, channel form and hydrology.

Alder Creek is an intermittent tributary to Castle Creek. The stream does not maintain perennially flowing reaches, as evidenced by water temperature monitoring. Hydrologically, the channel is passing the range of flow and sediment without downcutting or aggrading. Streambank cover, however, is low for a stream in this environmental setting.

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See Table RIPN-4 above under Standard 2 for new BLM riparian information associated with Standards 2 and 3.

Standard 4: Native Plant Communities

The following is excerpted from Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management, and pertains to assessment of rangeland health for the native plant communities standard:

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.

Indicators may include, but are not limited to, the following:

1. Native plant communities (flora and microbiotic crusts) are maintained or improved to ensure the proper functioning of ecological processes and continued productivity and diversity of native plant species.

2. The diversity of native plant species is maintained.

3. Plant vigor (total plant production, seed and seedstalk production, cover, etc.) is adequate to enable reproduction and recruitment of plants when favorable climatic events occur.

4. Noxious weeds are not increasing.

5. Adequate litter and standing dead plant material are present for site protection and for decomposition to replenish soil nutrients relative to site potential.

Rangeland Health Indicators
Indicators for invasive species and functional/structural groups rated in the moderate range of departure from expected conditions on the Alder Creek FFR allotment (Table C.4.1). Few large perennial bunchgrasses are present, and occur mostly under the protective canopy of shrubs. Western juniper occurs more commonly than expected for this ecological site. Cheatgrass is present in trace amounts throughout the allotments. Microbiotic crusts are less common than expected. The existing perennial grasses exhibit low vigor and a reduced capacity for reproduction and occur primarily under shrub canopies. Currently the plant community within this pasture is dominated by Sandberg's bluegrass, mountain big sagebrush and some Idaho fescue.

Table C.4.1. Rangeland Health Indicator rating summary.

Standard 4-Native Plant Communities	Degree of Departure				
	None-to-slight	Slight-to-moderate	Moderate	Moderate-to-extreme	Extreme
Pasture 1	3	4	2	0	0

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The 2006 summary of indicators of biotic integrity are consistent with 2012 sage-grouse habitat assessment data that identify a depressed Wyoming big sagebrush community at two sites with no cover of mid to deep-rooted perennial recorded.

Standard 5: Rangeland Seeding

This standard does not apply to this allotment.

Standard 6: Exotic Plant Communities

Although exotic plant species occupy this allotment, they do not occur to the extent that the threshold for control has been crossed. Therefore, this standard does not apply to this allotment.

Standard 7: Water Quality

The following is excerpted from Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management, and pertains to the assessment of rangeland health standards and guidelines applicable to stream surface and ground water quality:

> "Surface and ground water on public lands comply with the Idaho Water Quality Standards.
>
> Indicators may include, but are not limited to, the following:
>
> 1. Physical, chemical, and biologic parameters described in the Idaho Water Quality Standards."

Surface Water Monitoring

Alder Creek is located in the Mid Snake River/Succor Creek Sub-basin (Hydrologic Unit Code # 17050103). This assessment includes a review of known data collected by BLM and IDEQ. Data are evaluated to maintain consistency with current State of Idaho water quality standards and total maximum daily load (TMDL) assessments and allocations.

IDEQ reports water quality data differently than it has in the past. Prior to 2002, IDEQ prepared and submitted to EPA two separate documents. The first of these was a list (called a "§303(d) list") of all impaired waters in the state, as required under Section 303(d) of the Clean Water Act (IDEQ 1998). The second was a report (called a "§305(b) report") that summarized the status of all of Idaho's waters, as required under Section 305(b) of the Clean Water Act. IDEQ now prepares one report called The Integrated 303(d)/305(b) Report, which is a combination of these two documents.

The Integrated Report identifies water bodies differently than old §303(d) lists and §305(b) reports. The old lists and reports used "water quality limited segments" to identify streams and portions of streams that were impaired; the Integrated Report uses "assessment units." Assessment units are groups of similar streams within a subbasin that have similar land use practices, ownership, or land management.

Beneficial Use Support Status

Table C.7.1 lists the beneficial use support status for waters within the Alder FFR Allotment. In addition, all waters are assumed to support agriculture, industrial water supply, wildlife habitats and aesthetics, but none of the waters within the Alder FFR Allotment have been assessed for these uses.

Table C.7.1. Designated and existing beneficial use support status (IDEQ 2004a).

Name (Assessment Unit)	CWAL	SS	PCR	SCR
Alder Creek-2nd order (ID17050103SW014_02)	Not Supporting	---	---	---

CWAL=Cold Water Aquatic Life; SS=Salmonid Spawning; PCR=Primary Contact Recreation; SCR=Secondary Contact Recreation; N/A=Not Applicable --- = Not Assessed

Temperature Monitoring

Table C.7.2. summarizes BLM water temperature monitoring for support of cold water aquatic life beneficial uses in the Alder FFR Allotment. Water temperatures were monitored using automatic continuous-recording thermographs.

Table C.7.2. Stream temperature monitoring summary for Alder Creek.

Stream	Dates Sampled	Max T (°C)	Max Avg T (°C)	CWAL	SS
5341/6391 fence (T6S R2W S24 SENE)	7/01 – 9/02/03	19.1	14.2	FS	ND
	6/20 – 9/30/02	16.1	12.4	FS	ND
BLM/private boundary (T6S R01W S18 SWSE)	7/01 – 9/02/03	19.8	18.4	FS	ND

CWAL=Cold Water Aquatic Life (water temp. ≤ 22° C, with a maximum daily average of ≤ 19°C);
SS=Salmonid Spawning (water temp. ≤ 13° C, with a maximum daily average of ≤ 9°C)
FS=Fully Supports beneficial use; NS=Does Not Support beneficial use; ND=No Data

Bacteria Monitoring

The current standard for primary contact recreation beneficial use designation is 406 *Escherichia coli* organisms/100 ml for a single sample and 576 E. coli organisms/100 ml for a single sample for secondary recreational contact (IDAPA 58.01.02). These E. coli counts do not in themselves constitute a violation of water quality standards. When a single sample exceeds the limit, additional samples must be collected over a specified time frame. Table C.7.3 summarizes BLM monitoring for coliform bacteria.

Table C.7.3. Bacterial Colonies and Assessment of water quality for the support of beneficial use designations

Stream	Fecal Coliform (organisms/100 ml)	E. coli (organisms/ 100 ml)	Date Sampled	Beneficial Use Criteria Status
Alder Creek	170	160	9/03/03	Met criteria for SCR

SCR-Secondary Contact Recreation

Sediment

Water quality criteria for sediment are determined on a case-by-case basis (IDAPA 58.01.02.250.05). In the absence of specific criteria, sediment shall not exceed quantities that impair designated uses. The BLM has not sampled sediment or stream channel substrate in the Alder FFR Allotment.

Water Chemistry
Table C.7.4 summarizes water chemistry monitoring for streams in the Box T Allotment.

Table C.7.4. Water Chemistry Monitoring

Stream	Date	pH	Cond. (uS/cm)	D.O. (mg/L)	Instant. Temp (^oC)
Alder Creek (T6S R2W S24 SENE)	9/03/03	6.67	---	---	12.9
Water Quality Standard		6.5 – 9.0	---	>6	≤ 22
--- = Not measured/no data available.					

Ground Water
BLM has not conducted ground water quality monitoring within the Alder Creek FFR Allotment.

Other Data Reviewed
BLM also reviewed the State of Idaho's Beneficial Use Reconnaissance Protocol database (IDEQ 2004b) for Alder Creek.

Standard 8: Threatened and Endangered Plants and Animals

Botany
No populations of special status plant species are known to occur in this allotment.

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No populations of special status plant (SSP) species are known to occur in this allotment. Records show no reported special status plants in this allotment; for this reason, this standard is not applicable.

Information sources
Elemental Occurrences (EOs) for SSP populations are recorded in the Idaho Fish and Wildlife Information System (IFWIS) Species Diversity database (IDFG, 2011). EOs are derived by completion and review of an Idaho Rare Plant Observation Report through the Idaho Natural Heritage Program. Other sources that were used to assess and evaluate the composition and condition of SSP habitats within the Alder Creek FFR allotment include RHAs, photographs, field notes, Plants database (USDA NRCS, 2013), literature search, and information summarized above in Standards 1, 2, 3, 4, and 7 in this document. Records show no reported special status plants in this allotment.

Wildlife

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Information Sources
Information sources that were used to assess and evaluate the composition and condition of wildlife habitats within the Alder Creek FFR allotment include sage-grouse habitat assessments (SG HA; 2012), land cover classification (2002), aerial imagery (2011), photographs (2008, 2012, and 2013), and field visits (2013), in addition to information summarized above in Standards 1, 2, 3, 4, and 7 in this document.

Landscape Setting
One Level IV Ecoregion of Idaho is represented within the present allotment and includes the Owyhee Uplands and Canyons (80f) (Map WDLF-1) (McGrath, et al., 2002). The Owyhee Uplands and Canyons ecoregion occurs at mid to high elevations and is characterized by a volcanically-derived landscape of lava fields, tuffaceous outcrops dissected by deep, sometimes precipitous canyons. Vegetation communities in this ecoregion represented with the allotment include xeric and mesic shrub steppe, mountain shrub, and woodlands.

Habitat, Cover Types, and Ecological Sites
A variety of major habitats and general cover types occur within the allotment (Table WDLF-21; Map WDLF-2). These upland and riparian habitats and cover types occur within a variety of ecological sites (Table WDLF-21).

Table WDLF-21: Major habitat and general cover types within the BLM-managed portion of the Alder Creek FFR allotment

Habitat Type	General Cover Type	Percentage of Allotment	
		General Cover Type	Habitat Type
Grassland	bunchgrass	23	23
Shrub Steppe[1]	big sagebrush	25	53
	mountain big sagebrush	13	
	low sagebrush	15	
Mountain Shrub	mountain shrub	<1	<1
Forest	juniper	3	3
	Douglas-fir	<1	
Riparian	wet meadow	14	14
Non-native/Disturbed	exotic annuals	6	6

[1] Shrub steppe habitat type includes the predominant big and low sagebrush communities in the area. Big sagebrush (*Artemisia tridentata*) cover types include communities dominated by the subspecies Wyoming (*wyomingensis*) and Basin (*tridentaaa*) and mixed communities of both species. Mountain big sagebrush (*A. tridentata vaseyana*) and low sagebrush (*A. arbuscula*) cover types comprise the remaining sagebrush communities.

Table WDLF-22: NRCS Ecological Sites within Alder Creek FFR allotment.

Habitat Type	General Cover Type	Ecological Site Description	Percentage of Allotment	
			Ecological Site Description	General Cover Type
Shrub Steppe	Wyoming Big Sagebrush	Sandy Loam 8-12” ARTRW8/ACHY	3	6
		Loamy 8-12” ARTRW8/PSSPS-ACTH7	3	
	Mountain Big Sagebrush	Loamy 12-16” ARTRV/FEID-PSSPS	16	73
		Loamy 13-16” ARTRV/PSSPS-FEID	34	
		South Slope Loamy 12-16” ARTRV/PSSPS	23	

	Low Sagebrush	Very Shallow Stony 8-12" ARNO4/ACTH7[1]	17	21
		Shallow Claypan 12-16" ARAR8/FEID	4	

[1]Despite the classification of a Very Shallow Stony 8-12 ARNO4/ACTH7 Ecological Site by the NRCS, Black Sagebrush (*Artemisia nova*) has not been found in the Owyhee Field Office (pers. comm. B. Corbin, BLM Botanist, March 26, 2013).

Focal Special Status Species

Greater sage-grouse

Population Ecology

No fewer than five leks (occupied or active) are located in or near the allotment. In addition, the allotment is located within several 75 percent breeding bird density (BBD) lek buffers (4 mile; Table WDLF-23).

Table WDLF-23: Attendance at leks in or within 4 miles of the Alder Creek FFR allotment, 2007-2012

Lek[1]	**Pasture/s[2]**	**Survey Year[3]**					
		2012	**2011**	**2010**	**2009**	**2008**	**2007**
2O642*†	1^	0	41	40	--	0	--
2O196†	1	23	16	11	8	4	16
2O197*†	1	37	34	32	19	17	19
2O548*	1	0	54	--	--	--	--
2O705†	1	7	8	6	11	12	--

[1]An occupied lek is designated by the † symbol and defined as a traditional display area where two or more male sage-grouse have attended in 2 or more of the previous 5 years (Idaho Sage-grouse Advisory Committee 2006). Leks with 75 percent BBD areas are designated by an asterisk.
[2]The pasture in which the lek is located is designated by ^.
[3]Surveys were not conducted in years indicated by dashes (--).

Habitat Characteristics

Northern Great Basin Population/Owyhee Subpopulation Mid-Scale
Recently, Idaho BLM initiated a modeling effort to identify preliminary priority sage-grouse habitat (PPH) within the Snake River Plain MZ (Makela & Major, 2012). Priority habitat includes breeding, late brood-rearing, and winter concentration areas. Because priority habitat areas have the highest conservation value for maintaining the species and its habitat, it is BLM policy (as per WO IM 2010-071) to identify these areas in collaboration with respective state wildlife agencies. The current model indicates that the allotment is comprised entirely of PPH (Map WDLF-3).

Owyhee Front/Triangle Local Population Fine-scale
A review of the 2012 PPH output revealed that the area around the Toy Mountain group allotments in one of the critical input data layers (i.e., Idaho Sage-grouse Key Habitat Planning Map) had for the most part not been refined since its initial creation in the early 2000s. Much of the area was coarsely classified as Conifer Encroachment (R3). Review of recent (2012) aerial imagery and a Owyhee Field Office (OFO) land cover classification (Bunting & Strand, 2008) of the area have provided better habitat information and edits to be incorporated into the 2013 Greater Sage-grouse Habitat Planning Map (as per IM ID-2013-010). The update identifies large areas of currently Key Habitat (K) that were misclassified as R3 across the OFO, especially in the Toy Mountain group area. The update reveals that the allotment is primarily key habitat with a small portion of conifer encroachment area (Map WDLF-4).

Allotment/Pasture Site-scale
Based on a telemetry study of sage-grouse from the Owyhee Front/Triangle local population, seasonal locations show that the BLM-managed portion of the allotment contains breeding, upland summer, early and late brood-rearing riparian summer, and winter seasonal habitats (Table WDLF-24; Map WDLF-5c).

Table WDLF-24: Seasonal habitat types within the Alder Creek FFR allotment on BLM lands

Pasture	Seasonal Habitat			
	Breeding	**Upland Summer**	**Early/Late Brood-rearing Lentic/Lotic Areas**	**Winter**
1	X	X	X	X

Habitat Assessments
The current conditions of sage-grouse seasonal habitats were assessed following protocols outlined in the Sage-grouse Habitat Assessment Framework (SG HAF; (Stiver, Rinkes, & Naugle, 2010)). The primary habitat indicators and habitat suitability ranges within the SG HAF are consistent with sage-grouse habitat management guidelines provided by Connelly et al. (2000), the State of Idaho's sage-grouse management alternative (The State of Idaho, 2012), and interim BLM sage-grouse habitat management guidance as per WO-IM 2012-043. Habitat indicators and suitability ranges should not be viewed independently but rather as an assembly of vegetation components that contribute to providing for sage-grouse seasonal habitat requirements.

Focal Special Status Species

Greater sage-grouse

Habitat Characteristics

Habitat Assessments

The allotment is entirely within the breeding, upland summer, and winter seasonal ranges of the Owyhee Front/Triangle local population (Map WDLF-5c). Mountain big sagebrush and low sagebrush ecological sites support breeding (including early brood-rearing), upland summer, and winter sage-grouse habitat. Wyoming big sagebrush ecological sites support breeding and winter habitats and to a lesser extent upland summer habitat where local conditions are favorable due to

elevation and aspect. There are no lentic sites in the allotment, but there is one perennial stream (Alder Creek) and several intermittent drainages that provide important early and late brooding-rearing areas.

Most of the sage-grouse habitat within the pasture is considered key habit. An area in the northwest corner of the allotment is classified as a juniper encroachment area, and junipers of early to mid-seral status occur in most drainages (Map WDLF-4). In addition, dense mountain shrub communities mixed with mountain mahogany and aspen stands occur in the western portion of the allotment at the headwaters of a tributary to Buckaroo Creek.

Breeding Habitat
Two SG HAs were used to assess breeding habitat conditions within the allotment (Map WDLF-5c). Both SG HAs were located within what appears to be the South Slope Granitic 12-16" ARTRV/PSSPS-ACTH7 Ecological Site. Mountain big sagebrush ecological sites dominate the allotment (73 percent; Table WDLF-22) and therefore the habitat assessment is representative of conditions that predominate within the allotment.

Both SG HAs were conducted in 2012; however, the sites were surveyed after the breeding season (see below). Nevertheless, based on a variety of indicators that are not affected by annual variation (i.e., sagebrush components and perennial bunchgrass canopy cover) or that displayed depauperate representation in the summer that might also be expected earlier in the season (i.e., forb diversity and abundance), results from these surveys provide provisional evidence supporting the breeding habitat suitability rating for the allotment (see below).

Habitat conditions within the ecological site were consistent. Issues affecting breeding habitat quality within the pasture included sagebrush and understory indicators which were marginal or worse and in combination with invasive BRTE dominance, breeding habitat within the allotment merits an Unsuitable rating overall.

- **06S01W18a-2012** and **06S01W18b-2012 (R025XY027ID)**
  Unsuitable (*provisionally*). Although assessment was not conducted at the appropriate time of year, many of the components necessary for suitable breeding habitat probably would not fall within the correct ranges (excessive sagebrush CC, absence of perennial grass understory cover, excessive BRTE) even if assessment were conducted in the proper season (Figure H-3.29). The total absence of deep-rooted, tall-structured perennial grass cover is also a major issue in regards to nesting cover and, with the excessive BRTE cover, community composition and health. BRTE cover ranged from 42-62 percent. Perennial herbaceous understory cover was only present at one site and composed of one species (*Lupinus* sp.) which is not a preferred forage species. Although it's not certain what forage forb diversity and abundance would be in the spring based on these surveys, most other components appear to be providing unsuitable breeding habitat conditions.

Brood-rearing Riparian Habitats
The allotment contains one perennial stream (Alder Creek) and several intermittent/ephemeral stream valleys that probably support early and late brood-rearing habitat. With the exception of Alder Creek, the remaining streams are located on private land and have not been assessed within the allotment.

Alder Creek was assessed as PFC, but sage-grouse use is probably limited in most locations

along the stream due to its location in a rather narrow, steep-sided valley with riparian vegetation that is dominated by a closed canopy of woody species. However, the herbaceous understory is abundant with succulent riparian species and sage-grouse use may occur where local conditions permit (i.e., absent or mostly open woody canopy cover, low visual obstruction). Nevertheless, due to the relatively narrow floodplain, closed canopy, and limited openings where herbaceous vegetation has greater production potential, the portion of Alder Creek that traverse BLM-lands is only providing marginal habitat for sage-grouse and their broods.

The allotment does not contain any known spring-associated lentic riparian/wetland areas.

Upland Summer Habitat
Two SG HAs were used to assess upland summer habitat conditions within the allotment (Map WDLF-5c). Both SG HAs were located within what appears to be the South Slope Granitic 12-16" ARTRV/PSSPS-ACTH7 Ecological Site. Mountain big sagebrush ecological sites dominate the allotment (73 percent; Table WDLF-22) and therefore the habitat assessment is representative of conditions that predominate within the allotment.

Habitat conditions within the ecological site were consistent. Issues affecting breeding habitat quality within the pasture included sagebrush and understory indicators which were marginal or worse and in combination with invasive BRTE dominance, upland summer habitat within the allotment merits a Marginal rating overall.

- **06S01W18a-2012** and **06S01W18b-2012 (R025XY027ID)**
  Marginal. This ecological site is on the lower end of the marginal rating. Although most of the primary indicators are within the marginal ranges, few forbs are present for forage overall and are providing understory concealment cover only at one site indicating issues with potential predator detection due to excessive sagebrush height and mediocre form (Figure H-3.30). The total absence of deep-rooted, tall-structured perennial grass cover is also a major issue in regards to concealment cover and, with the excessive BRTE cover, community composition and health. Excessive BRTE cover may be inhibiting movement through the understory in addition to depressing ability to detect predators, as well as potentially increasing predator's ability to detect grouse.

Winter Habitat
Two SG HAs were used to assess winter habitat conditions within the allotment (Map WDLF-5c). Both SG HAs were located within what appears to be the South Slope Granitic 12-16" ARTRV/PSSPS-ACTH7 Ecological Site. Mountain big sagebrush ecological sites dominate the allotment (73%; Table WDLF-2) and therefore the habitat assessment is representative of conditions that predominate within the allotment. Habitat conditions within the ecological site were consistent, and winter habitat within the allotment was rated as Suitable.

- **06S01W18a-2012** and **06S01W18b-2012 (R025XY027ID)**
  Suitable. Overall the area is rated as suitable winter habitat because the amount (CC) and height of sagebrush would provide forage above persistent snow (Figure H-3.31). The excessive sagebrush and other shrub CC would provide adequate concealment and thermal cover also. However, in the absence of management actions to reduce junipers in parts of the allotment/pasture, the area will degrade into marginal habitat primarily due to a future increase of small to medium junipers as evidenced by their current presence and abundant recruitment. Due to juniper encroachment, parts of the allotment/pasture appear to be on the lower end of suitable winter habitat and may be limiting sage-grouse use.

General Riparian Habitat

All 0.6 miles of stream riparian habitat in this pasture are located along Alder Creek and are rated as functioning-at-risk (FAR) with an upward trend. Structural diversity, composition and vigor of hydric vegetation are all adequate to provide for the needs of most special status animals and other dependant wildlife. There is also adequate hydric vegetation cover to protect banks and dissipate energy which reduces the likelihood of significant habitat loss or degradation during high flow events.

2013 Supplement to the Alder Creek Allotment Rangeland Health Standards and Guidelines Assessment
Approximately 0.5 miles of Alder Creek were assessed as PFC in 2008. A woody overstory of abundant willows with an understory of riparian gramminoids such as common spikerush and *Carex* sp. are providing adequate habitat for riparian-dependent species status species (particularly migratory birds and willow flycatcher) breeding and foraging.

General Upland Habitat Assessment

Sagebrush and other shrubs are generally increasing and providing good woody cover, structure and forage for sage-grouse and most other sagebrush steppe obligates throughout much of the pasture. Western juniper is estimated to be increasing within this allotment and while it is providing habitat for a diversity of migratory birds and other species it is also adversely affecting habitat for sagebrush steppe species such as sage-grouse, pygmy rabbit and a diversity of other migratory birds where they are encroaching into these habitats. The occurrence of large perennial bunchgrasses is reduced, vigor is low and they are found primarily under the protection of shrubs. This is resulting in reduced ground cover and structure for sage-grouse and other ground nesting and foraging species. It is also likely to be limiting populations of rodents, small birds and insects that are prey for a diversity of raptors and other predatory species.

2013 Supplement to the Alder Creek Allotment Rangeland Health Standards and Guidelines Assessment
In general, upland habitat conditions have not improved since the previous assessment. Although shrub cover has remained consistent and continues to provide adequate woody cover, structure, and forage for shrub-obligate and dependent species, the quality of the herbaceous understory has declined. Deep-rooted, tall-statured perennial bunchgrasses remain sparse and short-statured bluegrass (*Poa* sp.) and invasive cheatgrass dominate the understory and do not provide adequate herbaceous understory cover and forage for most dependent special status wildlife species. BRTE appears to have increased substantially as the species was previously described as sparse but currently provides 42 to 62 percent canopy cover at recent SG HA transect sites. These understory conditions probably are limiting habitat quality for many ground-nesting and foraging species. In addition, juniper encroachment has most likely continued and densities increased as abatement efforts have not occurred in the interim period between assessments. Increases in juniper cover and conversion to woodlands results in habitat loss for most sagebrush-obligate and shrub-dependent special status species.

Fish

Redband trout - Alder Creek has not been sampled for fish, but the lower reaches contain redband trout. The reach is functional-at risk, with an overall upward trend, but fish habitat has not been evaluated. High amounts of bank instability put this reach at risk for sedimentation, which can impact reds and fry. However, there are no sediment data to indicate that sediment is

impacting fish habitat. Water temperature monitoring indicates full support for cold water aquatic life, although there are no data during the salmonid spawning period.

Interdisciplinary Team Members

The assessment was prepared by an Interdisciplinary Team (ID Team) from the Owyhee Field Office. The ID team contributed to the preparation of this document through various levels of involvement, as identified in the table below.

Name	Title	Roles and Responsibilities
Zig Napkora	Hydrologist	Standard 2 (Riparian Areas and Wetlands), Standard 3 (Stream Channel/Floodplain), and Standard 7 (Water Quality)
Kathi Kershaw	Ecologist/Botanist	Standard 1 (Watersheds) Standard 4 (Native Plant Communities) Standard 8 (Threatened and Endangered Plants).
Mike Mathis	Wildlife Biologist	Standard 8 (Threatened and Endangered Animals)
Dominika Lepak	Rangeland Management Specialist	ID team lead. Preparation of livestock use history. Standard 4 - Actual Use, Acres/AUM, Utilization. Editor (Initial Allotment Review, Final Assessment)

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APPENDICES

APPENDIX A: IDAHO STANDARDS FOR RANGELANDHEALTH AND GUIDELINES FOR LIVESTOCK GRAZING MANAGEMENT

Appendix A-1. Standards for Rangeland Health.

The Standards for Rangeland Health, as applied in the State of Idaho, are to be used as the Bureau of Land Management's management goals for the betterment of the environment, protection of cultural resources, and sustained productivity of the range. They are developed with the specific intent of providing for the multiple use of the public lands. Application of the standards should involve collaboration between the authorized officer, interested publics, and resource users.

Rangelands should be meeting the Standards for Rangeland Health or making significant progress toward meeting the standards. Meeting the standards provides for proper nutrient cycling, hydrologic cycling, and energy flow.

Monitoring of all uses is necessary to determine if the standards are being met. It is the primary tool for determining rangeland health, condition, and trend. It will be performed on representative sites.

Appropriate to soil type, climate, and landform, indicators are a list of typical physical and biological factors and processes that can be measured and/or observed (e.g., photographic monitoring). They are used in combination to provide information necessary to determine the health and condition of the rangelands. Usually, no single indicator provides sufficient information to determine rangeland health. Only those indicators appropriate to a particular site are to be used. The indicators listed below each standard are not intended to be all inclusive.

The issue of scale must be kept in mind in evaluating the indicators listed after each standard. It is recognized that individual isolated sites within a landscape may not be meeting the standards; however, broader areas must be in proper functioning condition. Furthermore, fragmentation of habitat that reduces the effective size of large areas must also be evaluated for its consequences.

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.

Indicators may include, but are not limited to, the following:
1. The amount and distribution of ground cover, including litter, for identified ecological site or soil-plant associations are appropriate for site stability.
2. Evidence of accelerated erosion in the form of rills and/or gullies, erosional pedestals, flow patterns, physical soil crusts/ surface sealing, and compaction layers below the soil surface is minimal for soil type and landform.

Standard 2 (Riparian Areas and Wetlands)
Riparian-wetland areas are in proper functioning condition appropriate to soil type, climate, geology, and landform to provide for proper nutrient cycling, hydrologic cycling and energy flow.

Indicators may include, but are not limited to, the following:
1. The riparian/wetland vegetation is controlling erosion, stabilizing streambanks, shading water areas to reduce water temperature, stabilizing shorelines, filtering sediment, aiding in floodplain development, dissipating energy, delaying floodwater, and increasing recharge of groundwater appropriate to site potential.
2. Riparian/wetland vegetation with deep strong binding roots is sufficient to stabilize streambanks and shorelines. Invader and shallow rooted species are a minor component of the floodplain.
3. Age class and structural diversity of riparian/wetland vegetation is appropriate for the site.
4. Noxious weeds are not increasing.

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.

Indicators may include, but are not limited to, the following:
1. Stream channels and floodplains dissipate energy of high water flows and transport sediment. Soils support appropriate riparian-wetland species, allowing water movement, sediment filtration, and water storage. Stream channels are not entrenching.
2. Stream width/depth ratio, gradient, sinuosity, and pool, riffle and run frequency are appropriate for the valley bottom type, geology, hydrology, and soils.
3. Streams have access to their floodplains and sediment deposition is evident.
4. There is little evidence of excessive soil compaction on the floodplain due to human activities.
5. Streambanks are within an appropriate range of stability according to site potential.
6. Noxious weeds are not increasing.

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.

Indicators may include, but are not limited to, the following:
1. Native plant communities (flora and microbiotic crusts) are maintained or improved to ensure the proper functioning of ecological processes and continued productivity and diversity of native plant species.
2. The diversity of native species is maintained.
3. Plant vigor (total plant production, seed and seedstalk production, cover, etc.) is adequate to enable reproduction and recruitment of plants when favorable climatic events occur.
4. Noxious weeds are not increasing.

5. Adequate plant litter and standing dead plant material are present for site protection and for decomposition to replenish soil nutrients relative to site potential.

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.

Indicators may include, but are not limited to, the following:
1. In established seedings, the diversity of perennial species is not diminishing over time.
2. Plant production, seed production, and cover are adequate to enable recruitment when favorable climatic events occur.
3. Noxious weeds are not increasing.
4. Adequate litter and standing dead plant material are present for site protection and for decomposition to replenish soil nutrients relative to site potential.

Standard 6 (Exotic Plant Communities)
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.

Indicators may include, but are not limited to, the following:
1. Noxious weeds are not increasing.
2. Perennial species numbers are being maintained.
3. Native and introduced perennial species are vigorous enough to reproduce when climatic and other environmental conditions are favorable.
4. Litter and standing dead plant material is adequate to replenish soil nutrients relative to site potential.

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

Indicators may include, but are not limited to, the following:
1. Physical, chemical, and biologic parameters described in the Idaho Water Quality Standards.

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

Indicators may include, but are not limited to, the following:

1. Parameters described in the Idaho Water Quality Standards.
2. Riparian/wetland vegetation with deep, strong, binding roots is sufficient to stabilize streambanks and shorelines. Invader and shallow rooted species are a minor component of the floodplain.
3. Age class structure diversity or riparian/wetland vegetation is appropriate for the site.

4. Native plant communities (flora and microbiotic crusts) are maintained or improved to ensure the proper functioning of ecological processes and continued productivity and diversity of native plant species.
5. The diversity of native species is maintained.
6. The amount and distribution of ground cover, including litter, for identified ecological site(s) or soil-plant associations are appropriate for site stability.
7. Noxious weeds are not increasing.

Appendix A-2. Guidelines for Livestock Grazing Management.

Introduction

Guidelines direct the selection of grazing management practices, and where appropriate, livestock management facilities to promote significant progress toward, or the attainment and maintenance of, the standards. Grazing management practices are livestock management techniques. They include the manipulation of season, duration (time), and intensity of use, as well as numbers, distribution, and kind of livestock. Livestock management facilities are structures such as fences, corrals, and water developments (ponds, springs, pipelines, troughs, etc.) used to facilitate the application of grazing management practices. Livestock grazing management practices and guidelines will be consistent with the Idaho Agricultural Pollution Abatement Plan.

Grazing management practices and facilities are implemented locally, usually on an allotment or watershed basis. Grazing management programs are based on a combination of appropriate grazing management practices and facilities developed through consultation, coordination, and cooperation with the Bureau of Land Management, permittees, other agencies, Indian tribes, and interested publics.

Guidelines:

1. Use grazing management practices and/or facilities to maintain or promote significant progress toward adequate amounts of ground cover to support infiltration, maintain soil moisture storage and stabilize soils.
2. Locate livestock management facilities away form riparian areas wherever they conflict with achieving or maintaining riparian-wetland functions.
3. Use grazing management practices and/or facilities to maintain or promote soil conditions that support water infiltration, plant vigor, and permeability rates and minimize soil compaction appropriate to site potential.
4. Implement grazing management practices that provide periodic rest or deferment during critical growth stages to allow sufficient regrowth to achieve and maintain healthy, properly functioning conditions, including good plant vigor and adequate vegetative cover appropriate to site potential.
5. Maintain or promote grazing management practices that provide sufficient residual vegetation to improve, restore, or maintain healthy riparian-wetland functions and structure for energy dissipation, sediment capture, ground water recharge, streambank stability, and wildlife habitat appropriate to site potential.
6. The development of springs, seeps or other projects affecting water and associated resources shall be designed to protect the ecological functions, wildlife habitat, and significant cultural and historical/ archaeological/ paleontological values associated with the water source.
7. Apply grazing management practices to maintain, promote, or progress toward appropriate stream channel and streambank morphology and functions. Adverse impacts due to livestock grazing will be addressed.
8. Apply grazing management practices that maintain or promote the interaction of the hydrologic cycle, nutrient cycle, and energy flow that will support the appropriate types

and amounts of soil organisms, plants and animals appropriate to soil type, climate and landform.

9. Apply grazing management practices to maintain adequate plant vigor for seed production, seed dispersal, and seedling survival of desired species relative to soil type, climate and landform.
10. Implement grazing management practices and/or facilities that provide for complying with the Idaho Water Quality Standards.
11. Use grazing management practices developed in recovery plans, conservation agreements, and Endangered Species Act, Section 7 consultations to maintain or improve habitat for federally listed threatened, endangered, and sensitive plants and animals.
12. Apply grazing management practices and/or facilities that maintain or promote the physical and biological conditions necessary to sustain native plant populations and wildlife habitats in native plant communities.
13. On areas seeded predominantly with non-native plants, use grazing management practices to maintain or promote the physical and biological conditions to achieve healthy rangelands.
14. Where native communities exist, the conversion to exotic communities after disturbance will be minimized.
15. Use non-native plant species for rehabilitation only in those situations where:
    a. native species are not readily available in sufficient quantities;
    b. native plant species cannot maintain or achieve the standards; or
    c. non-native plant species provide for management and protection of native rangelands

    Include a diversity of appropriate grasses, forbs, and shrubs in rehabilitation efforts.
16. On burned areas, allow natural regeneration when it is determined that populations of native perennial shrubs, grasses, and forbs are sufficient to revegetated the site. Rest burned or rehabilitated areas to allow recovery or establishment of perennial plant species.
17. Carefully consider the effects of new management facilities (e.g., water developments, fences) on healthy and properly functioning rangelands prior to implementation.
18. Use grazing management practices, where feasible, for wildfire control and to reduce the spread of targeted undesirable plants (e.g., cheatgrass, medusahead wildrye, and noxious weeds while enhancing vigor and abundance of desirable native or seeded species.
19. Employ grazing management practices that promote natural forest regeneration and protect reforestation projects until the Idaho Forest Practices Act requirements for timber stand replacement are met.
20. Design management fences to minimize adverse impacts, such as habitat fragmentation, to maintain habitat integrity and connectivity for native plants and animals.

APPENDIX B: METHODS

Appendix B-1. Upland Rangeland Health Evaluation Methods.

Rangeland Health Assessments
Rangeland Health Assessments, outlined in BLM technical reference 1734-6 Interpreting Indicators of Rangeland Health, are used with other available qualitative and quantitative data to determine if rangelands are meeting or making significant progress toward meeting the Standards for Rangeland Health. The rangeland health Assessment summary worksheet consists of 17 indicators, each of which is rated on the degree of departure from the appropriate ecological site description or ecological reference area. Areas without a nearby reference area are evaluated using familiarity of the area and incorporating the best professional judgment of the evaluators. The indicators are compiled into three interlocking attribute categories representing soil/site stability, hydrologic function, and biotic integrity. The preponderance of evidence of each attribute determines the condition of the site. The cover worksheet is also used to record current ground cover conditions, and types of ground cover.

Trend and Photo Plots
Trend data provide information on the plant community, such as changes in plant occurrence, vigor and health. Vegetation trend data are collected at permanently located nested plot frequency transect (NPFT) sites. Frequency and cover data are collected, as well as shrub density where applicable. The methodology used to establish and collect data at these sites is described in full detail in BLM technical references 1400-4 and 1730-1. Frequency data illustrates changes in numbers of plants and provides information on reproductive capabilities. Cover data describes the percent of ground covered by plant material, biological soil crusts, gravel, rock, and litter. Photographs are taken at NPFT sites and at other sites permanently marked for photo plots. At NPFT and photo plots sites, three photographs are taken, two general views and one of the plot itself. The photo plot is sketched to illustrate species occupying the plot and their sizes more clearly and can be correlated with the photograph to document plant vigor and health. Shrub density is recorded in either 1/100th or 1/200th acre plots, depending on the density of shrubs. These data are expressed as plants per acre.

Utilization
Utilization data are important in evaluating the effects of grazing and browsing on specific areas of rangeland. Utilization is generally expressed as a percentage of available forage weight or number of plants, twigs, etc., that have been consumed or destroyed. Utilization is recorded in terms of current year's production removed. Generally, utilization transects are run at pre-determined key use areas (permanent NPFT locations), however utilization may be collected anywhere throughout a pasture or allotment. A number of methods may be used including the Landscape Appearance Method, Key Species Method, Grazed Class Method, Cole Browse Method or Extensive Browse Method (Interagency Technical Reference 1996 BLM/RS/ST-96/004+1730). In general, the utilization data used in this assessment were collected using the Key Species Method and the Cole Browse Method.

Appendix B-2. Riparian/ Wetland Rangeland Health evaluation methods.

Stream-associated riparian/wetland areas are assessed for proper functioning condition as described in BLM Technical Reference TR1737-15, "A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas" (USDI, BLM 1998-2). The standard checklist consists of 17 indicators that are used to assess the functioning condition of riparian areas. The indicators are compiled into three categories representing hydrologic function, vegetation and erosion/deposition. A stream is rated as properly functioning when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high waterflow; filter sediment, capture bedload and aid in floodplain development; improve flood-water retention and ground water recharge; develop root masses that stabilize streambanks against cutting action; develop diverse channel characteristics to provide the habitat and water depth, duration, and temperature necessary for fish production; and support greater biodiversity. Status of noxious weeds is also considered for riparian health.

Spring-associated riparian/wetland areas are assessed for proper functioning condition as outlined in Technical Reference TR1737-16, "A User Guide to Assessing Proper Assessing Proper Functioning Condition and the Supporting Science for Lentic Areas" (USDI, BLM 1999-1). The standard checklist consists of 20 indicators that are used to assess the functioning condition of riparian areas. The indicators are compiled into three categories representing hydrologic function, vegetation and erosion/deposition. Lentic areas are defined as riparian/wetland areas adjacent to non-flowing aquatic habitats such as lakes, ponds, springs, seeps, and wet or moist meadows. A properly functioning riparian/wetland area will dissipate energies associated with wind action, wave action and overland flow from adjacent sites, thereby reducing erosion and improving water quality; filter sediment and aid floodplain development; improve flood water retention and groundwater recharge; develop root masses that stabilize islands and shoreline features against erosion; restrict water percolation; and maintain the soil structure necessary for riparian-adapted plants.

Most stream associated riparian/wetland areas were inventoried by Riparian Resources. This inventory includes 61 items that describe vegetative communities (including presence of noxious or invasive species), stream bank stability, stream channel morphology, observations of aquatic species and BLM's standard checklist for assessing proper functioning condition of lotic (stream-associated) riparian/wetland areas. Data sheets are on file at the BLM Owyhee Field Office.

Other available qualitative and quantitative data are used to determine if riparian areas are meeting Rangeland Health Standards. These data include photographs, stubble height measurements, stream bank stability estimates, riparian shrub utilization estimates and personal observations during site visits. Data collected for riparian herbaceous stubble height, percents shrub utilization and bank alteration are in accordance with BLM Lower Snake River District protocols.

Appendix B-3. Water quality monitoring methods.

Water temperatures are monitored with automatic data-recording thermographs or by taking instantaneous "grab" samples with a thermometer. For fecal coliform analysis, water samples are collected on site, sent to laboratories for bacteria counts, and reported as colonies/100 ml. Other water quality data may also have been obtained from the Idaho Department of Environmental Quality's Beneficial Use Reconnaissance (BURP) database, data presented in IDEQ subbasin assessments and total maximum daily load allocations, or data from Idaho Department of Fish and Game. Water quality parameters are referenced against Idaho Water Quality Standards (IDAPA 58.01.02). Water quality data are screened in accordance with IDEQ's Water Body Assessment Guidance (IDEQ 2002).

Appendix B-4. Wildlife habitat assessment methods.

General riparian habitat Assessments
Riparian special status species habitat assessments primarily use information presented in Standard 2. While there is no direct correlation between stream functioning condition and special status species habitat, many of the indicators of riparian functionality are also crucial components of habitat for many of the special status and other wildlife species dependent on this habitat type, especially redband trout and neotropical migratory birds and amphibians. The indicators that assess structure, composition and vigor of hydric (riparian) vegetation are especially important because they also assess the quality and quantity of shade, nesting/breeding habitat, and forage and escape cover.

Sage-grouse breeding and brood-rearing habitat Assessments
Assessments were conducted using methodology described in the draft document entitled "A Framework to Assist in Making Sensitive Species Habitat Assessments for BLM-Administered Public Lands in Idaho" (as revised in May, 2001) primarily as a means of evaluating the suitability of the assessment areas as habitat for sage-grouse (USDI 2001). Although this methodology specifically addresses the habitat requirements of sage-grouse, it is also useful in assessing the general health of sagebrush steppe ecosystems and their suitability as habitat for a diversity of species.

General upland habitat Assessments
The assessment of upland habitats for other special status animal species were conducted primarily using the same data that was used to assess native plant communities under standard 4 including abundance, diversity, vigor, production, cover, utilization, trend and the occurrence of noxious and invasive plants.

Special Status Plants
Inventories and reports pertaining to the Hart Creek group of allotments are listed below. All documents, reports, and site-specific observations reported in this assessment were made by the CDC or BLM staff, including contractors, and are on file with the BLM.

- Report on the conservation status of *Astragalus yoder-williamsii* in Idaho by Michael Mancuso and Robert K. Moseley, 1993. Observations

- Status of *Blepharidachne kingii* (King's desertgrass) and *Cleomella plocasperma* (alkali cleomella) in Idaho by Robert K. Moseley, 1995. Approximately 1000 acres was surveyed for King's desertgrass in Hart Creek pastures 1 and 2.
- Meadow Creek pipeline and fencing projects in pasture 2 of Box T allotments by BLM staff in 1994. Most of pasture 2 and part of pasture 3 were surveyed for *Astragalus yoder-williamsii* (Mud Flat milkvetch).

APPENDIX C: RANGELAND HEALTH INDICATOR RATINGS

Appendix C-1. Hart Creek Allotment Rangeland Health Indicator ratings.

Allotment - Pasture		**532-1**	**532-1**	**532-1**
Location – Township Range Section		04S01W27	04S01W33	05S01W06
Ecological Site		Sandy Loam 8-12	Calcareous Loam 7-10	Loamy 7-10
Indicator	Standard			
1. Rills	1	N-S	N-S	N-S
2. Water Flow Patterns	1	S-M	S-M	M-E
3. Pedestals/Terracettes	1	S-M	S-M	M-E
4. Bare Ground	1	M	N-S	S-M
5. Gullies	1	S-M	N-S	N-S
6. Wind Scoured, Blowouts and/or Depositions	1	N-S	N-S	N-S
7. Litter Movement	1	S-M	N-S	S-M
8. Soil Surface to Erosion	1,4,5	M	S-M	S-M
9. Soil Surface Loss or Degradation	1,4,5	S-M	S-M	M
10. Plant Community Comp. & Dist. Relative to Infiltration & Runoff	1	M	S-M	M
11. Compaction Layer	1,4,5	N-S	N-S	N-S
12. Functional / Structural Groups	4,5	M	M-E	M-E
13. Plant Mortality / Decadence	4,5	S-M	N-S	M-E
14. Litter Amount	1,4,5	S-M	M	S-M
15. Annual Production	4,5	N-S	S-M	N-S
16. Invasive Plants	4,5	M-E	S-M	S-M
17. Reproductive Capability of Perennial Plants	4,5	N-S	N-S	N-S

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		**532-2**	**532-2**	**532-2**	**532-2**
Location – Township Range Section		05S01W13	05S01W15	05S01W27	05S01W03
Ecological Site		Loamy Bottom 8-14	Loamy 7-10	Calcareous Loam 7-10	Calcareous Loam 7-10
Indicator	Standard				
1. Rills	1	N-S	N-S	N-S	N-S
2. Water Flow Patterns	1	S-M	S-M	S-M	S-M
3. Pedestals/Terracettes	1	S-M	M	S-M	N-S
4. Bare Ground	1	M	S-M	S-M	N-S
5. Gullies	1	S-M	N-S	N-S	N-S
6. Wind Scoured, Blowouts and/or Depositions	1	N-S	N-S	N-S	N-S
7. Litter Movement	1	N-S	N-S	N-S	N-S
8. Soil Surface to Erosion	1,4,5	S-M	S-M	N-S	S-M
9. Soil Surface Loss or Degradation	1,4,5	S-M	S-M	S-M	S-M
10. Plant Community Comp. & Dist. Relative to Infiltration & Runoff	1	M	M	M	S-M
11. Compaction Layer	1,4,5	N-S	N-S	N-S	N-S
12. Functional / Structural Groups	4,5	M-E	M-E	M-E	M
13. Plant Mortality / Decadence	4,5	M-E	S-M	M	S-M
14. Litter Amount	1,4,5	S-M	S-M	S-M	M
15. Annual Production	4,5	N-S	N-S	N-S	N-S
16. Invasive Plants	4,5	M-E	M-E	N-S	M
17. Reproductive Capability of Perennial Plants	4,5	S-M	S-M	S-M	N-S

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		532-3	532-3	532-3	532-3	532-3
Location – Township Range Section		05S02W11	06S01W07	05S01W32	06S02W10	05S02 W35
Ecological Site		Shallow Claypan 12-16	Shallow Claypan 11-13	Loamy 7-10	Mtn Ridge 14-18	Shallo w Claypa n 12-16
Indicator	Standard					
1. Rills	1	N-S	N-S	N-S	N-S	N-S
2. Water Flow Patterns	1	S-M	S-M	S-M	N-S	S-M
3. Pedestals/Terracettes	1	M	M	M	S-M	S-M
4. Bare Ground	1	N-S	N-S	S-M	N-S	N-S
5. Gullies	1	N-S	N-S	N-S	N-S	N-S
6. Wind Scoured, Blowouts and/or Depositions	1	N-S	N-S	N-S	N-S	N-S
7. Litter Movement	1	N-S	N-S	N-S	N-S	N-S
8. Soil Surface to Erosion	1,4,5	S-M	S-M	S-M	N-S	N-S
9. Soil Surface Loss or Degradation	1,4,5	S-M	S-M	S-M	N-S	N-S
10. Plant Community Comp. & Dist. Relative to Infiltration & Runoff	1	S-M	M	M	N-S	N-S
11. Compaction Layer	1,4,5	N-S	N-S	N-S	N-S	N-S
12. Functional / Structural Groups	4,5	S-M	M-E	M-E	N-S	N-S
13. Plant Mortality / Decadence	4,5	M	M	M	N-S	N-S
14. Litter Amount	1,4,5	S-M	S-M	N-S	N-S	N-S
15. Annual Production	4,5	N-S	N-S	N-S	N-S	N-S
16. Invasive Plants	4,5	M	M-E	M-E	N-S	M
17. Reproductive Capability of Perennial Plants	4,5	N-S	S-M	S-M	N-S	N-S

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

Appendix C-2. Box T allotment Rangeland Health Indicator ratings.

Allotment - Pasture		**534-1**	**534-1**	**534-1**	**534-1A**	**534-1A**
Location – Township Range Section		06S02W35	06S02W26	06S02W23	06S02W09	06S02W15
Ecological Site		Shallow Claypan 12-16	Loamy 13-16	Sh-Claypan 12-16	Sh-Claypan 12-16	Sh-Claypan 12-16
Indicator	Standard					
1. Rills	1	N-S	N-S	N-S	N-S	N-S
2. Water Flow Patterns	1	S-M	M	S-M	N-S	M
3. Pedestals/Terracettes	1	S-M	S-M	S-M	S-M	M
4. Bare Ground	1	N-S	S-M	N-S	N-S	N-S
5. Gullies	1	N-S	N-S	N-S	N-S	N-S
6. Wind Scoured, Blowouts and/or Depositions	1	N-S	N-S	N-S	N-S	N-S
7. Litter Movement	1	N-S	N-S	N-S	N-S	N-S
8. Soil Surface to Erosion	1,4,5	N-S	S-M	N-S	N-S	N-S
9. Soil Surface Loss or Degradation	1,4,5	N-S	S-M	N-S	S-M	S-M
10. Plant Community Comp. & Dist. Relative to Infiltration & Runoff	1	N-S	M	S-M	N-S	S-M
11. Compaction Layer	1,4,5	N-S	N-S	N-S	N-S	N-S
12. Functional / Structural Groups	4,5	N-S	S-M	S-M	N-S	S-M
13. Plant Mortality / Decadence	4,5	S-M	M-E	S-M	N-S	M
14. Litter Amount	1,4,5	N-S	N-S	S-M	N-S	N-S
15. Annual Production	4,5	N-S	N-S	N-S	N-S	N-S
16. Invasive Plants	4,5	S-M	M-E	S-M	M-E	M-E
17. Reproductive Capability of Perennial Plants	4,5	N-S	M	S-M	N-S	M

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		0534-2	0534-2	0534-2	0534-3	0534-3
Location – Township Range Section		07S02W09	07S03W08	06S02W05	07S03W12	07S02W06
Ecological Site		Loamy 13-16	Shallow Claypan 12-16	Shallow Claypan 12-16	Shallow Claypan 12-16	Loamy 13-16
Indicator	Standard					
1. Rills	1	N-S	N-S	N-S	N-S	N-S
2. Water Flow Patterns	1	N-S	M	S-M	M-E	M
3. Pedestals/Terracettes	1	S-M	M	S-M	E	M
4. Bare Ground	1	M	S-M	S-M	M	M
5. Gullies	1	N-S	N-S	N-S	N-S	N-S
6. Wind Scoured, Blowouts and/or Depositions	1	N-S	N-S	N-S	N-S	N-S
7. Litter Movement	1	N-S	S-M	N-S	N-S	S-M
8. Soil Surface to Erosion	1,4,5	M	S-M	S-M	M	S-M
9. Soil Surface Loss or Degradation	1,4,5	S-M	S-M	S-M	M	S-M
10. Plant Community Comp. & Dist. Relative to Infiltration & Runoff	1	S-M	S-M	S-M	S-M	M
11. Compaction Layer	1,4,5	N-S	N-S	N-S	S-M	S-M
12. Functional / Structural Groups	4,5	S-M	N-S	S-M	S-M	S-M
13. Plant Mortality / Decadence	4,5	S-M	S-M	S-M	M	M
14. Litter Amount	1,4,5	S-M	S-M	S-M	M	S-M
15. Annual Production	4,5	N-S	N-S	N-S	N-S	N-S
16. Invasive Plants	4,5	M	S-M	M	M-E	M
17. Reproductive Capability of Perennial Plants	4,5	N-S	N-S	S-M	S-M	S-M

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

Appendix C-3. Alder Creek FFR allotment Rangeland Health Indicator ratings.

Allotment - Pasture		**639**	**083105-1A**
Location – Township Range Section		06S01W18	**NEW** 06S01W18
Ecological Site		Loamy 13-16	Loamy 13-16
Indicator	Standard		
1. Rills	1	N-S	N-S
2. Water Flow Patterns	1	S-M	M
3. Pedestals/Terracettes	1	M	M
4. Bare Ground	1	S-M	M
5. Gullies	1	S-M	N-S
6. Wind Scoured, Blowouts and/or Depositions	1	N-S	N-S
7. Litter Movement	1	N-S	M
8. Soil Surface to Erosion	1,4,5	N-S	M
9. Soil Surface Loss or Degradation	1,4,5	S-M	M
10. Plant Community Comp. & Dist. Relative to Infiltration & Runoff	1	M	M
11. Compaction Layer	1,4,5	N-S	S-M
12. Functional / Structural Groups	4,5	M	M
13. Plant Mortality / Decadence	4,5	S-M	N-S
14. Litter Amount	1,4,5	S-M	M
15. Annual Production	4,5	N-S	S-M
16. Invasive Plants	4,5	M	S-M
17. Reproductive Capability of Perennial Plants	4,5	S-M	S-M

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

APPENDIX D: PROPER FUNCTIONING CONDITION ASSESSMENTS

Appendix D-1. Proper functioning condition assessments for Standard 2 (Riparian areas and Wetlands)

Hart Creek Allotment (0532) Riparian/Wetland Indicators and Functioning Condition Rating by Stream Segment

Riparian/Wetland Indicators:	5321	5321	5321	5321	5321	5321	5322	5322
	HAR001	HAR002	HAR003	HAR004	LHT001	PIC001	BRO002	BRO003
	10/15/01	5/12/01	5/14/01	5/13/01	8/28/04	7/06/01	5/29/00	5/29/00
Diverse age class/structure of hydric vegetation (6)	Y/N	Y	Y	Y	Y	Y/N	Y	Y
Diverse composition of hydric vegetation (7)	N	Y	Y	Y	N	N	Y/N	Y/N
Vegetation reflects maintenance of soil moisture (8)	N	Y	Y	Y	N	Y/N	Y/N	Y/N
Plant community comprised of bank stabilizing species (9)	Y/N	Y/N	Y	Y	Y	Y/N	Y	Y
Hydric vegetation exhibits high vigor (10)	Y/N	Y	Y	Y	Y	Y/N	Y	Y
Adequate hydric vegetation cover to protect banks and dissipate energy (11)	Y/N	Y/N	Y	Y	N	Y/N	Y	Y/N
Adequate large woody material (12)	N	Y	Y	Y	N/A	Y/N	Y	Y
Point bars revegetating with hydric species (14)	N	Y/N	Y/N	Y	N/A	Y/N	Y/N	Y
Noxious weeds are not increasing	Y	Y	Y	Y	Y	Y	Y	Y
Overall functioning condition*	FARS	FARU	FARU	PFC	PFC	FARS	PFC	PFC
Stream miles	0.5	1.7	0.3	0.8	0.4	1.0	0.6	0.7
Riparian acres	1.0	10.3	1.5	3.6	1.0	4.9	2.3	5.6

(Y=yes, N=no, Y/N=both) ( ) – item # on Lotic Riparian Proper Functioning Condition data sheet
PFC- proper functioning condition; FARU- functional at-risk with an upward trend; FARS – functional at-risk with no apparent (static) trend; FARD – functional at-risk with a downward trend; NF- nonfunctioning
NOTE: Overall rating determined from examination of both riparian and channel/floodplain indicators

Hart Creek Allotment (0532) Riparian/Wetland Indicators and Functioning Condition Rating by Stream Segment

Riparian/Wetland Indicators:	5322	5322	5323	5323	5323	5323	5323	5323
	BRO004	BRO005	BRO007	BRO011	LBRO01	LBT001	BRT001	CAT001
	5/29/00	5/29/00	8/27/04	6/05/01	6/05/01	6/05/01	7/11/00	7/11/00
Diverse age class/structure of hydric vegetation (6)	Y	Y	Y-SHRUB N-HERB	Y	Y/N	Y/N	Y/N	Y/N
Diverse composition of hydric vegetation (7)	Y	Y	Y-SHRUB N-HERB	Y	Y/N	Y/N	Y/N	Y/N
Vegetation reflects maintenance of soil moisture (8)	Y/N	Y/N	N	Y	Y/N	Y/N	Y/N	N
Plant community comprised of bank stabilizing species (9)	Y	Y/N	Y	Y	Y/N	Y	Y/N	Y/N
Hydric vegetation exhibits high vigor (10)	Y	Y	Y-SHRUB N-HERB	Y	Y/N	Y/N	Y/N	Y/N
Adequate hydric vegetation cover to protect banks and dissipate energy (11)	Y	Y/N	N	Y	Y/N	Y	N	Y/N
Adequate large woody material (12)	Y	Y	N/A	Y	Y/N	Y	Y	Y/N
Point bars revegetating with hydric species (14)	Y	Y/N	N/A	Y/N	Y/N	Y/N	Y/N	Y/N
Noxious weeds are not increasing	Y	Y	Y	Y	Y	Y	Y	Y
Overall functioning condition*	PFC	FARS	FARU	FARU	FARU	FARS	FARS	FARU
Stream miles	1.0	0.2	0.9	1.0	1.1	0.8	0.1	0.4
Riparian acres	4.8	0.8	1.6	3.3	2.8	2.7	0.1	0.4

(Y=yes, N=no, Y/N=both) ( ) – item # on Lotic Riparian Proper Functioning Condition data sheet
PFC- proper functioning condition; FARU- functional at-risk with an upward trend; FARS – functional at-risk with no apparent (static) trend; FARD – functional at-risk with a downward trend; NF- nonfunctioning
NOTE: Overall rating determined from examination of both riparian and channel/floodplain indicators

Hart Creek Allotment (0532) Riparian/Wetland Indicators and Functioning Condition Rating by Stream Segment

Riparian/Wetland Indicators:	5323	5323	5323	5323	5323	5323
	CAT002	BUC003	BUC004	BUT001	BUT002	BUT003
	8/05/04	7/10/00	7/10/00	9/01/05	9/01/05	9/01/05
Diverse age class/structure of hydric vegetation (6)	Y	Y	Y	Y	Y	Y
Diverse composition of hydric vegetation (7)	N	Y/N	Y	Y	Y	Y
Vegetation reflects maintenance of soil moisture (8)	Y	Y/N	Y/N	Y	Y	Y
Plant community comprised of bank stabilizing species (9)	Y	Y	Y/N	Y	Y	Y
Hydric vegetation exhibits high vigor (10)	Y	Y	Y	Y	Y	Y
Adequate hydric vegetation cover to protect banks and dissipate energy (11)	Y	Y/N	Y/N	Y	Y	Y/N
Adequate large woody material (12)	N/A	Y	Y	N/A	N/A	N/A
Point bars revegetating with hydric species (14)	N/A	Y/N	Y/N	N/A	N/A	Y
Noxious weeds are not increasing	Y	Y	Y	Y	Y	Y
Overall functioning condition*	PFC	FARU	FARU	PFC	PFC	PFC
Stream miles	0.8	1.2	0.9	0.2	0.2	1.2
Riparian acres	1.3	2.1	0.9	0.7	0.7	3.0

(Y=yes, N=no, Y/N=both): ( ) – item # on Lotic Riparian Proper Functioning Condition data sheet
PFC- proper functioning condition; FARU- functional at-risk with an upward trend; FARS – functional at-risk with no apparent (static) trend; FARD – functional at-risk with a downward trend; NF- nonfunctioning
NOTE: Overall rating determined from examination of both riparian and channel/floodplain indicators

Hart Creek Allotment (0532) Riparian/Wetland Indicators and Functioning Condition Rating for Lentic Systems (springs)

Riparian/Wetland Indicators:	5323 Alibi Spring 8/26/03	5323 Cat Spring 1 8/05/04	5323 Cat Spring Exclosure 8/05/04	5323 Cat Spring 2 8/05/04	5323 5323HSB (Henderson) 8/26/03	5323 Buckaroo Spring 9/01/05
Area is saturated at or near the surface in relatively frequent events (1)	Y	Y	Y	Y	Y	Y
Fluctuation of water levels is not excessive (2)	N	Y	Y	Y	Y	Y
Riparian zone is enlarging or has reached potential (3)	Y	N	Y	Y	N	Y
Upland watershed is not contributing to degradation (4)	Y	N	Y	Y	N	Y
Water quality is sufficient to support riparian-wetland plants (5)	N	Y	Y	Y	Y	Y
Natural surface or subsurface flow pattern are not altered (6)	Y	N	Y	N	N	Y
Structure accommodates safe passage of flows (7)	N/A	N/A	N/A	N/A	N/A	N/A
Diverse age-class distribution (8)	Y	N	N	Y	Y- SHRUB N-HERB	Y
Diverse composition of vegetation (9)	N	N	N	Y	N	Y
Species present indicate maintenance of soil wetland soil moisture (10)	N	Y	Y	Y	Y/N	Y
Vegetation has stabilizing root masses (11)	N	Y	Y	Y	Y	Y
Riparian plants exhibit high vigor (12)	N	N	Y-SHRUB	Y	N	Y
Adequate vegetative cover to protect soil surface during high flow (13)	N/A	N	N	N	N/A	Y
Abnormal hydrologic heaving is not present (14)	Y	N/A	N/A	N/A	Y	N/A
Favorable microsite conditions (15)	N	N/A	N/A	N/A	N	N/A
Accumulation of chemicals affecting plants is not present (16)	Y	Y	Y	Y	Y	Y
Saturation of soils is sufficient to maintain hydric soils (17)	N	Y	Y	Y	Y	Y
Underlying soil material is capable of restricting water percolation (18)	Y	Y	Y	Y	Y	Y
Area is in balance with water and sediment supply (19)	Y	Y	Y	Y	N	Y
Characteristics adequate to dissipate wind and wave events (20)	NA	N/A	N/A	N/A	N/A	N/A
Functioning condition	FARD	FARD	FARS	FARU	FARD	PFC
Noxious/Invasive Weeds	Y	Y	Y	Y	Y	Y
Acres	0.1	0.1	0.1	0.1	0.05	0.1
Developed	T/F	N	T/F	N	T	N

(Y=yes, N=no, Y/N=both) ( ) – item # on Lentic Riparian Proper Functioning Condition data sheet
PFC- proper functioning condition; FARU- functional at-risk with an upward trend; FARS – functional at-risk with no apparent (static) trend; FARD – functional at-risk with a downward trend; NF- nonfunctioning; T=Trough; P=Stock Pond;F=Source Fenced

BOX T ALLOTMENT (0534) Riparian/Wetland Indicators and Functioning Condition Rating by Stream Segment

Riparian/Wetland Indicators:	5341	5341	5341	5341A	5341A	5341A	5343
	ALD004	CHA002	NFC005	NFC005	NFC006	NCT001	MEA001
	5/28/00	8/17/03	9/04/03	9/04/03	10/22/04	10/22/04	9/03/03
Diverse age class/structure of hydric vegetation (6)	Y	Y	N	N	N	N	Y
Diverse composition of hydric vegetation (7)	Y	Y	N	N	Y	Y	Y
Vegetation reflects maintenance of soil moisture (8)	Y/N	Y	Y	Y	Y	Y	Y
Plant community comprised of bank stabilizing species (9)	Y	Y	Y/N	Y/N	Y	Y	Y/N
Hydric vegetation exhibits high vigor (10)	Y	Y	Y-HERB N-SHRUb	Y-HERB N-SHRUb	N	Y	N
Adequate hydric vegetation cover to protect banks and dissipate energy (11)	Y	Y	N	N	N	N	Y/N
Adequate large woody material (12)	Y	N/A	N	N	N/A	N/A	Y
Point bars revegetating with hydric species (14)	Y	N/A	Y	Y	N/A	N/A	Y
Noxious weeds are not increasing	N	Y	N	N	Y	Y	Y
Overall functioning condition*	FARU	PFC	FARS	FARS	FARD	FARS	FARU
Stream miles	0.4	0.3	0.6	0.2	1.2	0.3	1.5
Riparian acres	1.0	0.5	1.5	0.5	10	1.0	5.5

(Y=yes, N=no, Y/N=both) ( ) - item # on Lotic Riparian Proper Functioning Condition data sheet

PFC- proper functioning condition; FARU- functional at-risk with an upward trend; FARS – functional at-risk with no apparent (static) trend; FARD – functional at-risk with a downward trend; NF- nonfunctioning

NOTE: Overall rating determined from examination of both riparian and channel/floodplain indicators

BOX T ALLOTMENT (0534) Riparian/Wetland Indicators and Functioning Condition Rating for Lentic Systems (springs)

Riparian/Wetland Indicators:	5341 Charity Excl. 8/05/04	5341 Charity Source 8/05/04	5341 Charity Spring 2 8/05/04	5341 Lineham Spring 8/26/03	5341 5341A 8/26/03	5341 5341B 8/05/04	5341 5341C 8/26/03	5341 5341Z 8/26/03
Area is saturated at or near the surface in relatively frequent events (1)	Y	Y	Y	Y	N	Y	Y	N
Fluctuation of water levels is not excessive (2)	Y	Y	Y	Y	N	Y	N	N
Riparian zone is enlarging or has reached potential (3)	Y	N	N	N	N	N	N	N
Upland watershed is not contributing to degradation (4)	Y	Y	Y	Y	Y	Y	Y	Y
Water quality is sufficient to support riparian-wetland plants (5)	Y	Y	Y	N	N	Y	N	N
Natural surface or subsurface flow pattern are not altered (6)	Y	N	N	N	N	N	N	N
Structure accommodates safe passage of flows (7)	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A
Diverse age-class distribution (8)	Y	N	N	Y	N/A	N	N	N
Diverse composition of vegetation (9)	Y	N	N	Y	N/A	N	N	N
Species present indicate maintenance of soil wetland soil moisture (10)	Y	Y	Y	Y	N/A	Y	N	N
Vegetation has stabilizing root masses (11)	Y	Y	N	N	N/A	N	N	Y
Riparian plants exhibit high vigor (12)	Y	N	N	Y	N/A	N	N	N
Adequate vegetative cover to protect soil surface during high flow (13)	Y	N	N	N	N/A	N/A	N/A	N/A
Abnormal hydrologic heaving is not present (14)	N/A	N/A	N/A	Y	Y	N/A	Y	Y
Favorable microsite conditions (15)	N/A	N/A	N/A	N/A	N	N/A	Y	N
Accumulation of chemicals affecting plants is not present (16)	Y	Y	Y	Y	Y	Y	N	Y
Saturation of soils is sufficient to maintain hydric soils (17)	Y	Y	Y	Y	N	Y	Y	N
Underlying soil material is capable of restricting water percolation (18)	Y	Y	Y	Y	N	Y	N	Y
Area is in balance with water and sediment supply (19)	Y	Y	Y	Y	N	Y	N	N
Characteristics adequate to dissipate wind and wave events (20)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Functioning condition	PFC	FARD	NF	FARD	NF	NF	NF	FARD
Noxious/Invasive Weeds	N	Y	Y	N	ND	Y	Y	Y
Acres	1.0	0.1	0.05	0.05	0.1	0.1	0.05	0.1
Developed	No	No	3T	T	2T	P	TP	T

(Y=yes, N=no, Y/N=both) ( ) - item # on Lentic Riparian Proper Functioning Condition data sheet; ND=No Data
PFC- proper functioning condition; FARU- functional at-risk with an upward trend; FARS – functional at-risk with no apparent (static) trend; FARD – functional at-risk with a downward trend; NF- nonfunctioning; T=Trough; P=Stock Pond;F=Source Fenced

BOX T ALLOTMENT (0534) Riparian/Wetland Indicators and Functioning Condition Rating for Lentic Systems (springs)

Riparian/Wetland Indicators:	5341A 5341A-B (2 springs) 8/27/03	5341A 5341A-C 8/27/03	5341A 5341A-D 8/27/03	5341A 5341A-E (2 springs) 8/27/03	5341A 5341A-F 8/27/03	5341A 5341A-G 8/27/03
Area is saturated at or near the surface in relatively frequent events (1)	Y	Y	Y	Y	N(dry)	Y
Fluctuation of water levels is not excessive (2)	Y	Y	Y	Y	N	Y
Riparian zone is enlarging or has reached potential (3)	N	Y	N	Y	N	Y
Upland watershed is not contributing to degradation (4)	Y	Y	Y	Y	Y	Y
Water quality is sufficient to support riparian-wetland plants (5)	Y	Y	Y	Y	Y	Y
Natural surface or subsurface flow pattern are not altered (6)	N	N	N	N	Y	N
Structure accommodates safe passage of flows (7)	N/A	N/A	N/A	N/A	N/A	N/A
Diverse age-class distribution (8)	N	N	N	Y	N	N
Diverse composition of vegetation (9)	N	N	N	N	N	N
Species present indicate maintenance of soil wetland soil moisture (10)	Y	Y	Y	Y	Y	Y
Vegetation has stabilizing root masses (11)	Y	Y	Y	Y	Y	Y
Riparian plants exhibit high vigor (12)	N	N	N	N	N	N
Adequate vegetative cover to protect soil surface during high flow (13)	N/A	N/A	Y	N/A	N/A	N
Abnormal hydrologic heaving is not present (14)	Y	Y	Y	Y	N/A	Y
Favorable microsite conditions (15)	Y	Y	Y	Y	N/A	N
Accumulation of chemicals affecting plants is not present (16)	Y	Y	Y	Y	Y	Y
Saturation of soils is sufficient to maintain hydric soils (17)	Y	Y	Y	Y	N	Y
Underlying soil material is capable of restricting water percolation (18)	Y	Y	Y	Y	N	Y
Area is in balance with water and sediment supply (19)	Y	Y	Y	Y	Y	Y
Characteristics adequate to dissipate wind and wave events (20)	N/A	N/A	N/A	N/A	N/A	N/A
Functioning condition	FARD	FARD	FARD	FARD	FARS	FARS
Noxious/Invasive Weeds	Y	Y	Y	Y	Y	Y
Acres	0.05	0.05	0.05	0.2	0.05	0.5
Developed	Old T	No	Old T	No	T(dry)	No

(Y=yes, N=no, Y/N=both) ( ) - item # on Lentic Riparian Proper Functioning Condition data sheet; ND=No Data
PFC- proper functioning condition; FARU- functional at-risk with an upward trend; FARS – functional at-risk with no apparent (static) trend; FARD – functional at-risk with a downward trend; NF- nonfunctioning; T=Trough; P=Stock Pond;F=Source Fenced

ALDER CREEK FFR ALLOTMENT (0639) Riparian/Wetland Indicators and Functioning Condition Rating by Stream Segment

Riparian/Wetland Indicators:	6391	6391
	ALD003	ALD004
	5/28/00	5/28/00
Diverse age class/structure of hydric vegetation (6)	Y	Y
Diverse composition of hydric vegetation (7)	Y	Y
Vegetation reflects maintenance of soil moisture (8)	Y/N	Y/N
Plant community comprised of bank stabilizing species (9)	Y	Y
Hydric vegetation exhibits high vigor (10)	Y	Y
Adequate hydric vegetation cover to protect banks and dissipate energy (11)	Y	Y
Adequate large woody material (12)	Y	Y
Point bars revegetating with hydric species (14)	Y/N	Y
Noxious weeds are not increasing	Y	N
Overall functioning condition*	FARU	FARU
Stream miles	0.5	0.1
Riparian acres	1.6	0.2

(Y=yes, N=no, Y/N=both) ( ) - item # on Lotic Riparian Proper Functioning Condition data sheet
PFC- proper functioning condition; FARU- functional at-risk with an upward trend; FARS – functional at-risk with no apparent (static) trend; FARD – functional at-risk with a downward trend; NF- nonfunctioning
NOTE: Overall rating determined from examination of both riparian and channel/floodplain indicators

APPENDIX D-2. Proper functioning condition assessments for Standard 3 (Stream Channel/Floodplain).

HART CREEK ALLOTMENT (0532) Stream Channel/Floodplain Indicators and Functioning Condition Rating by Stream Segment

Stream Channel/Floodplain Indicators:	5321	5321	5321	5321	5321	5321	5322	5322
	HAR001	HAR002	HAR003	HAR004	LHT001	PIC001	BRO002	BRO003
	10/15/01	5/12/01	5/14/01	5/13/01	8/28/04	7/06/01	5/29/00	5/29/00
Floodplain inundated frequently (1)	Y	Y/N	Y/N	Y	N	Y/N	Y	Y
Beaver dams are active and stable (2)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sinuosity, w/d ratio, gradient in balance with landscape setting (3)	N	Y	Y	Y	Y	Y/N	Y	Y
Riparian area is widening or has achieved potential extent (4)	N	Y	Y	Y	Y	Y/N	Y	Y
Upland watershed not contributing to riparian degradation (5)	Y	Y	Y	Y	Y	Y/N	Y	Y/N
Floodplain and channel characteristics dissipate energy (13)	N	Y	Y	Y	Y	Y/N	Y	Y
Lateral stream movement associated with natural sinuosity (15)	N	Y	Y	Y	Y	Y	Y	Y
System is vertically stable (16)	Y	Y	Y	Y	Y	Y	Y	Y
No excessive erosion or deposition (17)	Y/N	Y	Y	Y	Y	Y	Y	Y
Overall functioning condition*	FARS	FARU	FARU	PFC	PFC	FARS	PFC	PFC
Stream miles	0.5	1.7	0.3	0.8	0.4	1.0	0.6	0.7
Riparian acres	1.0	10.3	1.5	3.6	4.9	4.9	2.3	5.6

Stream Channel/Floodplain Indicators:	5322	5322	5323	5323	5323	5323	5323	5323
	BRO004	BRO005	BRO007	BRO011	LBRO01	LBT001	BRT001	CAT001
	5/29/00	5/29/00	8/27/04	6/05/01	6/05/01	6/05/01	7/11/00	7/11/00
Floodplain inundated frequently (1)	Y	N	Y	Y	Y/N	Y/N	Y/N	Y/N
Beaver dams are active and stable (2)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sinuosity, w/d ratio, gradient in balance with landscape setting (3)	Y	Y/N	Y	Y/N	Y/N	Y/N	N	Y/N
Riparian area is widening or has achieved potential extent (4)	Y	Y/N	Y	Y/N	Y/N	Y	N	Y/N
Upland watershed not contributing to riparian degradation (5)	N	Y	Y	Y	Y	Y/N	Y/N	Y/N
Floodplain and channel characteristics dissipate energy (13)	Y	Y	N	Y	Y	Y/N	Y	Y
Lateral stream movement associated with natural sinuosity (15)	Y	Y	Y	Y	Y/N	Y/N	Y/N	Y
System is vertically stable (16)	Y	Y	Y	Y	Y	Y	Y	Y
No excessive erosion or deposition (17)	Y	Y	Y	Y	Y	Y/N	Y/N	Y/N
Overall functioning condition*	PFC	FARS	FARU	FARU	FARU	FARS	FARS	FARU
Stream miles	1.0	0.2	0.9	1.0	1.1	0.8	0.1	0.4
Riparian acres	4.8	0.8	1.6	3.3	2.8	2.7	0.1	0.4

(Y=yes, N=no, Y/N=both) ( ) - item # on Lotic Riparian Proper Functioning Condition data sheet
PFC- proper functioning condition; FARU- functional at-risk with an upward trend; FARS – functional at-risk with no apparent (static) trend; FARD – functional at-risk with a downward trend; NF- nonfunctioning
NOTE: Overall rating determined from examination of both riparian and channel/floodplain indicators

HART CREEK ALLOTMENT (0532) Stream Channel/Floodplain Indicators and Functioning Condition Rating by Stream Segment

Stream Channel/Floodplain Indicators:	5323	5323	5323	5323	5323	5323
	CAT002	BUC003	BUC004	BUT001	BUT002	BUT003
	8/05/04	7/10/00	7/10/00	9/01/05	9/01/05	9/01/05
Floodplain inundated frequently (1)	Y	Y	Y/N	Y	Y	Y
Beaver dams are active and stable (2)	N/A	N/A	N/A	N/A	N/A	N/A
Sinuosity, w/d ratio, gradient in balance with landscape setting (3)	Y	Y/N	Y/N	Y	Y	Y
Riparian area is widening or has achieved potential extent (4)	Y	Y/N	Y/N	Y	Y	Y
Upland watershed not contributing to riparian degradation (5)	Y	Y/N	Y/N	Y	Y	Y
Floodplain and channel characteristics dissipate energy (13)	Y	Y	Y	Y	Y	Y
Lateral stream movement associated with natural sinuosity (15)	Y	Y	Y	Y	Y	Y
System is vertically stable (16)	Y	Y	Y	Y	Y	Y
No excessive erosion or deposition (17)	Y	Y	Y/N	Y	Y	Y
Overall functioning condition*	PFC	FARU	FARU	PFC	PFC	PFC
Stream miles	0.8	1.2	0.9	0.2	0.2	1.2
Riparian acres	1.3	2.1	0.9	0.7	0.7	3.0

(Y=yes, N=no, Y/N=both) ( ) - item # on Lotic Riparian Proper Functioning Condition data sheet

PFC- proper functioning condition; FARU- functional at-risk with an upward trend; FARS – functional at-risk with no apparent (static) trend; FARD – functional at-risk with a downward trend; NF- nonfunctioning

NOTE: Overall rating determined from examination of both riparian and channel/floodplain indicators

BOX T ALLOTMENT (0534) Stream Channel/Floodplain Indicators and Functioning Condition Rating by Stream Segment

Stream Channel/Floodplain Indicators:	5341	5341	5341	5341A	5341A	5341A	5343
	ALD004	CHA002	NFC005	NFC005	NFC006	NCT001	MEA001
	5/28/00	8/17/03	9/03/03	9/03/03	10/22/04	10/22/04	9/03/03
Floodplain inundated frequently (1)	Y/N	Y	Y	Y	Y	Y	Y/N
Beaver dams are active and stable (2)	N	N/A	N/A	N/A	N/A	N/A	N/A
Sinuosity, w/d ratio, gradient in balance with landscape setting (3)	N	Y	Y	Y	N	Y	Y/N
Riparian area is widening or has achieved potential extent (4)	Y	Y	Y/N	Y/N	N	Y	Y
Upland watershed not contributing to riparian degradation (5)	Y	Y	Y	Y	N	Y	Y
Floodplain and channel characteristics dissipate energy (13)	Y/N	Y	N	N	N	Y	N
Lateral stream movement associated with natural sinuosity (15)	Y	Y	N	N	Y	Y	N
System is vertically stable (16)	Y/N	Y	Y	Y	N	Y	Y
No excessive erosion or deposition (17)	N	Y	Y	Y	N	Y	Y
Overall functioning condition*	FARU	PFC	FARS	FARS	FARD	FARS	FARU
Stream miles	0.4	0.3	0.6	0.2	1.2	0.3	1.5
Riparian acres	1.0	0.5	1.5	0.5	10	1.0	5.5

(Y=yes, N=no, Y/N=both) ( ) - item # on Lotic Riparian Proper Functioning Condition data sheet
PFC- proper functioning condition; FARU- functional at-risk with an upward trend; FARS – functional at-risk with no apparent (static) trend; FARD – functional at-risk with a downward trend; NF- nonfunctioning
NOTE: Overall rating determined from examination of both riparian and channel/floodplain indicators

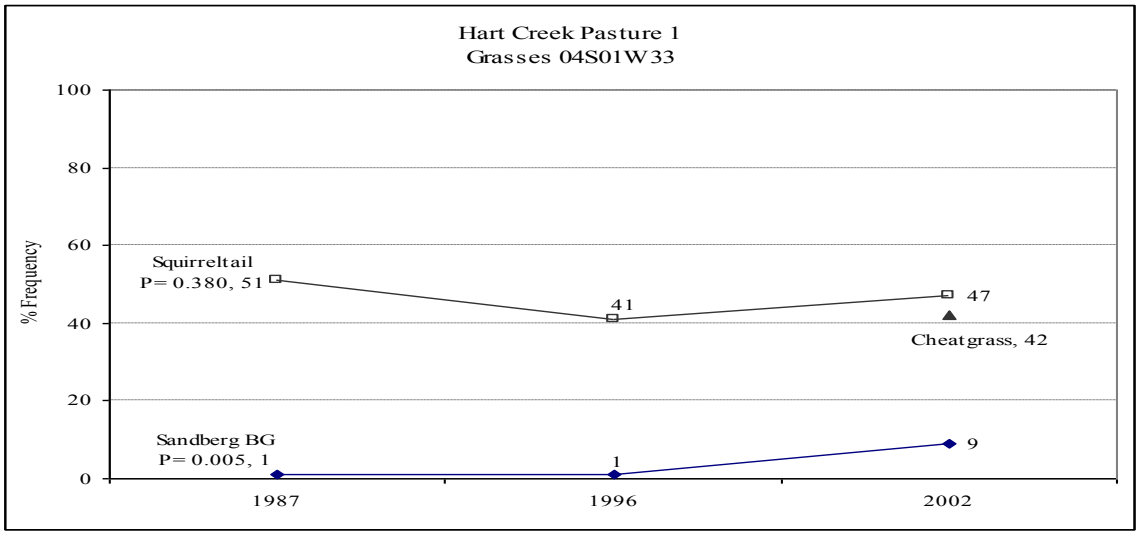
ALDER FFR ALLOTMENT (0639) Stream Channel/Floodplain Indicators and Functioning Condition Rating by Stream Segment

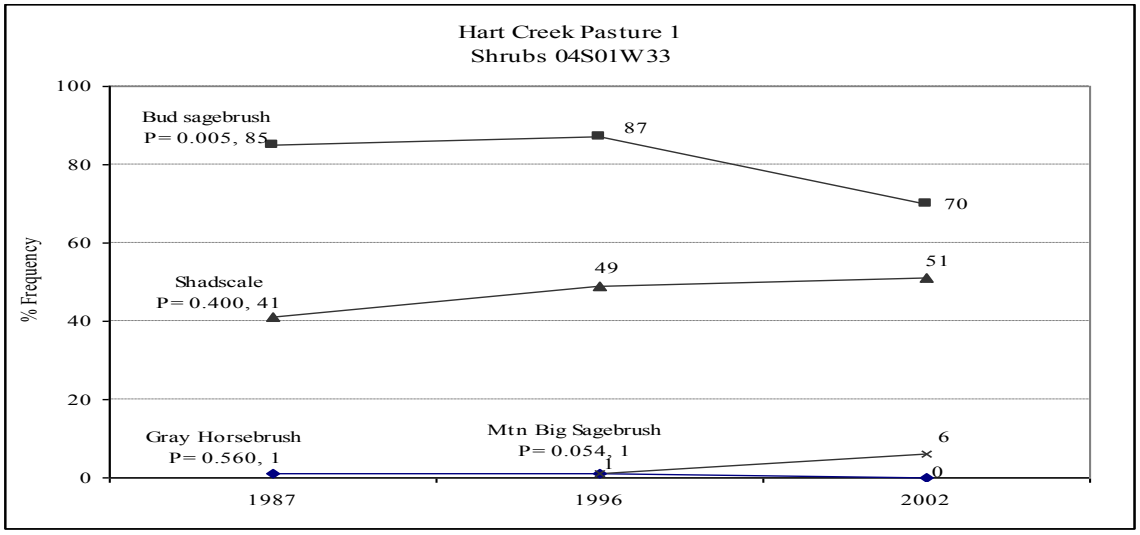
Stream Channel/Floodplain Indicators:	6391	6391
	ALD003	ALD004
	5/28/00	5/28/00
Floodplain inundated frequently (1)	Y	Y/N
Beaver dams are active and stable (2)	N	N
Sinuosity, w/d ratio, gradient in balance with landscape setting (3)	Y	N
Riparian area is widening or has achieved potential extent (4)	Y	Y
Upland watershed not contributing to riparian degradation (5)	Y/N	Y
Floodplain and channel characteristics dissipate energy (13)	Y	Y/N
Lateral stream movement associated with natural sinuosity (15)	Y/N	Y
System is vertically stable (16)	Y	Y/N
No excessive erosion or deposition (17)	Y	N
Overall functioning condition*	FARU	FARU
Stream miles	0.5	0.1
Riparian acres	1.6	0.2

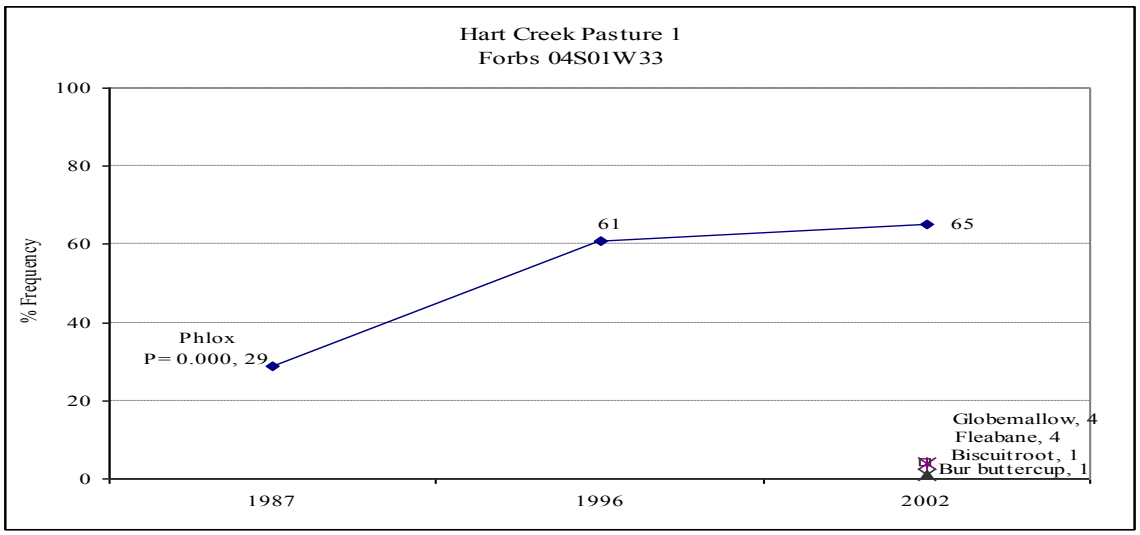
(Y=yes, N=no, Y/N=both) ( ) - item # on Lotic Riparian Proper Functioning Condition data sheet
PFC- proper functioning condition; FARU- functional at-risk with an upward trend; FARS – functional at-risk with no apparent (static) trend; FARD – functional at-risk with a downward trend; NF- nonfunctioning
NOTE: Overall rating determined from examination of both riparian and channel/floodplain indicators

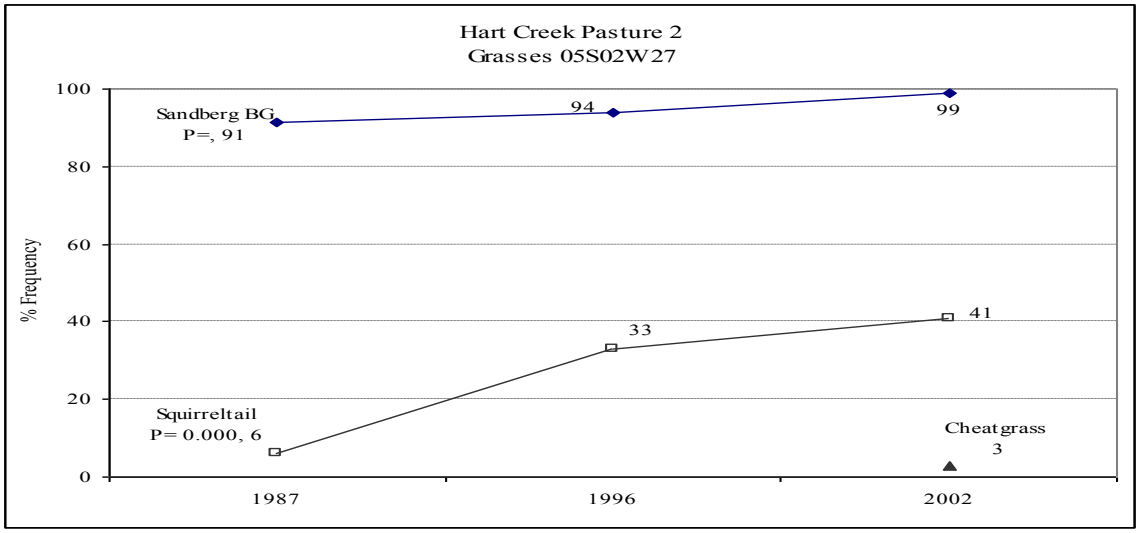
APPENDIX E: FREQUENCY DATA

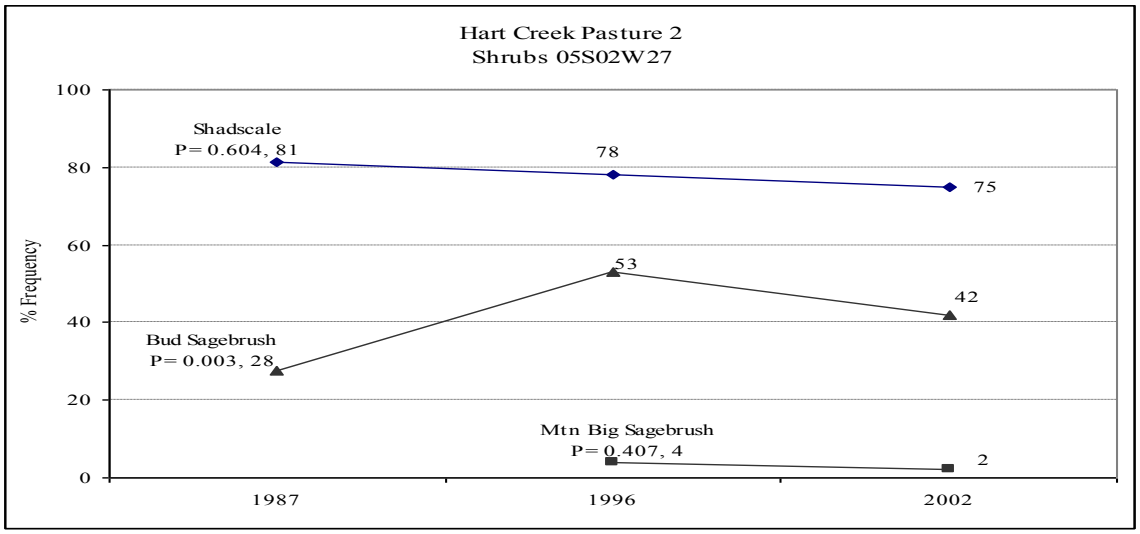
Appendix E-1. Nested plot frequency data for the Hart Creek allotment.

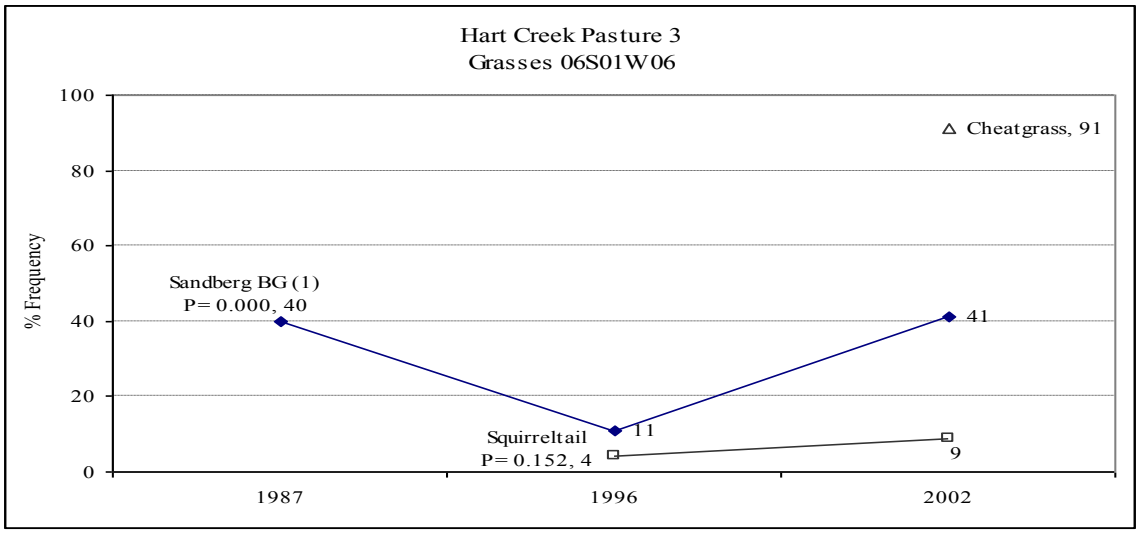


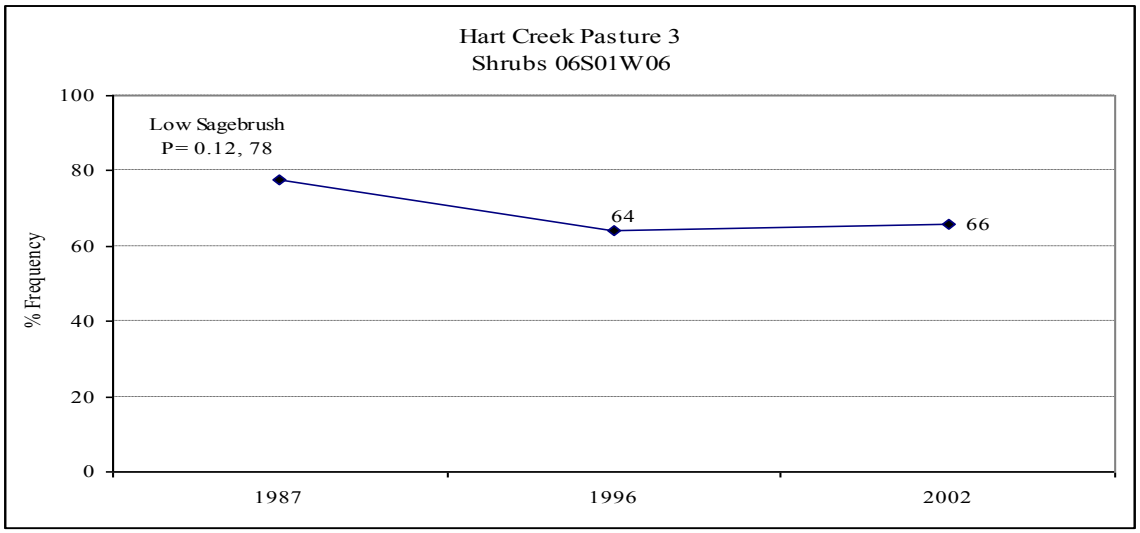




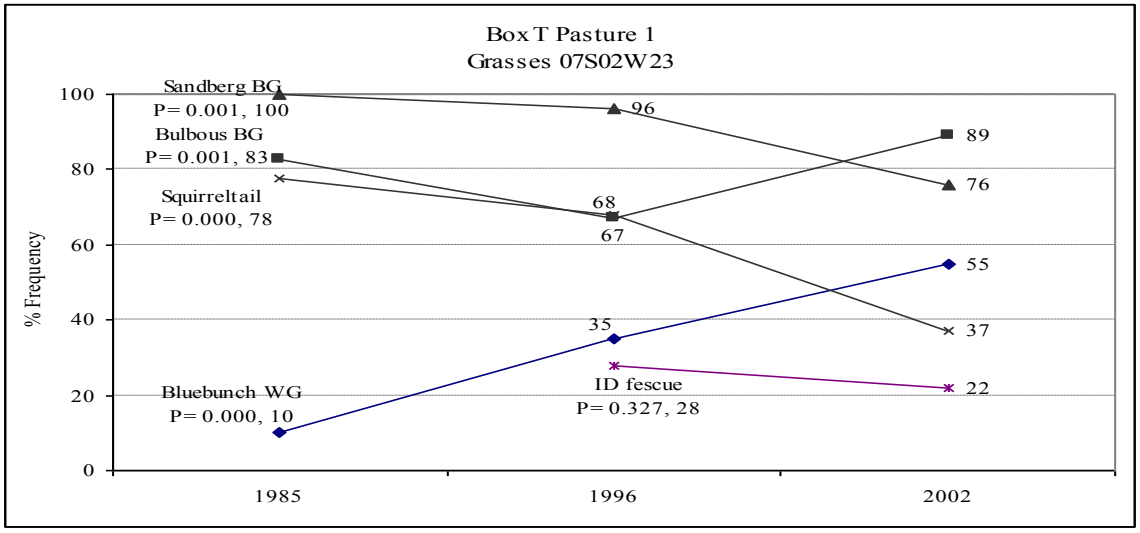

Hart Creek Pasture 2
Grasses 05S02W27
% Frequency
100
80
60
40
20
0
Sandberg BG
P=, 91
94
99
33
41
Squirreltail
P= 0.000, 6
Cheatgrass
3
1987
1996
2002

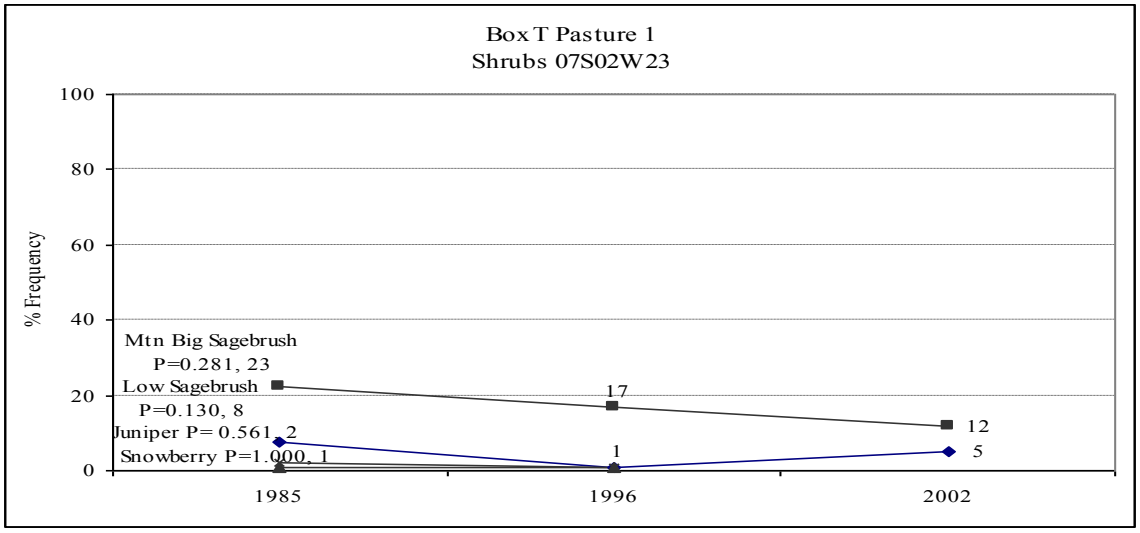

Hart Creek Pasture 2
Shrubs 05S02W27
% Frequency
100
80
60
40
20
0
Shadscale
P= 0.604, 81
78
75
53
42
Bud Sagebrush
P= 0.003, 28
Mtn Big Sagebrush
P= 0.407, 4
2
1987
1996
2002

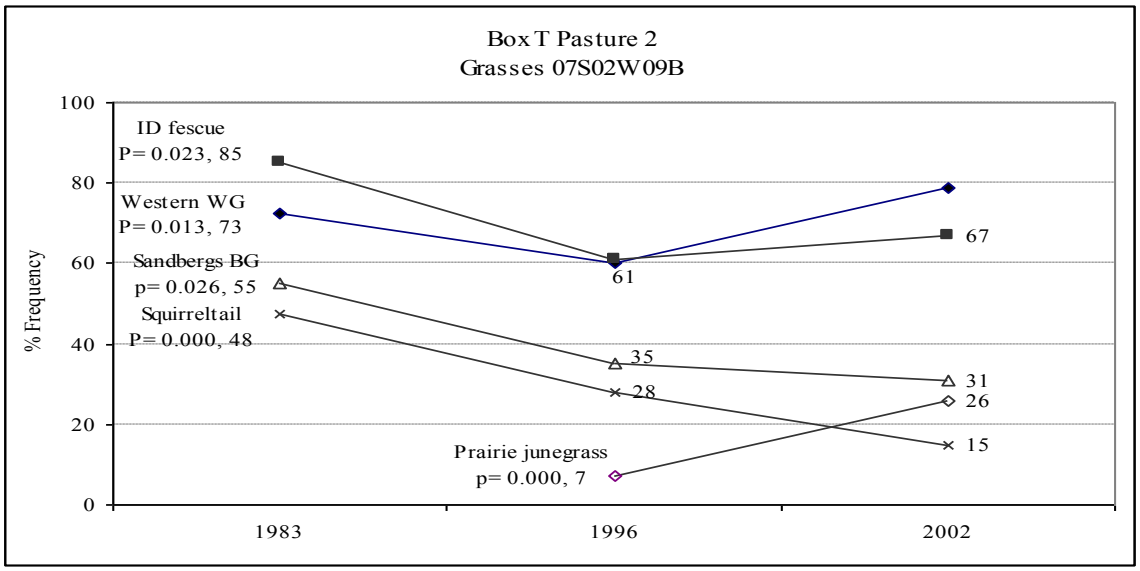

Hart Creek Pasture 3
Grasses 06S01W06
% Frequency
100
80
60
40
20
0
Cheatgrass, 91
Sandberg BG (1)
P= 0.000, 40
41
11
Squirreltail
P= 0.152, 4
9
1987
1996
2002

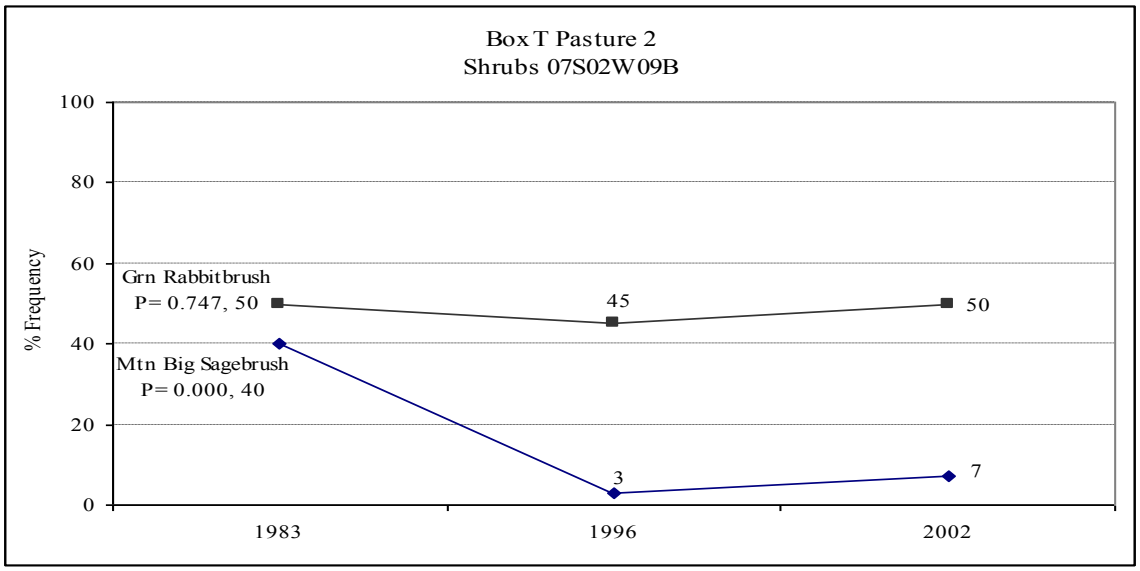

Hart Creek Pasture 3
Shrubs 06S01W06
% Frequency
100
80
60
40
20
0
Low Sagebrush
P= 0.12, 78
64
66
1987
1996
2002

Appendix E-2. Nested plot frequency data for the Box "T" allotment.






Box T Pasture 2
Grasses 07S02W09B
% Frequency
100
80
60
40
20
0
ID fescue
P= 0.023, 85
Western WG
P= 0.013, 73
Sandbergs BG
p= 0.026, 55
Squirreltail
P= 0.000, 48
Prairie junegrass
p= 0.000, 7
61
67
35
31
28
26
15
1983
1996
2002


Box T Pasture 2
Shrubs 07S02W09B
% Frequency
100
80
60
40
20
0
Grn Rabbitbrush
P= 0.747, 50
Mtn Big Sagebrush
P= 0.000, 40
45
50
3
7
1983
1996
2002

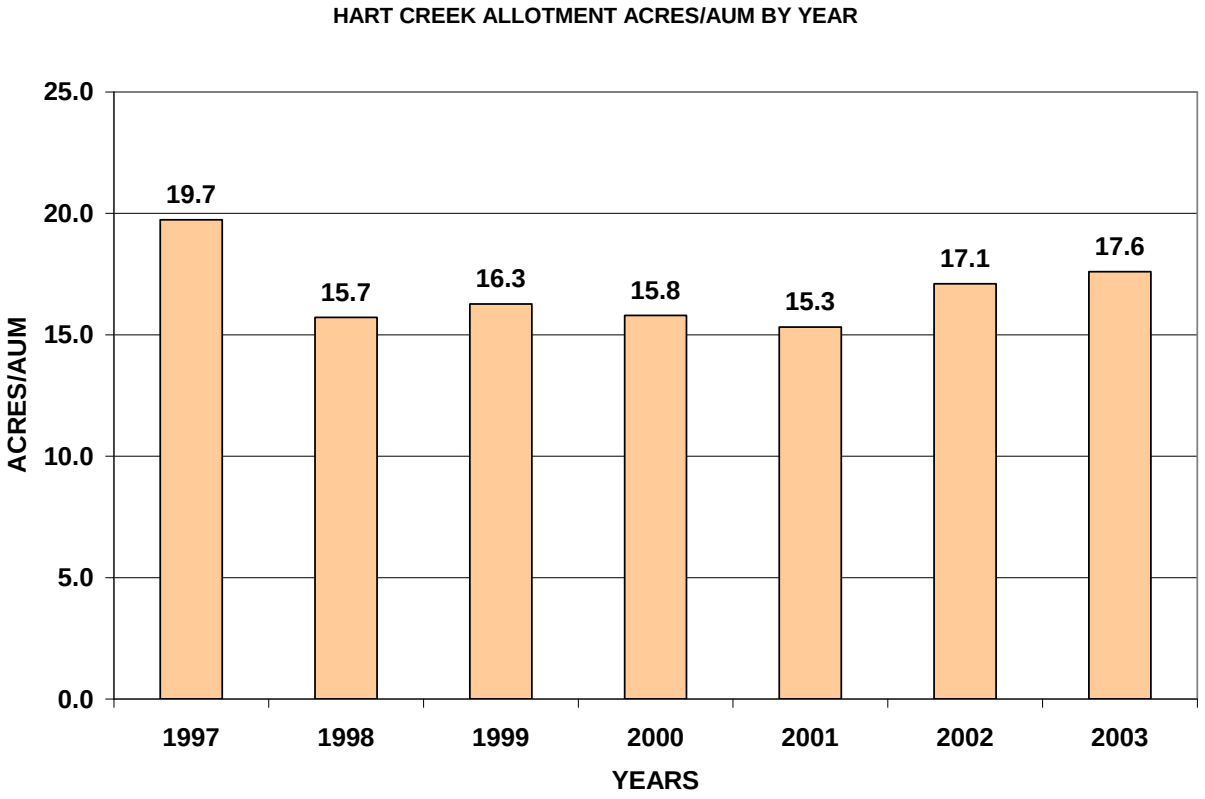
APPENDIX F: ACTUAL USE RECORDS AND ACRES/AUM

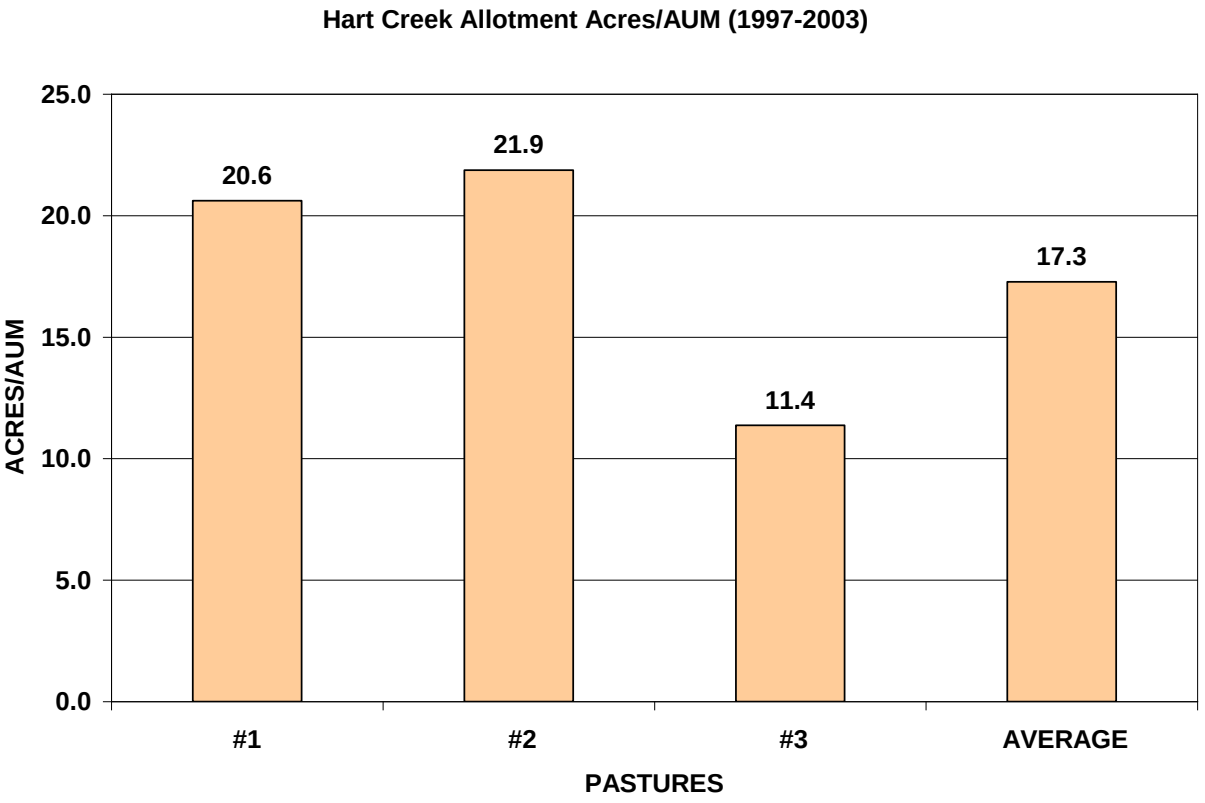
Appendix F-1. Actual use records for the Hart Creek allotment.

Hart Creek (#0532) Actual Use				
	Pasture 1	**Pasture 2**	**Pasture 3**	**Total/Year**
1997	--	350	521	871
1998	431	--	626	1057
1999	--	446	578	1024
2000	450	--	573	1023
2001	--	440	705	1145
2002	389	--	595	984
2003	--	360	708	1068
Total BLM AUMs	**1270**	**1596**	**4306**	**7172**
Average Use per Pasture	**423**	**399**	**615**	**1437**
-- = Pasture rested				

Acres / AUM by Pasture

	Pasture 1	**Pasture 2**	**Pasture 3**	**Average**
1997	rest	26.0	13.4	19.7
1998	20.3	rest	11.2	15.7
1999	rest	20.4	12.1	16.3
2000	19.4	rest	12.2	15.8
2001	rest	20.7	9.9	15.3
2002	22.4	rest	11.8	17.1
2003	rest	25.3	9.9	17.6
BLM Acres/AUM	**20.6**	**21.9**	**11.4**	**17.3**
Acreage Summary				
Pasture acres-BLM	8,728	9,115	6,992	24,835
Pasture acres-PVT	722	318	43	1083
Pasture acres-ST	0	642	9	651
Total Acres	**9,450**	**10,075**	**7,044**	**26,569**


HART CREEK ALLOTMENT ACRES/AUM BY YEAR
25.0
20.0
15.0
10.0
5.0
0.0
ACRES/AUM
19.7
15.7
16.3
15.8
15.3
17.1
17.6
1997
1998
1999
2000
2001
2002
2003
YEARS


Hart Creek Allotment Acres/AUM (1997-2003)
25.0
20.0
15.0
10.0
5.0
0.0
ACRES/AUM
20.6
21.9
11.4
17.3
#1
#2
#3
AVERAGE
PASTURES

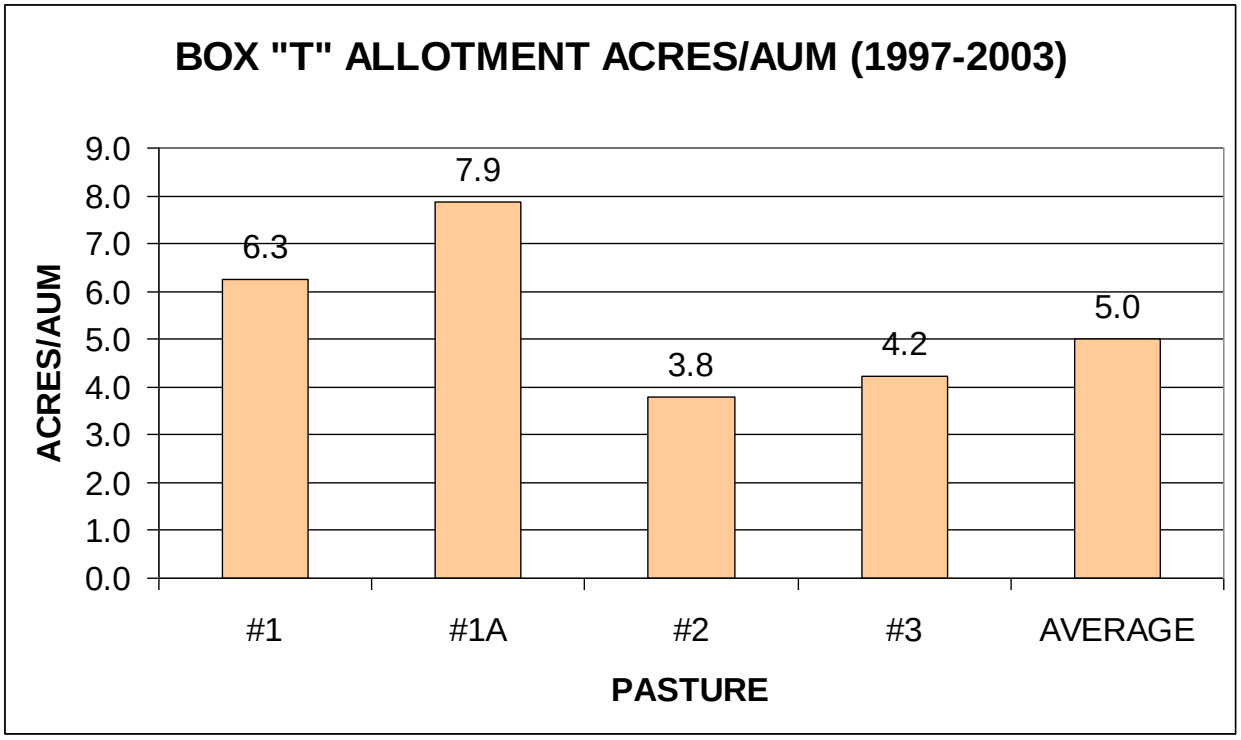
Appendix F-2. Actual use records for Box "T" allotment.

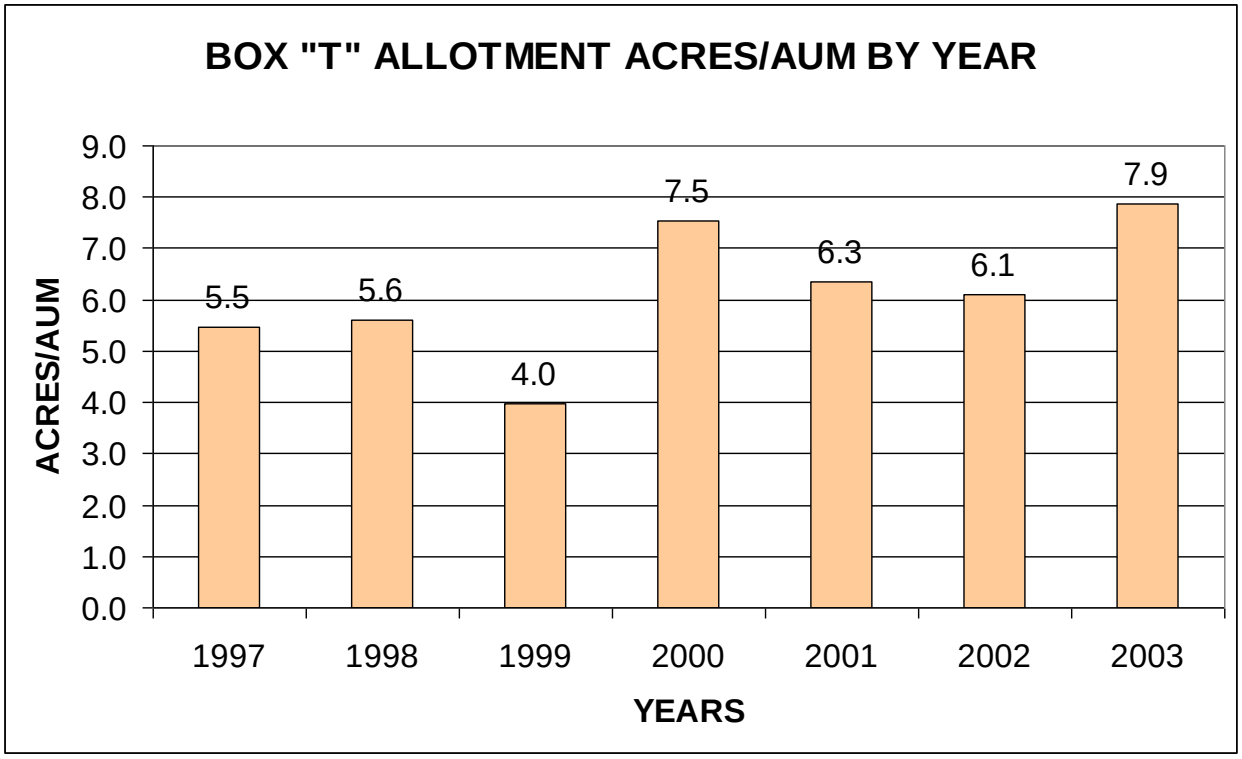
BOX "T" (#0534)
Actual Use

	Pasture 1	Pasture 1A	Pasture 2	Pasture 3	Total / Year
1997	506	108	690	405	1709
1998	663	101	608	331	1703
1999	685	213	611	414	1923
2000	190	155	493	324	1162
2001	359	112	675	273	1419
2002	395	152	671	182	1400
2003	328	107	521	147	1103
Total BLM AUMs	**3126**	**948**	**4269**	**2076**	**10419**
Ave. use per past.	**447**	**135**	**610**	**297**	**1488**

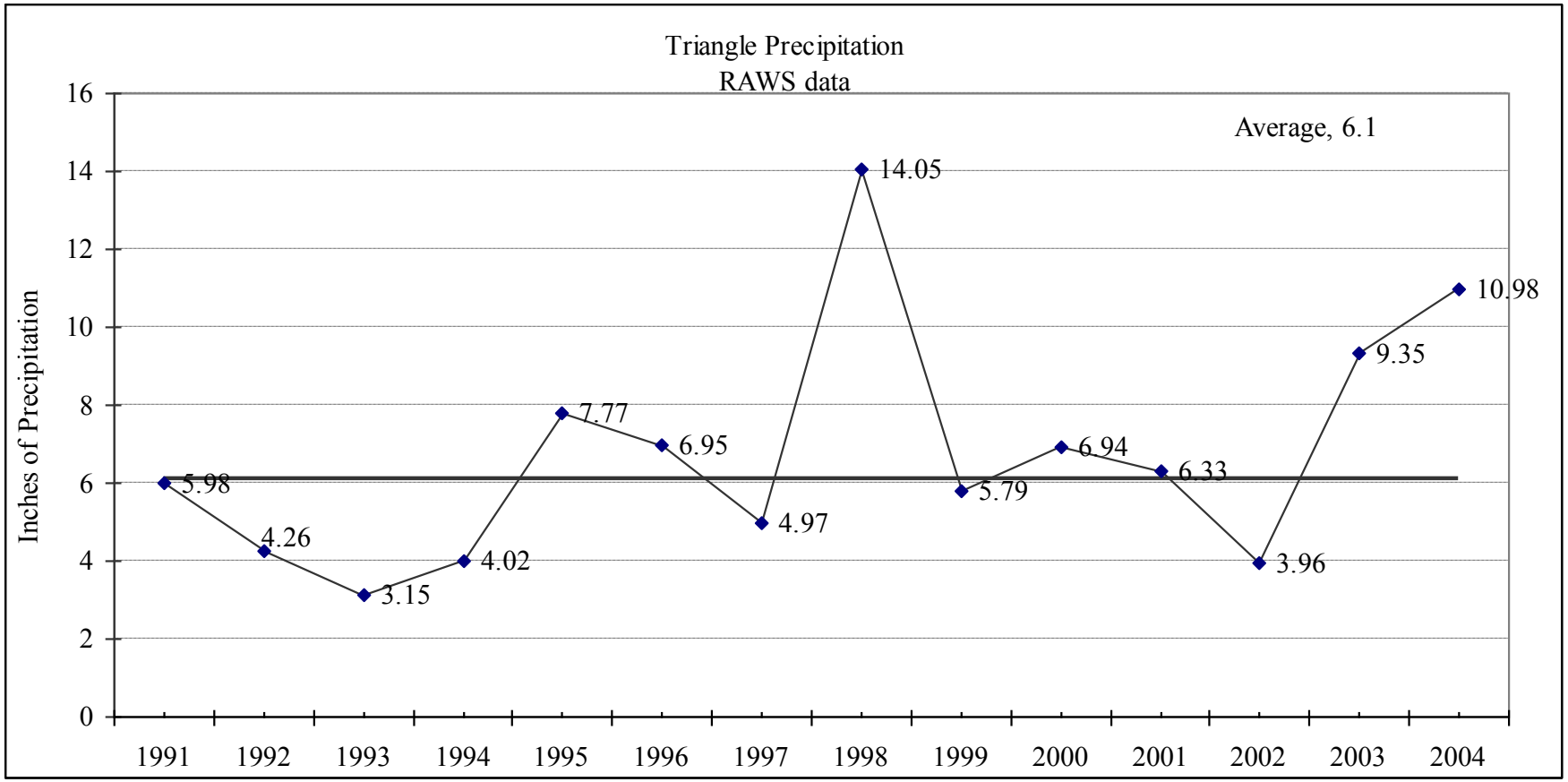
(ACRES/AUM)

	Pasture 1	Pasture 1A	Pasture 2	Pasture 3	Average
1997	5.5	9.9	3.4	3.1	5.5
1998	4.2	10.6	3.8	3.8	5.6
1999	4.1	5.0	3.8	3.0	4.0
2000	14.7	6.9	4.7	3.9	7.5
2001	7.8	9.5	3.4	4.6	6.3
2002	7.1	7.0	3.5	6.9	6.1
2003	8.5	10.0	4.4	8.5	7.9
BLM Acres/AUM	**6.3**	**7.9**	**3.8**	**4.2**	**5.0**
Acreage Summary					
Pasture acres-BLM	2,797	1,067	2,317	1,255	7,436
Pasture acres-PVT	11	30	19	62	122
Pasture acres-ST	0	7	1	0	8
Total Acres	**2,808**	**1,104**	**2,337**	**1,317**	**7,566**


BOX "T" ALLOTMENT ACRES/AUM (1997-2003)
ACRES/AUM
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
6.3
7.9
3.8
4.2
5.0
#1
#1A
#2
#3
AVERAGE
PASTURE


BOX "T" ALLOTMENT ACRES/AUM BY YEAR
ACRES/AUM
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
5.5
5.6
4.0
7.5
6.3
6.1
7.9
1997
1998
1999
2000
2001
2002
2003
YEARS

APPENDIX G: PRECIPITATION DATA



APPENDIX H: SPECIAL STATUS SPECIES OCCURRENCE, HABITAT ASSOCIATIONS, INVENTORY, MONITORING

Appendix H-1: Occurrence and Habitat Associations

One federal candidate species for listing as threatened or endangered, the Columbia spotted frog, is known to occur within the Box T allotment and another, the yellow-billed cuckoo, may occur but has not been verified. Another 22 species classified as BLM "Sensitive Species" and/or State of Idaho "Species of Special Concern" are also known or likely to occur within this allotment. The following table lists these species, their legal status, and their key habitat associations within the allotment.

Species	Status[1]	Key Habitat Associations
Prairie Falcon (*Falco mexicanus*)	S	Cliff/canyon, sagebrush
Ferruginous Hawk (*Buteo regalis*)	S	Cliff, rock outcrop, sagebrush
Sage-grouse (*Centrocercus urophasianus)*	S	Sagebrush, meadow, riparian
Yellow-billed Cuckoo (*Coccyzus erythropthalmus*)	C, SC	Woody Riparian (not confirmed)
Calliope Hummingbird (*Stellula calliope)*	S	Woody riparian, big sagebrush
Willow Flycatcher (*Empidonax trailii)*	S	Woody riparian, big sagebrush
Loggerhead Shrike (*Lanius ludovicianus)*	S, SC	Sagebrush, desert shrub, open juniper
Brewer's Sparrow (*Spizella breweri)*	S	Sagebrush
Sage Sparrow (*Amphispiza belli*)	S	Sagebrush
Spotted Bat (*Euderma maculatum)*	S, SC	Roosting/hibernation: Cliffs, canyons, rock outcrops Foraging: sagebrush
Fringed Myotis (*Myotis thysanodes)*	S, SC	Roosting/hibernation: Cliffs, canyons, rock outcrops Foraging: Sagebrush
Townsend's Big-eared Bat (*Plecotus townsendii)*	S, SC	Roosting/hibernation: Caves, trees. Foraging: Sagebrush, canyon.
Western Pipestrelle (*Pipistrellus hesperus)*	SC	Roosting/hibernation: Caves, rock outcrops, burrows near water Foraging: Sagebrush, canyon
Kit Fox (*Vulpes macrotes*)	S, SC	Sagebrush, desert shrub
California Bighorn Sheep (*Ovis canadensis californiana*)	S	Canyon and adjacent uplands
Piute Ground Squirrel *(Spermophilus mollis)*	S	Big sagebrush
Pygmy Rabbit (*Brachylagus idahoensis)*	S, SC	Big sagebrush.
Mojave Black-Collared lizard (*Crotaphytus bicinctores*)	S, SC	Rock outcrops in Wyoming sagebrush & desert shrub
Common Garter Snake (Thamnophis	S	Aquatic/riparian

Species	Status[1]	Key Habitat Associations
sirtalis)		
Longnose Snake (*Reinocheilus lecontei*)	S, SC	Sagebrush, desert shrub, rocky washes, outcrops
Western Ground Snake (*Sonora semianuata*)	S, SC	Sagebrush, desert shrub, rocky washes, outcrops
Columbia Spotted Frog (*Rana luteiventris*)	C, SC	
Western Toad (*Bufo boreas*)	S, SC	Wetland/riparian, all upland habitats
Woodhouse Toad (*Bufo woodhousii)*	S	Wetland/riparian, all upland habitats
Redband Trout (*Oncorhynchus mykiss gibbsi)*	S, SC	Aquatic

[1]SC = State of Idaho Species of Special Concern, S = BLM Sensitive Species, C = Federal Candidate Species for Listing as Threatened or Endangered, T = Federal Threatened Species

Population Inventory and Monitoring

Inventory and monitoring data are limited or absent for many of these special status species. Therefore, little is known about their distribution, population status or trend within the allotments. Their occurrence within the allotments has been verified through field observation or assumed likely because the allotments fall within the species known range and contain habitat types potentially capable of supporting viable populations of the species. The following is a brief description of surveys and/or monitoring efforts that have been conducted for special status animal species in the allotments.

Sage-grouse - Since the late 1970s, BLM and Idaho Department of Fish and Game (IDFG) biologists periodically conducted lek (breeding ground) surveys/counts. Recent aerial surveys that included all or portions of these allotments were conducted in 1995, 1997, 2001 and 2002 and confirmed the presence of seven active leks within these allotments and six others within close proximity. No inferences can be made concerning trend of sage-grouse populations within these allotments since monitoring has been very limited. However, a number of historic leks and leks that were active as recently as the late 1980s in and near the Hart Creek allotment no longer appear to be active and could be indicative of a declining sage-grouse population.

A sage-grouse telemetry study designed to gather information on sage-grouse distribution and movements and key habitats was conducted between 2002 and 2004 by IDFG via a Challenge Cost Share (CCS) agreement with the BLM (Rachael et al 2004). Sage-grouse from three different leks along the Owyhee Front were captured and radio-collared and their locations recorded on a monthly basis. Two of these leks are within relative close proximity to the Hart Creek allotment. Monitoring results indicate that both nesting and wintering habitat occurs within Hart Creek allotment and Alder Creek FFR and that some of these sage-grouse are migrating as far as 20 miles to summer and winter within portions of the Box T allotment. Although sage-grouse from leks closer to the Box T allotment were not been radio-collared, some of these birds are very likely to be nesting within the Box T allotment.

Columbia Spotted Frog – Formal surveys for Columbia spotted frogs and other herptofauna were conducted throughout much of the Owyhee Field Office in 1995 via Challenge Cost Share (CCS) agreements with the BLM by Boise State University and Idaho State University (Munger et al. 1996). This survey further verified and detailed the extent of Columbia spotted frog populations along Meadow Creek that were originally discovered by BLM biologists in 1993. It also verified their occurrence along the North Fork of Castle Creek. Both streams are within the Box T allotment. Spotted frog populations and habitat along these streams are periodically monitored as described in the Columbia Spotted Frog Great Basin Population (Owyhee Mountains Subpopulation) Long-term Monitoring Plan (Engle 2001).

Bats - A bat survey was conducted by the Pacific Northwest Bat Research Team under a CCS with the Idaho Department of Fish and Game in 1996 to determine bat distribution and use of juniper woodlands (Perkins and Peterson 1996) and included one survey site immediately adjacent to the Box T allotment. This site was at Spencer Reservoir and revealed the presence of five species of bats, none of which are currently on the list of BLM Sensitive Species of IDF&G Species of Special Concern.

Passerine Birds - Qualified volunteers in association with the U.S. Geological Survey's Patuxtent Research Center have conducted Breeding Bird Surveys annually. One survey route extends from Spencer Reservoir along Triangle Road to Oreana and has been surveyed every year beginning in 1985. Eight species of birds currently listed as BLM Sensitive Species and/or State of Idaho Species of Special Concern have been observed during these surveys.

Appendix H-2: Sage-grouse Habitat Assessment Worksheets

Sage-grouse Habitat Assessment Worksheet - Breeding Habitat (5/23/01)

Date:	**Project or Allotment Name/#:**	
Pasture Name/#:	**Site #:**	**FO:**
Legal Description: T. R. Section , 1/4, 1/4		**GPS File #:**
Evaluator(s):	**Ecological Site:**	
Site Info. (circle one): Arid Site, Mesic Site UTM:		

Landscape Site (circle one): Key Habitat , R1, R2, R3

Cover Type (circle one): Sagebrush, Perennial Grassland (native, introduced), Annual Grassland with Sagebrush, Annual Grassland, Juniper Area

Habitat Indicator	Suitable Habitat	✓	Marginal Habitat	✓	Unsuitable Habitat	✓
Average Sagebrush Canopy Cover	≥ 15% but ≤ 25%		10-<15% or >25%		<10%	
Average Sagebrush Height Mesic Site Arid Site	 15-30" 12-30"		 10-14" or > 30" 10-11" or >30"		 <10" <10"	
Sagebrush Growth Form	Spreading form, few, if any, dead branches for most plants		Mix of spreading and columnar growth forms present		Tall, columnar growth form with dead branches for most plants	
Average Grass and Forb Height	≥ 7"		5 - < 7"		< 5"	
Average Perennial Grass Canopy Cover Mesic Site Arid Site	 ≥ 15% ≥ 10%		 5 - <15% 5 - <10%		 <5% < 5%	
Average Forb Canopy Cover Mesic Site Arid Site	 ≥ 10% ≥ 5%		 5 - <10% 3 - <5%		 < 5% < 3%	
Preferred Forb Abundance and Diversity[1]	Forbs common with at least a few preferred species present		Forbs common but only 1 or 2 preferred species present		Forbs rare to sparsely present	
	Overall Site Evaluation					

Rationale for Overall Rating and Comments:

Comments on Restoration Potential:

Sage-grouse Habitat Assessment Worksheet - Late Brood-rearing (5/23/01)

Date:	**Project or Allotment Name/#:**	
Pasture Name/#:	**Site #:**	**FO:**
Legal Description: T. R. Section , 1/4, 1/4		**GPS File #:**
Evaluator(s):	**Ecological Site:**	**UTM #**

Landscape Site (circle one): Key Habitat , R1, R2, R3

Site Description (circle one): riparian area/perennial stream, riparian area/intermittent stream, wet meadow, lakebed, upland sagebrush site

Habitat Indicator	**Suitable Habitat**	✓	**Marginal Habitat**	✓	**Unsuitable Habitat**	✓
Riparian and Wet Meadow Communities:						
Riparian and wet meadow plant community	Mesic or wetland plant species dominate wet meadow or riparian area		Xeric plant species invading wet meadow or riparian area		Xeric plant species along water's edge or near center of wet meadow	
Riparian and wet meadow stability	No erosion evident; some bare ground may be evident but vegetative cover dominates the site		Minor erosion occurring and bare ground may be evident but vegetative cover dominates the site		Major erosion evident; large patches of bare ground	
Forb availability	Succulent, green forbs are readily available in terms of distribution and plant structure		Succulent, green forbs are available though distribution is spotty or plant structure limits effective use		Succulent, green forbs are scarce or not available	
Proximity of sagebrush cover	Sagebrush cover is adjacent to brood-rearing area (<100 yards)		Sagebrush cover is in close proximity (> 100 yards but < 300 yards) of brood-rearing areas		Sagebrush cover is unavailable (> 300 yards)	
Overall Riparian/Wet Meadow Site Evaluation						
Upland Sagebrush Communities:						
Forb availability	Succulent, green forbs are readily available in terms of distribution and plant structure		Succulent, green forbs are available though distribution is spotty or plant structure limits effective use		Succulent, greeen forbs are scarce or not available despite favorable growing conditions	
Overall Upland Site Evaluation						

Comments:

Appendix H-3: 2012 Sage-grouse Habitat Assessment Worksheets

The following Sage-grouse Habitat Assessment worksheets are based on the most current Sage-grouse Habitat Assessment Framework (Stivers et al. 2010). The worksheets display the compiled results for data collected in 2012.

Figure H-3.1. Summary of breeding SG HA in Hart Creek pasture 3 in the Shallow Claypan 12-16 ARAR8/FEID Ecological Site (2012).

Form H-3	Sage-grouse Habitat Suitability Worksheet –	BREEDING	R025XY010ID			
Allotment-Pasture Names:	Hart Creek-Cat Creek	**Allotment-Pasture Number:**	0532-03	**Number of Transects:**	2	**Subpopulation:** NC NV/ SE OR/ SW ID
Ecological Site ID:	R025XY010ID	**Ecological Site Name:**	Shallow Claypan 12-16 ARAR8/FEID			**Home Range Name:** Owyhee Front/Triangle
Site IDs:	**Land Cover Type/s:**	**Area Sampled (ha):**	**Date:**			**Associated Leks:** 20196, 20548, 20642
0532-03-06S01W06-2012	ARAR/POSE	15	5/30/2012			
0532-03-06S02W11b-2012	ARAR/POSE	5	5/30/2012			**Site Info:** Arid

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	χ	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	29.0	15-25%		5-<15% or >25%	X	<5%	
Sagebrush Height Mesic Site (mean) Arid Site (mean)	37.2	40-80 cm 30-80 cm	X	20-<40 cm or >80 cm 20-<30 cm or >80 cm		<20 cm <20 cm	
Predominant Sagebrush Shape (mode)	Spreading	Spreading	X	Mix of Spreading and Columnar		Columnar	
Perennial Grass and Forb Height (mean)	22.0	≥18 cm	X	10-18 cm		<10 cm	
Perennial Grass Canopy Cover Mesic Site (mean) Arid Site (mean)	6.0	≥15% ≥10%		5-<15% 5-<10%	X	<5% <5%	
Perennial Forb Canopy Cover Mesic Site (mean) Arid Site (mean)	10.0	≥10% ≥5%	X	5-<10% 3-<5%		<5% <3%	
Preferred Forb Availability (relative to site potential)	Abundant	Preferred forbs are common with several species present	X	Preferred forbs are common but only a few species are present		Preferred forbs are rare	
Number of Preferred Forb Species (*n*)	9.5		14 total				

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	χ	Suitability	Rationale
Other Shrub Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site Potential
Other Shrub Height (mean)	0.0	Suitable	Appropriate based on Ecological Site Potential
Sagebrush and Other Shrub Canopy Cover (mean)	29.0	Suitable	Appropriate based on Ecological Site Potential
Sagebrush and Other Shrub Height (mean)	37.2	Suitable	Suitable breeding habitiat should have shrub heights between 30-80 cm
Perennial Grass Height (excluding Poa spp.) (mean)	27.0	Suitable	Suitable breeding habitiat should have perennial grass heights of at least 18 cm
Poa Spp. Canopy Cover (mean)	29.0	Marginal	As dominant understory species, indicative of a shift in community composition (State 1A to 1C); higher representation than expected, usually at the expense of deep-rooted, tall-structured perennial species
Annual Grass Canopy Cover (mean)	11.0	Marginal	High BRTE cover indicative of invasive weed issue; increased risk of wildfire and irreversible potential community State shift
Annual Forb Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site Potential
Bare Ground Canopy Cover (relative to site potential) (mean)	9.0	Suitable	Appropriate based on Ecological Site potential considering that the low amount is not due to litter but rather higher amounts of rock and bedrock

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	unknown-not noted
Evidence of recent livestock use?	Cattle present

Rationale for Overall Suitablity Rating: Breeding habitat in the pasture in this ESD is rated as suitable because most of the primary and supplementary indicators fall within the suitable ranges. Sagebrush overstory and the perennial herbaceous understory are providing suitable nesting cover. The slightly high sagebrush CC is probably not limiting use due to the species involved (ARAR). Preferred forbs are diverse and abundant. Some vegetation community health issues due to *Poa* , BRTE, JUOC, and low bare ground are present. Higher representation of these species is occurring at the expense of deep-rooted, tall-structured, perennial bunchgrasses, and is also indicative of a community phase shift from HCPC. An additional assessment (*06S01W07-2012*) that was not conducted at the appropriate time of year resulted in many of the components necessary for suitable breeding habitat falling within the correct ranges (sagebrush CC, height, perennial herbaceous heights, forb abundance), and provides additional support the suitable breeding habitat rating.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability	X		

Figure H-3.2. Summary of breeding SG HA in Hart Creek pasture 3 in the Loamy 8-12 ARTRW/PSSPS-ACTH7 Ecological Site (2012).

Form H-3	Sage-grouse Habitat Suitability Worksheet –	BREEDING	R011XY001ID			
Allotment-Pasture Names:	Hart Creek-Cat Creek	**Allotment-Pasture Number:**	0532-03	**Number of Transects:**	2	**Subpopulation:** NC NV/ SE OR/ SW ID
Ecological Site ID:	R011XY001ID	**Ecological Site Name:**	Loamy 8-12 ARTRW8/PSSPS-ACTH7			**Home Range Name:** Owyhee Front/Triangle
Site IDs:	**Land Cover Type/s:**	**Area Sampled (ha):**	**Date:**			**Associated Leks:** 2O196, 2O548, 2O642
0532-03-05S01W31-2012	ARTRW/POSE	50	5/30/2012			
0532-03-06S02W01-2012	ARTRW-ARTRT-ARAR/BRTE	50	5/30/2012			**Site Info:** Arid

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	χ	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	28.0	15-25%		5-<15% or >25%	X	<5%	
Sagebrush Height Mesic Site (mean) Arid Site (mean)	69.4	40-80 cm 30-80 cm	X	20-<40 cm or >80 cm 20-<30 cm or >80 cm		<20 cm <20 cm	
Predominant Sagebrush Shape (mode)	Mixed	Spreading		Mix of Spreading and Columnar	X	Columnar	
Perennial Grass and Forb Height (mean)	22.0	≥18 cm	X	10-18 cm		<10 cm	
Perennial Grass Canopy Cover Mesic Site (mean) Arid Site (mean)	0.0	≥15% ≥10%		5-<15% 5-<10%		<5% <5%	X
Perennial Forb Canopy Cover Mesic Site (mean) Arid Site (mean)	3.0	≥10% ≥5%		5-<10% 3-<5%	X	<5% <3%	
Preferred Forb Availability (relative to site potential)	Common	Preferred forbs are common with several species present		Preferred forbs are common but only a few species are present	X	Preferred forbs are rare	
Number of Preferred Forb Species (*n*)	5.5				9 total		

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	χ	Suitability	Rationale
Other Shrub Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site Potential
Other Shrub Height (mean)	0.0	Suitable	Appropriate based on Ecological Site Potential
Sagebrush and Other Shrub Canopy Cover (mean)	28.0	Suitable	Suitable breeding habitat should be ≤42% total shrub CC
Sagebrush and Other Shrub Height (mean)	69.4	Suitable	Suitable breeding habitat should have shrub heights between 30-80 cm
Perennial Grass Height (excluding Poa spp.) (mean)	0.0	Unsuitable	Suitable breeding habitat should have perennial grass representation
Poa Spp. Canopy Cover (mean)	22.0	Suitable	Appropriate based on Ecological Site potential although high representation, usually at the expense of deep-rooted, tall-structured perennial species
Annual Grass Canopy Cover (mean)	50.0	Unsuitable	Exceedingly high BRTE cover indicative of invasive weed issue; increased risk of wildfire and irreversible potential community State shift
Annual Forb Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site Potential
Bare Ground Canopy Cover (relative to site potential) (mean)	4.0	Marginal	Lower than expected based on Ecological Site potential; possibly indicative of fine fuel (litter) build-up due to BRTE

Does ecological site potential limit suitability potential?	YES	NO
		x

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			x				

Evidence of sage-grouse use?	Sage-grouse scat observed at 05S01W31, otherwise unknown-not noted
Evidence of recent livestock use?	Cattle dung observed (?) at 05S01W31, otherwise unknown-not noted

Rationale for Overall Suitablity Rating:

Although the sagebrush height was suitable, CC and growth form fell within the marginal ranges. In combination with the lack of perennial grass and forb cover and height (heavily skewed due to one large forb at one site), breeding habitat is on the lower end of marginal in this Ecological Site. Forb diversity and abundance was variable among the sites; however, overall, diversity was low and abundance was marginal at best based in the ESD. Forbs for early brood rearing appear to be limited. The data displays a thorough BRTE invasion in this ESD which limits suitability. JUOC at one site also demonstrates an issue with conifer encroachment. Litter (probably due to BRTE) also may be building up and creating a higher risk of wildfire spread. The marginal rating's only merit is the presence of the sagebrush overstory component and also that sage-grouse still appear to be using this ESD based on sign and the occurrence of several leks located nearby. However, the very low attendance and poor habitat conditions may indicate a downward trend in this ESD in this pasture.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability		x	

Figure H-3.3. Summary of breeding SG HA in Hart Creek pasture 3 in the Loamy 13-16 ARTRV/PSSPS-FEID Ecological Site (2012).

Form H-3	Sage-grouse Habitat Suitability Worksheet –	BREEDING	R025XY011ID			
Allotment-Pasture Names:	Hart Creek-Cat Creek	Allotment-Pasture Number:	0532-03	Number of Transects:	2	Subpopulation: NC NV/ SE OR/ SW ID
Ecological Site ID:	R025XY011ID	Ecological Site Name:	Loamy 13-16 ARTRV/PSSPS-FEID			Home Range Name: Owyhee Front/Triangle
Site IDs:	Land Cover Type/s:		Area Sampled (ha):	Date:		Associated Leks: 2O196, 2O548, 2O642
0532-3-06S02W10a-2012	ARTRV-JUOC/POSE-SIHY		5	7/23/2012		
0532-3-06S02W14-2012	ARTRV-ARAR/POSE-PSSPS		2	7/26/2012		Site Info: Mesic

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	χ	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	40.0	15-25%		5-<15% or >25%	X	<5%	
Sagebrush Height Mesic Site (mean) Arid Site (mean)	63.3	40-80 cm 30-80 cm	X	20-<40 cm or >80 cm 20-<30 cm or >80 cm		<20 cm <20 cm	
Predominant Sagebrush Shape (mode)	Spreading	Spreading	X	Mix of Spreading and Columnar		Columnar	
Perennial Grass and Forb Height (mean)	15.6	≥18 cm		10-18 cm	X	<10 cm	
Perennial Grass Canopy Cover Mesic Site (mean) Arid Site (mean)	8.0	≥15% ≥10%		5-<15% 5-<10%	X	<5% <5%	
Perennial Forb Canopy Cover Mesic Site (mean) Arid Site (mean)	7.0	≥10% ≥5%		5-<10% 3-<5%	X	<5% <3%	
Preferred Forb Availability (relative to site potential)	Abundant	Preferred forbs are common with several species present	X	Preferred forbs are common but only a few species are present		Preferred forbs are rare	
Number of Preferred Forb Species (*n*)	12.5		18 total				

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	χ	Suitability	Rationale
Other Shrub Canopy Cover (mean)	7.0	Suitable	Appropriate based on Ecological Site Potential
Other Shrub Height (mean)	63.5	Suitable	Appropriate based on Ecological Site Potential
Sagebrush and Other Shrub Canopy Cover (mean)	47.0	Marginal	Suitable breeding habitat should be ≤42% total shrub CC
Sagebrush and Other Shrub Height (mean)	63.6	Suitable	Suitable breeding habitat should have shrub heights between 40-80 cm
Perennial Grass Height (excluding Poa spp.) (mean)	18.4	Suitable	Suitable breeding habitat should have perennial grass height at least 18 cm
Poa Spp. Canopy Cover (mean)	11.0	Suitable	Appropriate based on Ecological Site Potential
Annual Grass Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site Potential
Annual Forb Canopy Cover (mean)	1.0	Suitable	Appropriate based on Ecological Site Potential
Bare Ground Canopy Cover (relative to site potential) (mean)	21.0	Suitable	Appropriate based on Ecological Site Potential

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	Sage-grouse scat observed at both sites; Sage-grouse spring and winter scat including cecal casts and roost piles noted at 06S02W14
Evidence of recent livestock use?	High cattle utilization noted at 06S02W10a, otherwise unknown-not noted

Rationale for Overall Suitability Rating:

Although assessments were not conducted at the appropriate time of year, many of the components for suitable breeding habitat fall within the suitable ranges (sagebrush height and growth form, and forb diversity and abundance) and would provisionally be rated as suitable if measured during the breeding season. Perennial herbaceous vegetation height provided by grass is providing suitable nesting cover. Although sagebrush CC is high especially in combination with other shrubs CC, these components are probably not excluding sage-grouse nesting locations overall. This Ecological Site probably is providing suitable breeding habitat assuming these area are snow-free during the nesting period.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability	P		

Figure H-3.4. Summary of upland summer SG HA in Hart Creek pasture 3 in the Shallow Claypan 12-16 ARAR8/FEID Ecological Site (2012).

Form H-4	Sage-grouse Habitat Suitability Worksheet –	UPLAND SUMMER	R025XY010ID			
Allotment-Pasture Names	Hart Creek-Cat Creek	Allotment-Pasture Number:	0532-03	Number of Transects:	1	Subpopulation: NC NV/ SE OR/ SW ID
Ecological Site ID:	R025XY010ID	Ecological Site Name:	Shallow Claypan 12-16 ARAR8/FEID			Home Range Name: Owyhee Front/Triangle
Site IDs:	Land Cover Type/s:		Area Sampled (ha):	Date:		Associated Leks: 2O196, 2O548, 2O642
0532-03-06S02W11b-2012	ARAR/POSE		5	5/30/2012		Site Info: Arid

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	x	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	26.0	10-25%		5-<10% or >25%	X	<5%	
Sagebrush Height (mean)	31.7	40-80 cm		20-<40 cm or >80 cm	X	<20 cm	
Perennial Grass and Forb Canopy Cover (mean)	22.0	≥15%	X	5-15%		<5%	
Preferred Forb Availability (relative to site potential)	Abundant	Preferred forbs are common with several species present	X	Preferred forbs are common but only a few species are present		Preferred forbs are rare	
Number of Preferred Forb Species (*n*)	9.0		14 total				

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	x	Suitability	Rationale
Predominant Sagebrush Shape (mode)	Spreading	Suitable	Spreading sagebrush growth form provides horizontal concealment cover
Perennial Grass and Forb Height (mean)	23.2	Suitable	Suitable upland summer habitat should have perennial herbaceous vegetation heights at least 10 cm
Perennial Grass Canopy Cover (mean)	6.0	Marginal	Suitable upland summer habitat should have perennial grass canopy covers that provide concealment cover and are appropriate for the Ecological Site potential
Perennial Forb Canopy Cover (mean)	16.0	Suitable	Suitable upland summer habitat should have abundant and diverse forb representation
Other Shrub Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site potential
Other Shrub Height (mean)	0.0	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Canopy Cover (mean)	26.0	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Height (mean)	31.7	Suitable	Appropriate based on Ecological Site potential
Perennial Grass Height (excluding Poa spp.) (mean)	29.0	Suitable	Suitable upland summer habitat should have perennialgrass heights at least 10 cm
Poa Spp. Canopy Cover (mean)	32.0	Marginal	As a dominant understory species, indicative of a shift in community composition (State 1A to 1C); higher representation than expected, usually at the expnse of deep-rooted, tall-structured perennial species
Annual Grass Canopy Cover (mean)	6.0	Suitable	Current BRTE cover indicative of the beginning invasive weed issue
Annual Forb Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site potential
Bare Ground Canopy Cover (relative to site potential) (mean)	16.0	Suitable	Appropriate based on Ecological Site potential considering that the amount is not due to litter but rather higher amounts of rock and bedrock

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	unknown-not noted
Evidence of recent livestock use?	Cattle present

Rationale for Overall Suitablity Rating:	Although assessment was not conducted at the appropriate time of year, this ecological site would probably be rated suitable because many of the primary and supplementary indicators fall within the suitable range. Although sagebrush height is low, the relatively tall heights of perennial herbaceous understory vegetation (grass and forbs) are providing additional concealment cover. Forbs are diverse and abundant and are providing adequate foraging opportunities which probably would persist into the summer considering the elevation (approx. 5975 ft). *Poa* CC is slightly high indicating an issue with vegetation community health. In addition, JUOC are common in the area and encroachment is a management issue and may be limiting sage-grouse use now or in the future.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability	P		

Figure H-3.5. Summary of upland summer SG HA in Hart Creek pasture 3 in the Loamy 8-12 ARTRW/PSSPS-ACTH7 Ecological Site (2012).

Form H-4	Sage-grouse Habitat Suitability Worksheet –	UPLAND SUMMER	R011XY001ID			
Allotment-Pasture Names	Hart Creek-Cat Creek	Allotment-Pasture Number:	0532-03	Number of Transects:	1	Subpopulation: NC NV/ SE OR/ SW ID
Ecological Site ID:	R011XY001ID	Ecological Site Name:	Loamy 8-12 ARTRW8/PSSPS-ACTH7			Home Range Name: Owyhee Front/Triangle
Site IDs:	Land Cover Type/s:	Area Sampled (ha):	Date:			Associated Leks: 2O196, 2O548, 2O642
0532-03-06S02W01-2012	ARTRW-ARTRT-ARAR/BRTE	50	5/30/2012			
						Site Info: Arid

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	X	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	26.0	10-25%		5-<10% or >25%	X	<5%	
Sagebrush Height (mean)	77.3	40-80 cm	X	20-<40 cm or >80 cm		<20 cm	
Perennial Grass and Forb Canopy Cover (mean)	2.0	≥15%		5-15%		<5%	X
Preferred Forb Availability (relative to site potential)	Sparse	Preferred forbs are common with several species present		Preferred forbs are common but only a few species are present		Preferred forbs are rare	X
Number of Preferred Forb Species (*n*)	4.0						

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	X	Suitability	Rationale
Predominant Sagebrush Shape (mode)	Mixed	Marginal	Mix of sagebrush growth form in the absence or lack of herbaceous understory cover may not be providing adequate concealment cover
Perennial Grass and Forb Height (mean)	38.0	Unsuitable	The value is based on one forb; overall understory concealment cover is not being provided by these components
Perennial Grass Canopy Cover (mean)	0.0	Unsuitable	Suitable upland summer habitat should have perennial grass representation
Perennial Forb Canopy Cover (mean)	2.0	Unsuitable	Suitable upland summer habitat should have abundant and diverse forb representation
Other Shrub Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site potential
Other Shrub Height (mean)	0.0	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Canopy Cover (mean)	26.0	Suitable	Sagebrush and other shrubs are providing adequate horizontal concealment cover
Sagebrush and Other Shrub Height (mean)	77.3	Suitable	Suitable upland summer habitat should have shrub cover heights between 30-80 cm
Perennial Grass Height (excluding Poa spp.) (mean)	0.0	Unsuitable	Suitable upland summer habitat should have perennial grass representation
Poa Spp. Canopy Cover (mean)	10.0	Suitable	Appropriate based on Ecological Site potential
Annual Grass Canopy Cover (mean)	74.0	Unsuitable	Exceedingly high BRTE cover indicative of invasive weed issue; increased risk of wildfire and irreversible potential community State shift
Annual Forb Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site potential
Bare Ground Canopy Cover (relative to site potential) (mean)	4.0	Marginal	Lower than expected based on Ecological Site potential; possibly indicative of fine fuel (litter) build-up due to BRTE

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	unknown-not noted
Evidence of recent livestock use?	unknown-not noted

Rationale for Overall Suitablity Rating:

Although assessment was not conducted at the appropriate time of year, this ecological site is rated as unsuitable because, other than sagebrush height, the majority of primary and supplementary indicators fall within the marginal or unsuitable range. Upland summer habitat conditions are not expected to improve if measured later in the season when soil moisture is depleted further. Understory cover is not being provided by perennial herbaceous species. Forbs are not diverse or abundant and therefore availability of sage-grouse forage is limited. Excessive BRTE in the understory is probably hindering understory movement and may be preventing sage-grouse from effectively detecting predators as well as enhancing their detection by predators. JUOC is also common at the site and also may be enhancing avian predator perching opportunities. The total absence of deep-rooted, tall-structured perennial grass cover is also a major issue in regards to concealment cover and, with the excessive BRTE cover, community composition and health.

Site-Scale Suitability	Suitable	Marginal	Unsuitable
			P

Figure H-3.6. Summary of upland summer SG HA in Hart Creek pasture 3 in the Loamy 13-16 ARTRV/PSSPS-FEID Ecological Site (2012).

Form H-4	Sage-grouse Habitat Suitability Worksheet –	UPLAND SUMMER	R025XY011ID			
Allotment-Pasture Names	Hart Creek-Cat Creek	**Allotment-Pasture Number:**	0532-03	**Number of Transects:**	2	**Subpopulation:** NC NV/ SE OR/ SW ID
Ecological Site ID:	R025XY011ID	**Ecological Site Name:**	Loamy 13-16 ARTRV/PSSPS-FEID			**Home Range Name:** Owyhee Front/Triangle
Site IDs:	**Land Cover Type/s:**		**Area Sampled (ha):**	**Date:**		**Associated Leks:** 2O196, 2O548, 2O642
0532-3-06S02W10a-2012	ARTRV-JUOC/POSE-SIHY		5	7/23/2012		
0532-3-06S02W14-2012	ARTRV-ARAR/POSE-PSSPS		2	7/26/2012		**Site Info:** Mesic

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	χ	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	**40.0**	10-25%		5-<10% or >25%	X	<5%	
Sagebrush Height (mean)	**63.3**	40-80 cm	X	20-<40 cm or >80 cm		<20 cm	
Perennial Grass and Forb Canopy Cover (mean)	**15.0**	≥15%	X	5-15%		<5%	
Preferred Forb Availability (relative to site potential)	**Abundant**	Preferred forbs are common with several species present	X	Preferred forbs are common but only a few species are present		Preferred forbs are rare	
Number of Preferred Forb Species (*n*)	**13.0**		18 total				

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	χ	Suitability	Rationale
Predominant Sagebrush Shape (mode)	**Spreading**	Suitable	Spreading sagebrush growth form provides adequate concealment cover
Perennial Grass and Forb Height (mean)	**15.6**	Suitable	Suitable upland summer habitat should have perennial herbaceous vegetation heights of at least 10 cm
Perennial Grass Canopy Cover (mean)	**8.0**	Suitable	Lower than expected based on Ecological Site potential possibly indicating a vegetation community composition issue
Perennial Forb Canopy Cover (mean)	**7.0**	Suitable	Belt transect information indicate abundant and diverse forb representation
Other Shrub Canopy Cover (mean)	**7.0**	Suitable	Appropriate based on Ecological Site potential
Other Shrub Height (mean)	**63.5**	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Canopy Cover (mean)	**47.0**	Suitable	Sagebrush and other shrubs are providing adequate horizontal concealment cover
Sagebrush and Other Shrub Height (mean)	**63.6**	Suitable	Suitable upland summer habitat should have shrub cover heights between 40-80 cm
Perennial Grass Height (excluding Poa spp.) (mean)	**18.4**	Suitable	Suitable upland summer habitat should have perennial grass heights of at least 10 cm
Poa Spp. Canopy Cover (mean)	**11.0**	Suitable	Appropriate based on Ecological Site potential
Annual Grass Canopy Cover (mean)	**0.0**	Suitable	Appropriate based on Ecological Site potential
Annual Forb Canopy Cover (mean)	**1.0**	Suitable	Appropriate based on Ecological Site potential
Bare Ground Canopy Cover (relative to site potential) (mean)	**21.0**	Suitable	Appropriate based on Ecological Site potential

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	Sage-grouse scat observed at both sites; Sage-grouse spring and winter scat including cecal casts and roost piles noted at 06S02W14
Evidence of recent livestock use?	High cattle utilization noted at 06S02W10a, otherwise unknown-not noted

Rationale for Overall Suitablity Rating:	Upland summer habitat in the pasture in this ESD is rated as suitable because the vast majority of primary and supplementary indicators fall within the suitable ranges. Forbs are especially diverse and abundant. High sagebrush CC is probably not limiting use by sage-grouse.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability	X		

Figure H-3.7. Summary of winter SG HA in Hart Creek pasture 3 in the Shallow Claypan 12-16 ARAR8/FEID Ecological Site (2012).

Form H-6	Sage-grouse Habitat Suitability Worksheet –		WINTER	R025XY010ID			
Allotment-Pasture Names:	Hart Creek-Cat Creek	Allotment-Pasture Number:	0532-03	Number of Transects:	3	Subpopulation:	NC NV/ SE OR/ SW ID
Ecological Site ID:	R025XY010ID	Ecological Site Name:	Shallow Claypan 12-16 ARAR8/FEID			Home Range Name:	Owyhee Front/Triangle
Site IDs:	Land Cover Type/s:		Area Sampled (ha):	Date:		Associated Leks:	2O196, 2O548, 2O642
0532-03-06S01W06-2012	ARAR/POSE		15	5/30/2012			
0532-03-06S02W11b-2012	ARAR/POSE		5	5/30/2012		Site Info:	Arid
0532-03-06S01W07-2012	ARAR/POSE		20	7/27/2012			

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	X	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	30.0	>10%	X	5-10%		<5%	
Sagebrush Height above Snow 0 cm snow (annual mean) 15 cm snow (annual mean) 30 cm snow (annual mean)	37.9	>25 cm >40 cm >55 cm	X	10-25 cm 25-40 cm 40-55 cm		<10 cm <25 cm <40 cm	

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	X	Suitability	Rationale
Predominant Sagebrush Shape (mode)	Spreading	Suitable	Spreading sagebrush growth form is providing effective concealment cover
Other Shrub Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site potential
Other Shrub Height (mean)	0.0	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Canopy Cover (mean)	30.0	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Height (mean)	37.9	Suitable	Sagebrush height is providing available forage and effective concealment cover

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	unknown-not noted
Evidence of recent livestock use?	Cattle present

Rationale for Overall Suitability Rating:	Overall the Ecological Site is rated as suitable winter habitat because all the primary and supplementary indicators fall within the suitable range. In general, the amount (CC) and height of sagebrush would provide adequate forage and concealment cover above persistent snow at most sites under average conditions.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability	X		

Figure H-3.8. Summary of winter SG HA in Hart Creek pasture 3 in the Loamy 8-12 ARTRW/PSSPS-ACTH7 Ecological Site (2012).

Form H-6	Sage-grouse Habitat Suitability Worksheet –	WINTER	R011XY001ID			
Allotment-Pasture Names:	Hart Creek-Cat Creek	**Allotment-Pasture Number:**	0532-03	**Number of Transects:**	2	**Subpopulation:** NC NV/ SE OR/ SW ID
Ecological Site ID:	R011XY001ID	**Ecological Site Name:**	Loamy 8-12 ARTRW8/PSSPS-ACTH7			**Home Range Name:** Owyhee Front/Triangle
Site IDs:	**Land Cover Type/s:**	**Area Sampled (ha):**	**Date:**			**Associated Leks:** 2O196, 2O548, 2O642
0532-03-05S01W31-2012	ARTRW/POSE	50	5/30/2012			
0532-03-06S02W01-2012	ARTRW-ARTRT-ARAR/BRTE	50	5/30/2012			**Site Info:** Arid

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	X	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	28.0	>10%	X	5-10%		<5%	
Sagebrush Height above Snow 0 cm snow (annual mean) 15 cm snow (annual mean) 30 cm snow (annual mean)	69.4	>25 cm >40 cm >55 cm	X	10-25 cm 25-40 cm 40-55 cm		<10 cm <25 cm <40 cm	

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	X	Suitability	Rationale
Predominant Sagebrush Shape (mode)	Mixed	Suitable	Mix of sagebrush forms is not a limiting factor as availability of forage is more important and sagebrush CC is providing effective concealment cover
Other Shrub Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site potential
Other Shrub Height (mean)	0.0	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Canopy Cover (mean)	28.0	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Height (mean)	69.4	Suitable	Sagebrush height is providing available forage and effective concealment cover

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	Sage-grouse scat observed at 05S01W31, otherwise unknown-not noted
Evidence of recent livestock use?	Cattle dung observed (?) at 05S01W31, otherwise unknown-not noted

Rationale for Overall Suitability Rating:

Overall the area is rated as suitable winter habitat because the amount (CC) and height of sagebrush would provide forage above persistent snow (which rarely occurs at the sites' elevations). Sagebrush CC would provide adequate concealment and thermal cover also. However, in the absence of management actions to reduce junipers in parts of the allotment/pasture, the area will degrade into marginal habitat primarily due to a future increase of small to medium junipers as evidenced by their current presence and abundant recruitment. Due to juniper encroachment, parts of the pasture appear to be on the lower end of suitable winter habitat and may be limiting sage-grouse use.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability	X		

Figure H-3.9. Summary of winter SG HA in Hart Creek pasture 3 in the Loamy 13-16 ARTRV/PSSPS-FEID Ecological Site (2012).

Form H-6	Sage-grouse Habitat Suitability Worksheet –		WINTER	R025XY011ID			
Allotment-Pasture Names:	Hart Creek-Cat Creek	Allotment-Pasture Number:	0532-03	Number of Transects:	2	Subpopulation:	NC NV/ SE OR/ SW ID
Ecological Site ID:	R025XY011ID	Ecological Site Name:	Loamy 13-16 ARTRV/PSSPS-FEID			Home Range Name:	Owyhee Front/Triangle
Site IDs:	Land Cover Type/s:		Area Sampled (ha):	Date:		Associated Leks:	2O196, 2O548, 2O642
0532-3-06S02W10a-2012	ARTRV-JUOC/POSE-SIHY		5	7/23/2012			
0532-3-06S02W14-2012	ARTRV-ARAR/POSE-PSSPS		2	7/26/2012		Site Info:	Mesic

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	X	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	40.0	>10%	X	5-10%		<5%	
Sagebrush Height above Snow 0 cm snow (annual mean) 15 cm snow (annual mean) 30 cm snow (annual mean)	63.3	>25 cm >40 cm >55 cm	X	10-25 cm 25-40 cm 40-55 cm		<10 cm <25 cm <40 cm	

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	X	Suitability	Rationale
Predominant Sagebrush Shape (mode)	Spreading	Suitable	Spreading sagebrush growth form provides adequate concealment cover
Other Shrub Canopy Cover (mean)	7.0	Suitable	Appropriate based on Ecological Site potential
Other Shrub Height (mean)	63.5	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Canopy Cover (mean)	47.0	Suitable	Sagebrush and other shrub CC is providing additional concealment and thermal cover
Sagebrush and Other Shrub Height (mean)	63.6	Suitable	Sagebrush height is providing available forage and effective concealment cover

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	Sage-grouse scat observed at both sites; Sage-grouse spring and winter scat including cecal casts and roost piles noted at 06S02W14
Evidence of recent livestock use?	High cattle utilization noted at 06S02W10a, otherwise unknown-not noted

Rationale for Overall Suitability Rating:	Overall the ESD within the pasture is rated suitable because all primary and supplementary indicators fall within the suitable range. Sagebrush CC and height would provide forage above persistent snow. Sagebrush and other shrub CC provide adequate concealment and thermal cover also. Although JUOC encroachment is occurring in some areas, winter habitat quality is probably not substantially affected because most raptors that would use these trees as perches migrate out of the area during the winter.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability	X		

Figure H-3.10. Summary of breeding SG HA in Box T pasture 1 in the Loamy 13-16 ARTRV/PSSPS-FEID Ecological Site (2012).

Form H-3	Sage-grouse Habitat Suitability Worksheet –	BREEDING	R025XY011ID			
Allotment-Pasture Names:	Box T-Charity Springs	**Allotment-Pasture Number:**	0534-01	**Number of Transects:**	3	**Subpopulation:** NC NV/ SE OR/ SW ID
Ecological Site ID:	R025XY011ID	**Ecological Site Name:**	Loamy 13-16 ARTRV/PSSPS-FEID			**Home Range Name:** Owyhee Front/Triangle
Site IDs:	**Land Cover Type/s:**		**Area Sampled (ha):**	**Date:**		**Associated Leks:** 2O642, 2O557, 2O619
0534-1-06S02W14a-2012	ARTRV/POBU		3	7/17/2012		
0534-1-06S02W23b-2012	ARTRV/POBU-FEID		3	7/17/2012		**Site Info:** Mesic
0534-01-06S02W35c-2012	ARTRV-CHVI-SYOR/SIHY-POBU		5	7/17/2012		

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	χ	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	**24.0**	15-25%	X	5-<15% or >25%		<5%	
Sagebrush Height Mesic Site (mean) Arid Site (mean)	**74.0**	40-80 cm 30-80 cm	X	20-<40 cm or >80 cm 20-<30 cm or >80 cm		<20 cm <20 cm	
Predominant Sagebrush Shape (mode)	**Spreading**	Spreading	X	Mix of Spreading and Columnar		Columnar	
Perennial Grass and Forb Height (mean)	**15.0**	≥18 cm		10-18 cm	X	<10 cm	
Perennial Grass Canopy Cover Mesic Site (mean) Arid Site (mean)	**10.7**	≥15% ≥10%		5-<15% 5-<10%	X	<5% <5%	
Perennial Forb Canopy Cover Mesic Site (mean) Arid Site (mean)	**6.0**	≥10% ≥5%		5-<10% 3-<5%	X	<5% <3%	
Preferred Forb Availability (relative to site potential)	**Abundant**	Preferred forbs are common with several species present	X	Preferred forbs are common but only a few species are present		Preferred forbs are rare	
Number of Preferred Forb Species (*n*)	**14.7**		21 sp. total				

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	χ	Suitability	Rationale
Other Shrub Canopy Cover (mean)	**8.0**	Suitable	Appropriate based on Ecological Site Potential
Other Shrub Height (mean)	**40.0**	Suitable	Appropriate based on Ecological Site Potential
Sagebrush and Other Shrub Canopy Cover (mean)	**32.0**	Suitable	Suitable breeding habitat should be ≤42% total shrub CC
Sagebrush and Other Shrub Height (mean)	**70.3**	Suitable	Suitable breeding habitat should have shrub heights between 40-80 cm
Perennial Grass Height (excluding Poa spp.) (mean)	**15.5**	Marginal	Suitable breeding habitat should have perennial grass height of at least 18 cm
Poa Spp. Canopy Cover (mean)	**27.3**	Marginal	As the dominant herbaceous understory species, indicative of a shift in community composition (State 1.1 to 1.2); higher representation than expected, usually at the expense of deep-rooted, tall-structured perennial species
Annual Grass Canopy Cover (mean)	**3.3**	Suitable	Appropriate based on Ecological Site Potential
Annual Forb Canopy Cover (mean)	**3.3**	Suitable	Appropriate based on Ecological Site Potential
Bare Ground Canopy Cover (relative to site potential) (mean)	**27.3**	Suitable	Appropriate based on Ecological Site Potential

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	unknown-not noted
Evidence of recent livestock use?	unknown-not noted

Rationale for Overall Suitability Rating: Although assessment was not conducted at the appropriate time of year, many of the components necessary for suitable breeding habitat fall within the correct ranges (sagebrush CC, height, growth form, and forb diversity and abundance). Although perennial herbaceous vegetation understory height is in the marginal height range, vigorous, tall, and abundant Poa species are providing additional nesting cover. Juniper encroachment is occurring in the pasture and may be a issue in the future.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability	P		

Figure H-3.11. Summary of breeding SG HA in Box T pasture 1 in the Mountain Ridge 14-18 ARAR8/FEID Ecological Site (2012).

Form H-3	Sage-grouse Habitat Suitability Worksheet –		BREEDING	0534-1-06S02W23c-2012 R025XY042ID			
Date:	7/17/2012	County:	Owyhee	State:	Idaho	Subpopulation:	NC NV/ SE OR/ SW ID
Evaluators:	Evans, Roseman, Schroeder					Home Range Name:	Owyhee Front/Triangle
Legal Description:	T06SR02WS23QNEQQNE		Allotment-Pasture Names:	Box T-Charity Springs		Associated Leks:	2O642, 2O557, 2O619
Land Cover Type:	ARAR/PSSPS					Ecological Site:	Mountain Ridge 14-18 ARAR8/FEID
Number of Transects:	1	Area Sampled (ha):	60			Site Info:	Arid
List UTM Coordinates:							
Starting (NAD83)	537784E	4748961N					
Ending (NAD 83)	537745E	4748930N					

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	χ	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	10.0	15-25%		5-<15% or >25%	X	<5%	
Sagebrush Height Mesic Site (mean) Arid Site (mean)	30.0	40-80 cm 30-80 cm	X	20-<40 cm or >80 cm 20-<30 cm or >80 cm		<20 cm <20 cm	
Predominant Sagebrush Shape (mode)	Spreading	Spreading	X	Mix of Spreading and Columnar		Columnar	
Perennial Grass and Forb Height (mean)	17.7	≥18 cm		10-18 cm	X	<10 cm	
Perennial Grass Canopy Cover Mesic Site (mean) Arid Site (mean)	26.0	≥15% ≥10%	X	5-<15% 5-<10%		<5% <5%	
Perennial Forb Canopy Cover Mesic Site (mean) Arid Site (mean)	10.0	≥10% ≥5%	X	5-<10% 3-<5%		<5% <3%	
Preferred Forb Availability (relative to site potential)	Abundant	Preferred forbs are common with several species present	X	Preferred forbs are common but only a few species are present		Preferred forbs are rare	
Number of Preferred Forb Species (*n*)	11.0		11 sp. total				

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	χ	Suitability	Rationale
Other Shrub Canopy Cover (mean)	4.0	Suitable	Appropriate based on Ecological Site Potential
Other Shrub Height (mean)	38.0	Marginal	Suitable breeding habitat should have shrub heights between 40-80 cm
Sagebrush and Other Shrub Canopy Cover (mean)	14.0	Suitable	Suitable breeding habitat should be ≤42% total shrub CC
Sagebrush and Other Shrub Height (mean)	32.3	Marginal	Suitable breeding habitat should be have shrub heights between 40-80 cm
Perennial Grass Height (excluding Poa spp.) (mean)	19.5	Suitable	Suitable breeding habitat should have perennial grass height of at least 18 cm
Poa Spp. Canopy Cover (mean)	16.0	Suitable	Appropriate based on Ecological Site Potential
Annual Grass Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site Potential
Annual Forb Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site Potential
Bare Ground Canopy Cover (relative to site potential) (mean)	4.0	Suitable	Appropriate based on Ecological Site Potential

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	Unknown-not noted
Evidence of recent livestock use?	Unknown-not noted

Rationale for Overall Suitability Rating: Although assessment was not conducted at the appropriate time of year, many of the components necessary for suitable breeding habitat fall within the correct ranges (sagebrush height, growth form, perennial herbaceous understory vegetation CC, and forb diversity and abundance). Although sagebrush and perennial herbaceous vegetation understory height are at the threshold of suitability, this may be due to small sample size. Nevertheless, heights are adequate for all intents and purposes. However, in combination with sagebrush CC that is lower than adequate, sagebrush nest site opportunities might be somewhat limited. Juniper encroachment is occurring in the pasture and may be an issue in the future.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability	P		

Figure H-3.12. Summary of riparian summer SG HAs and PFC in Box T pasture 1.

Form H-5 Sage-grouse Habitat Suitability Worksheet – **RIPARIAN SUMMER**

Allotment-Pasture Names: Box T-Charity Springs	**Allotment-Pasture Number:**	0534-01	**Number of Sites:**	9	**Subpopulation:** NC NV/ SE OR/ SW ID
					Home Range Name: Owyhee Front/Triangle
Site IDs:	**Assessment Type:**	**Riparian Type:**	**Year Assessed:**		**Associated Leks:** 20619,20196, 20642, 20505
0534-01-06S02W14-2002	SG/PFC	Lentic	2002/2008		
0534-01-Linehan Spring PFC	PFC	Lentic	2008		
0534-01-Roadside Spring PFC	PFC	Lentic	2010		
0534-01-06S02W35b-2002	SG/PFC	Lentic	2002/2010		
0534-01-Unnamed Spring 5341C PFC	PFC	Lentic	2003		
0534-01-Unnamed Spring 5341Z PFC	PFC	Lentic	2003		
Alder Creek PFC 2000	PFC	Lotic	2000		
Charity Spring Tributary PFC 2003	PFC	Lotic	2003		
North Fork Castle Creek PFC 2008	PFC	Lotic	2008		

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	**X**	**Suitable**	✓	**Marginal**	✓	**Unsuitable**	✓
Riparian and Wet Meadow Stability (mode) PFC (n) FAR (n) NF (n)	FAR 1 6 2	Majority of areas are in PFC		Majority of areas are FAR	X	Majority of areas are NF	
Preferred Forb Availability (relative to site potential) Number of Preferred Forb Species (*n*)	S=1 M=6 U=2	Preferred forbs are common with several species present		Preferred forbs are common but only a few species are present	X	Preferred forbs are rare	
Proximity of sagebrush cover (mean)	S=7 M=2	Sagebrush cover is adjacent to brood-rearing areas (<90m)	X	Sagebrush cover is in close proximity to brood-rearing areas (90-275m)		Sagebrush cover is unavailable (>275m)	

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	**Suitability**	**Rationale**
Juniper Density	Marginal	Junipers present at all sites; high density at majority of sites, low density at a few
Soil Saturation Summer/Fall	Suitable	The majority of sites are maintaining sufficiently saturated soils to support succulent vegetation into the summer and fall.
Woody Deciduous Canopy Density	Marginal	The density of the woody deciduous canopy is medium to high at the majority of sites, but ranges to non-existent at a few.
Noxious/Invasive Weeds	Marginal	Noxious weeds are present at the majority of sites

Rationale for Overall Suitability Rating: The majority of indicators fall within the Marginal range. Persistent saturated soils and proximity to sagebrush indicate that the majority of these riparian areas have the ability to support sage-grouse forage and provide protective cover. High juniper cover at most sites, and high aspen and willow cover at a few may be limiting sage-grouse visibility and their ability to detect predators. Noxious and invasive weeds are also a concern.

	Suitable	**Marginal**	**Unsuitable**
Site-Scale Suitability		X	

Figure H-3.13. Summary of upland summer SG HA in Box T pasture 1 in the Loamy 13-16 ARTRV/PSSPS-FEID Ecological Site (2012).

Form H-4	Sage-grouse Habitat Suitability Worksheet –		UPLAND SUMMER	R025XY011ID			
Allotment-Pasture Names	Box T-Charity Springs	Allotment-Pasture Number:	0534-01	Number of Transects:	3	Subpopulation:	NC NV/ SE OR/ SW ID
Ecological Site ID:	R025XY011ID	Ecological Site Name:	Loamy 13-16 ARTRV/PSSPS-FEID			Home Range Name:	Owyhee Front/Triangle
Site IDs:	Land Cover Type/s:		Area Sampled (ha):	Date:		Associated Leks:	2O642, 2O557, 2O619
0534-1-06S02W14a-2012	ARTRV/POBU		3	7/17/2012			
0534-1-06S02W23b-2012	ARTRV/POBU-FEID		3	7/17/2012		Site Info:	Mesic
0534-01-06S02W35c-2012	ARTRV-CHVI-SYOR/SIHY-POBU		5	7/17/2012			

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	χ	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	24.0	10-25%	X	5-<10% or >25%		<5%	
Sagebrush Height (mean)	74.0	40-80 cm	X	20-<40 cm or >80 cm		<20 cm	
Perennial Grass and Forb Canopy Cover (mean)	16.7	≥15%	X	5-15%		<5%	
Preferred Forb Availability (relative to site potential)	Abundant	Preferred forbs are common with several species present	X	Preferred forbs are common but only a few species are present		Preferred forbs are rare	
Number of Preferred Forb Species (*n*)	14.7		21 sp. total				

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	χ	Suitability	Rationale
Predominant Sagebrush Shape (mode)	Spreading	Suitable	Spreading sagebrush growth form provides adequate concealment cover
Perennial Grass and Forb Height (mean)	11.7	Suitable	Although perennial herbaceous vegetation understory height is in the marginal height range, vigorous, tall, and abundant *Poa* species are providing additional concealment cover.
Perennial Grass Canopy Cover (mean)	10.0	Marginal	Lower than expected based on Ecological Site potential
Perennial Forb Canopy Cover (mean)	2.0	Suitable	Belt transect reveals abundant and diverse forb component relative to Ecological Site potential
Other Shrub Canopy Cover (mean)	1.0	Suitable	Appropriate based on Ecological Site potential
Other Shrub Height (mean)	20.5	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Canopy Cover (mean)	30.0	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Height (mean)	63.0	Suitable	Appropriate based on Ecological Site potential
Perennial Grass Height (excluding Poa spp.) (mean)	13.4	Suitable	Although perennial grass height is in the marginal height range, vigorous, tall, and abundant *Poa* species are providing additional concealment cover.
Poa Spp. Canopy Cover (mean)	37.0	Marginal	As a co-dominant understory species, indicative of a shift in community composition (State 1A to 1C, or State 1A to 1F); higher representation than expected, usually at the expense of deep-rooted, tall-structured perennial species
Annual Grass Canopy Cover (mean)	3.0	Suitable	Appropriate based on Ecological Site potential
Annual Forb Canopy Cover (mean)	1.0	Suitable	Appropriate based on Ecological Site potential
Bare Ground Canopy Cover (relative to site potential) (mean)	30.0	Suitable	Appropriate based on Ecological Site potential

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	unknown-not noted
Evidence of recent livestock use?	unknown-not noted

Rationale for Overall Suitability Rating:	Upland summer habitat in the pasture in this ESD is rated as suitable because all of the primary indicators and most of the supplementary indicators fall within the suitable ranges. Forbs are especially diverse and abundant. Marginal perennial understory herbaceous vegetation heights are supplemented by cover provided by tall, vigorous *Poa* species. However, the higher representation of *Poa* species canopy cover is probably occurring at the expense of deep-rooted, tall structured, perennial bunchgrasses that have lower canopy cover representation than expected for the Ecological site.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability	X		

Figure H-3.14. Summary of upland summer SG HA in Box T pasture 1 in the Mountain Ridge 14-18 ARAR8/FEID Ecological Site (2012).

Form H-4	Sage-grouse Habitat Suitability Worksheet –	UPLAND SUMMER	0534-1-06S02W23c-2012	R025XY042ID		
Date:	7/17/2012	**County:**	Owyhee	**State:**	Idaho	**Subpopulation:** NC NV/ SE OR/ SW ID
Evaluators:	Evans, Roseman, Schroeder					**Home Range Name:** Owyhee Front/Triangle
Legal Description:	T06SR02WS23QNEQQNE		**Allotment-Pasture Names:**	Box T-Charity Springs		**Associated Leks:** 2O642, 2O557, 2O619
Land Cover Type:	ARAR/PSSPS					**Ecological Site:** Mountain Ridge 14-18 ARAR8/FEID
Number of Transects:	1	**Area Sampled (ha):**	60			**Site Info:** Arid
List UTM Coordinates:						
Starting (NAD83)	537784E	4748961N				
Ending (NAD 83)	537745E	4748930N				

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	χ	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	**10.0**	10-25%	X	5-<10% or >25%		<5%	
Sagebrush Height (mean)	**30.0**	40-80 cm		20-<40 cm or >80 cm	X	<20 cm	
Perennial Grass and Forb Canopy Cover (mean)	**36.0**	≥15%	X	5-15%		<5%	
Preferred Forb Availability (relative to site potential)	**Abundant**	Preferred forbs are common with several species present	X	Preferred forbs are common but only a few species are present		Preferred forbs are rare	
Number of Preferred Forb Species (*n*)	**11.0**		11 sp. total				

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	χ	Suitability	Rationale
Predominant Sagebrush Shape (mode)	**Spreading**	Suitable	Spreading sagebrush growth form provides adequate concealment cover
Perennial Grass and Forb Height (mean)	**17.7**	Suitable	Perennial herbaceous vegetation understory height is providing adequate concealment cover
Perennial Grass Canopy Cover (mean)	**26.0**	Suitable	Appropriate based on Ecological Site potential
Perennial Forb Canopy Cover (mean)	**10.0**	Suitable	Appropriate based on Ecological Site potential
Other Shrub Canopy Cover (mean)	**4.0**	Suitable	Appropriate based on Ecological Site potential
Other Shrub Height (mean)	**38.0**	Suitable	Other shrub height is providing adequate concealment cover
Sagebrush and Other Shrub Canopy Cover (mean)	**14.0**	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Height (mean)	**32.3**	Suitable	Sagebrush and other shrub height is providing adequate concealment cover
Perennial Grass Height (excluding Poa spp.) (mean)	**19.5**	Suitable	Perennial grass heights are providing adequate concealment cover
Poa Spp. Canopy Cover (mean)	**16.0**	Suitable	Appropriate based on Ecological Site potential
Annual Grass Canopy Cover (mean)	**0.0**	Suitable	Appropriate based on Ecological Site potential
Annual Forb Canopy Cover (mean)	**0.0**	Suitable	Appropriate based on Ecological Site potential
Bare Ground Canopy Cover (relative to site potential) (mean)	**4.0**	Suitable	Appropriate based on Ecological Site potential

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	Unknown-not noted
Evidence of recent livestock use?	Unknown-not noted

Rationale for Overall Suitability Rating:	Upland summer habitat in the pasture in this ecological site is rated as suitable because most of the primary indicators and most of the supplementary indicators fall within the suitable ranges. Forbs are especially diverse and abundant. Marginal sagebrush heights are supplemented by other shrub heights and perennial herbaceous vegetation understory heights which are providing additional and adequate concealment cover.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability	X		

Figure H-3.15. Summary of winter SG HA in Box T pasture 1 in the Loamy 13-16 ARTRV/PSSPS-FEID Ecological Site (2012).

Form H-6	Sage-grouse Habitat Suitability Worksheet –		WINTER	R025XY011ID			
Allotment-Pasture Names:	Box T-Charity Springs	Allotment-Pasture Number:	0534-01	Number of Transects:	3	Subpopulation:	NC NV/ SE OR/ SW ID
Ecological Site ID:	R025XY011ID	Ecological Site Name:	Loamy 13-16 ARTRV/PSSPS-FEID			Home Range Name:	Owyhee Front/Triangle
Site IDs:	Land Cover Type/s:		Area Sampled (ha):	Date:		Associated Leks:	2O642, 2O557, 2O619
0534-1-06S02W14a-2012	ARTRV/POBU		3	7/17/2012			
0534-1-06S02W23b-2012	ARTRV/POBU-FEID		3	7/17/2012		Site Info:	Mesic
0534-01-06S02W35c-2012	ARTRV-CHVI-SYOR/SIHY-POBU		5	7/17/2012			

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	X	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	24.0	>10%	X	5-10%		<5%	
Sagebrush Height above Snow 0 cm snow (annual mean) 15 cm snow (annual mean) 30 cm snow (annual mean)	74.0	>25 cm >40 cm >55 cm	X	10-25 cm 25-40 cm 40-55 cm		<10 cm <25 cm <40 cm	

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	X	Suitability	Rationale
Predominant Sagebrush Shape (mode)	Spreading	Suitable	Spreading sagebrush growth form provides adequate concealment cover
Other Shrub Canopy Cover (mean)	8.0	Suitable	Appropriate based on Ecological Site potential
Other Shrub Height (mean)	40.0	Suitable	Other shrub heights are providing additional concealment and thermal cover
Sagebrush and Other Shrub Canopy Cover (mean)	32.0	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Height (mean)	70.3	Suitable	Sagebrush height is providing available forage, and in combination with other shrub height is providing effective concealment cover

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	unknown-not noted
Evidence of recent livestock use?	unknown-not noted

Rationale for Overall Suitability Rating:	Overall the ecological site within the pasture is rated as suitable winter habitat because the amount (CC) and height of sagebrush would provide forage above persistent snow. Sagebrush and other shrub CC provide adequate concealment and thermal cover also.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability	X		

Figure H-3.16. Summary of winter SG HA in Box T pasture 1 in the Mountain Ridge 14-18 ARAR8/FEID Ecological Site (2012).

Sage-grouse Habitat Suitability Worksheet –		WINTER	0534-1-06S02W23c-2012 R025XY042ID			
7/17/2012	County:	Owyhee	State:	Idaho	Subpopulation:	NC NV/ SE OR/ SW ID
Evans, Roseman, Schroeder					Home Range Name:	Owyhee Front/Triangle
T06SR02WS23QNEQQNE		Allotment-Pasture Names:	Box T-Charity Springs		Associated Leks:	2O642, 2O557, 2O619
ARAR/PSSPS					Ecological Site:	Mountain Ridge 14-18 ARAR8/FEID
1	Area Sampled (ha):	60			Site Info:	Arid
537784E	4748961N					
537745E	4748930N					

Habitat Indicator Suitability Range (Primary)

X	Suitable	✓	Marginal	✓	Unsuitable	✓
10.0	>10%		5-10%	X	<5%	
30.0	>25 cm >40 cm >55 cm		10-25 cm 25-40 cm 40-55 cm		<10 cm <25 cm <40 cm	X

Habitat Indicator Suitability Range (Supplemental)

X	Suitability	Rationale
Spreading	Suitable	Spreading sagebrush growth form provides adequate concealment cover
4.0	Suitable	Appropriate based on Ecological Site potential
38.0	Marginal	Other shrub heights may not be providing sufficient concealment and thermal cover in deep snow ≥30 cm
14.0	Suitable	Appropriate based on Ecological Site potential
32.3	Marginal	Sagebrush and other shrub heights may not be providing sufficient available forage, concealment and thermal cover in deep snow ≥30 cm

mit suitability potential?	YES	NO
	X	

Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
		X				

	Unknown-not noted
??	Unknown-not noted

Rating:	Overall the ecological site within the pasture may be limiting the potential to provide suitable winter habitat. This ecological site is found on mountain ridges above 6000 feet where snow accumulations may far exceed the height of most medium sized shrubs (approx. 60 cm). Nonetheless, based on the indicators this site is rated as marginal winter habitat because sagebrush heights may not be tall enough to emerge from deep snow and provide available forage for sage-grouse. The mountain ridge setting is probably windswept which may prevent deep snow accumulations making sagebrush forage available; however, this may only apply to areas near the top of the ridge leaving areas downslope with much deeper snow especially considering the elevation.

Suitable	Marginal	Unsuitable
	X	

Figure H-3.17. Summary of riparian summer conditions in Box T pasture 4.

Form H-5	Sage-grouse Habitat Suitability Worksheet –	RIPARIAN SUMMER			
Allotment-Pasture Names: Box T-Cow Valley	**Allotment-Pasture Number:**	0534-02	**Number of Sites:**	1	**Subpopulation:** NC NV/ SE OR/ SW ID
					Home Range Name: Owyhee Front/Triangle
Site IDs:	**Assessment Type:**	**Riparian Type:**	**Year Assessed:**		**Associated Leks:** 20619, 20557
0534-02-07S02W04a-2002	SG	Lentic	2002		

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	χ	Suitable	✓	Marginal	✓	Unsuitable	✓
Riparian and Wet Meadow Stability (mode) PFC (n) FAR (n) NF (n)	NA	Majority of areas are in PFC		Majority of areas are FAR		Majority of areas are NF	
Preferred Forb Availability (relative to site potential) Number of Preferred Forb Species (*n*)	S=0 M=1 U=0 8 spp.	Preferred forbs are common with several species present		Preferred forbs are common but only a few species are present	X	Preferred forbs are rare	
Proximity of sagebrush cover (mean)	S=1 M=0 U=0	Sagebrush cover is adjacent to brood-rearing areas (<90m)	X	Sagebrush cover is in close proximity to brood-rearing areas (90-275m)		Sagebrush cover is unavailable (>275m)	

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	Suitability	Rationale
Juniper Density	Suitable	Junipers are absent from the site
Soil Saturation Summer/Fall	Unsuitable	Site is an ephemeral drainage without obligate riparian species and does not support saturated soils to support succulent vegetation into the summer and fall.
Woody Deciduous Canopy Density	Suitable	Woody deciduous canopy is absent
Noxious/Invasive Weeds	Marginal	Noxious weeds are present at the site

Rationale for Overall Suitablity Rating: This assessment was along an intermittent tributary to Meadow Creek. Nearby escape cover was the only indicator within the Suitable range. Indicators limiting habitat quality at the site include xeric species dominant within and adjacent to the drainage and spotty distribution of succulent forbs (although species were diverse [8 spp.] and common where available). Although some erosion and bare ground were evident, the dominance of vegetation cover appears to be providing sufficient site stability. Sage-grouse scat was noted as being observed nearby.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability		X	

Figure H-3.18. Summary of breeding SG HA in Box T pasture 2 in the Shallow Claypan 12-16 ARAR8/FEID Ecological Site (2012).

Form H-3	Sage-grouse Habitat Suitability Worksheet –		BREEDING	0534-02-07S02W04b-2012 R025XY010ID			
Date:	7/25/2012	County:	Owyhee	State:	Idaho	Subpopulation:	NC NV/ SE OR/ SW ID
Evaluators:	Evans, Shroeder					Home Range Name:	Owyhee Front/Triangle
Legal Description:	T07SR02WS04QSWQQNW		Allotment-Pasture Names	Box T-Cow Valley		Associated Leks:	2O619, 2O557
Land Cover Type:	ARAR/FEID					Ecological Site:	Shallow Claypan 12-16 ARAR8/FEID
Number of Transects:	1	Area Sampled (ha):	3			Site Info:	Arid
List UTM Coordinates:							
Starting (NAD83)	533782E	4743471N					
Ending (NAD 83)	533738E	4743450N					

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	X	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	18.0	15-25%	X	5-<15% or >25%		<5%	
Sagebrush Height Mesic Site (mean) Arid Site (mean)	38.9	40-80 cm 30-80 cm	X	20-<40 cm or >80 cm 20-<30 cm or >80 cm		<20 cm <20 cm	
Predominant Sagebrush Shape (mode)	Spreading	Spreading	X	Mix of Spreading and Columnar		Columnar	
Perennial Grass and Forb Height (mean)	7.3	≥18 cm		10-18 cm		<10 cm	X
Perennial Grass Canopy Cover Mesic Site (mean) Arid Site (mean)	34.0	≥15% ≥10%	X	5-<15% 5-<10%		<5% 5%	
Perennial Forb Canopy Cover Mesic Site (mean) Arid Site (mean)	4.0	≥10% ≥5%		5-<10% 3-<5%	X	<5% <3%	
Preferred Forb Availability (relative to site potential)	Common	Preferred forbs are common with several species present	X	Preferred forbs are common but only a few species are present		Preferred forbs are rare	
Number of Preferred Forb Species (*n*)	8.0						

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	X	Suitability	Rationale
Other Shrub Canopy Cover (mean)	16.0	Suitable	Appropriate based on Ecological Site potential
Other Shrub Height (mean)	29.0	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Canopy Cover (mean)	34.0	Suitable	Suitable breeding habitat should be ≤42% total shrub CC; providing additional nesting cover
Sagebrush and Other Shrub Height (mean)	34.2	Suitable	Suitable breeding habitat should have shrub heights between 30-80 cm
Perennial Grass Height (excluding Poa spp.) (mean)	7.7	Unsuitable	Marginal breeding habitat should have perennial grass height of at least 10 cm
Poa Spp. Canopy Cover (mean)	6.0	Suitable	Appropriate based on Ecological Site potential
Annual Grass Canopy Cover (mean)	2.0	Suitable	Appropriate based on Ecological Site potential
Annual Forb Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site potential
Bare Ground Canopy Cover (relative to site potential) (mean)	46.0	Suitable	Appropriate based on Ecological Site potential

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	Abundant scat along transect and in area
Evidence of recent livestock use?	Unknown-not noted

Rationale for Overall Suitability Rating: Although assessment was not conducted at the appropriate time of year, some of the components necessary for suitable breeding habitat fall within the correct ranges (sagebrush CC, height, growth form, and perennial herbaceous CC). Perennial forb species diversity and abundance is adequate. Perennial herbaceous vegetation understory height is in the unsuitable range and is affecting the quality of the site by not providing that component of nesting cover.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability	P		

Figure H-3.19. Summary of upland summer SG HA in Box T pasture 2 in the Shallow Claypan 12-16 ARAR8/FEID Ecological Site (2012).

Form H-4	Sage-grouse Habitat Suitability Worksheet –		UPLAND SUMMER	0534-02-07S02W04b-2012	R025XY010ID		
Date:	7/25/2012	County:	Owyhee	State:	Idaho	Subpopulation:	NC NV/ SE OR/ SW ID
Evaluators:	Evans, Shroeder					Home Range Name:	Owyhee Front/Triangle
Legal Description:	T07SR02WS04QSWQQNW		Allotment-Pasture Names:	Box T-Cow Valley		Associated Leks:	2O619, 2O557
Land Cover Type:	ARAR/FEID					Ecological Site:	Shallow Claypan 12-16 ARAR8/FEID
Number of Transects:	1	Area Sampled (ha):	3			Site Info:	Arid
List UTM Coordinates:							
Starting (NAD83)	533782E	4743471N					
Ending (NAD 83)	533738E	4743450N					

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	x	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	18.0	10-25%	X	5-<10% or >25%		<5%	
Sagebrush Height (mean)	38.9	40-80 cm		20-<40 cm or >80 cm	X	<20 cm	
Perennial Grass and Forb Canopy Cover (mean)	38.0	≥15%	X	5-15%		<5%	
Preferred Forb Availability (relative to site potential)	Common	Preferred forbs are common with several species present	X	Preferred forbs are common but only a few species are present		Preferred forbs are rare	
Number of Preferred Forb Species (*n*)	8.0						

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	x	Suitability	Rationale
Predominant Sagebrush Shape (mode)	Spreading	Suitable	Spreading sagebrush growth form provides adequate concealment cover
Perennial Grass and Forb Height (mean)	7.3	Marginal	Suitable upland summer habitat should have perennial herbaceous vegetation heights of at least 10 cm to provide some concealment cover
Perennial Grass Canopy Cover (mean)	34.0	Suitable	Appropriate based on Ecological Site potential
Perennial Forb Canopy Cover (mean)	4.0	Suitable	Suitable upland summer habitat should have perennial forb CC of at least 10%; belt transect reveals adequate forb diversity and abundant
Other Shrub Canopy Cover (mean)	16.0	Suitable	Appropriate based on Ecological Site potential
Other Shrub Height (mean)	29.0	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Canopy Cover (mean)	34.0	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Height (mean)	34.2	Marginal	Suitable upland summer habitat should have shrub heights of at least 40 cm to provide some concealment cover
Perennial Grass Height (excluding Poa spp.) (mean)	7.7	Marginal	Suitable upland summer habitat should have perennial grass heights of at least 10 cm to provide some concealment cover
Poa Spp. Canopy Cover (mean)	6.0	Suitable	Appropriate based on Ecological Site potential
Annual Grass Canopy Cover (mean)	2.0	Suitable	Appropriate based on Ecological Site potential
Annual Forb Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site potential
Bare Ground Canopy Cover (relative to site potential) (mean)	46.0	Suitable	Appropriate based on Ecological Site potential

Does ecological site potential limit suitability potential?	YES	NO
		x

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			x				

Evidence of sage-grouse use?	Abundant scat along transect and in area
Evidence of recent livestock use?	Unknown-not noted

Rationale for Overall Suitability Rating:	Although sagebrush and perennial herbaceous vegetation CC were suitable, sagebrush and perennial herbaceous vegetation heights may be limiting the ability of sage-grouse to conceal themselves. Nevertheless, forb diversity and abundance are providing available forage and indicators do not reveal a community composition issue.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability	x		

Figure H-3.20. Summary of upland summer SG HA in Box T pasture 2 in an undescribed Ecological Site (2012).

Form H-4	Sage-grouse Habitat Suitability Worksheet –		UPLAND SUMMER	0534-02-07S02W08-2012	Undescribed inclusion		
Date:	7/25/2012	County:	Owyhee	State:	Idaho	Subpopulation:	NC NV/ SE OR/ SW ID
Evaluators:	Schroeder, Evans					Home Range Name:	Owyhee Front/Triangle
Legal Description:	T07SR02WS08QNEQQNE		Allotment-Pasture Names:	Box T-Cow Valley		Associated Leks:	2O619, 2O557
Land Cover Type:	ATCA/SIHY					Ecological Site:	Undescribed inclusion
Number of Transects:	1	Area Sampled (ha):	25			Site Info:	Arid
List UTM Coordinates:							
Starting (NAD83)	533454E	4742807N					
Ending (NAD 83)	533494E	4742775N					

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	χ	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	0.0	10-25%		5-<10% or >25%		<5%	X
Sagebrush Height (mean)	0.0	40-80 cm		20-<40 cm or >80 cm		<20 cm	X
Perennial Grass and Forb Canopy Cover (mean)	8.0	≥15%		5-15%	X	<5%	
Preferred Forb Availability (relative to site potential)	Abundant	Preferred forbs are common with several species present		Preferred forbs are common but only a few species are present	X	Preferred forbs are rare	
Number of Preferred Forb Species (*n*)	6.0						

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	χ	Suitability	Rationale
Predominant Sagebrush Shape (mode)	NA	Unsuitable	Suitable upland summer habitat should have sagebrush species representation
Perennial Grass and Forb Height (mean)	19.3	Suitable	Perennial herbaceous heights are providing adequate concealment cover
Perennial Grass Canopy Cover (mean)	8.0	Suitable	Appropriate based on Ecological Site potential
Perennial Forb Canopy Cover (mean)	0.0	Unsuitable	Suitable upland summer habitat should have at least 10% perennial forb cover
Other Shrub Canopy Cover (mean)	76.0	Unsuitable	Excessive shrub CC may limit grouse ability to detect predators and move within the stand
Other Shrub Height (mean)	50.1	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Canopy Cover (mean)	76.0	Unsuitable	Excessive shrub CC may limit grouse ability to detect predators and move within the stand
Sagebrush and Other Shrub Height (mean)	50.1	Suitable	Appropriate based on Ecological Site potential
Perennial Grass Height (excluding Poa spp.) (mean)	19.3	Suitable	Perennial grass heights are providing adequate concealment cover
Poa Spp. Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site potential
Annual Grass Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site potential
Annual Forb Canopy Cover (mean)	6.0	Suitable	Appropriate based on Ecological Site potential
Bare Ground Canopy Cover (relative to site potential) (mean)	24.0	Suitable	Appropriate based on Ecological Site potential

Does ecological site potential limit suitability potential?	YES	NO
	X	

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist

Evidence of sage-grouse use?	Unknown-not noted
Evidence of recent livestock use?	Unknown-not noted

Rationale for Overall Suitability Rating:	This site was rated as marginal because no primary indicators fell within the suitable range. Although perennial herbaceous CC and forb availability fell within the marginal range, the lack of sagebrush and the excessive shrub CC more than likely limits extensive sage-grouse use of this vegetation community type.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability		X	

Figure H-3.21. Summary of winter SG HA in Box T pasture 2 in the Shallow Claypan 12-16 ARAR8/FEID Ecological Site (2012).

Form H-6	Sage-grouse Habitat Suitability Worksheet –	WINTER	0534-02-07S02W04b-2012	R025XY010ID		
Date:	7/25/2012	County:	Owyhee	State:	Idaho	Subpopulation: NC NV/ SE OR/ SW ID
Evaluators:	Evans, Shroeder					Home Range Name: Owyhee Front/Triangle
Legal Description:	T07SR02WS04QSWQQNW		Allotment-Pasture Names:	Box T-Cow Valley		Associated Leks: 2O619, 2O557
Land Cover Type:	ARAR/FEID					Ecological Site: Shallow Claypan 12-16 ARAR8/FEID
Number of Transects:	1	Area Sampled (ha):	3			Site Info: Arid
List UTM Coordinates:						
Starting (NAD83)	533782E	4743471N				
Ending (NAD 83)	533738E	4743450N				

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	x	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	18.0	>10%	X	5-10%		<5%	
Sagebrush Height above Snow 0 cm snow (annual mean) 15 cm snow (annual mean) 30 cm snow (annual mean)	38.9	>25 cm >40 cm >55 cm		10-25 cm 25-40 cm 40-55 cm	X	<10 cm <25 cm <40 cm	

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	x	Suitability	Rationale
Predominant Sagebrush Shape (mode)	Spreading	Suitable	Spreading sagebrush growth form provides adequate horizontal concealment cover
Other Shrub Canopy Cover (mean)	16.0	Suitable	Appropriate based on Ecological Site potential
Other Shrub Height (mean)	29.0	Marginal	Other shrub heights would not provide sufficient vertical concealment cover under typical snow accumulation for the elevation and area
Sagebrush and Other Shrub Canopy Cover (mean)	34.0	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Height (mean)	34.2	Marginal	Shrub heights would not provide sufficient vertical concealment cover nor available forage under typical snow accumulation for the elevation and area

Does ecological site potential limit suitability potential?	YES	NO
		x

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			x				

Evidence of sage-grouse use?	Abundant scat along transect and in area
Evidence of recent livestock use?	Unknown-not noted

Rationale for Overall Suitability Rating:	Overall the ecological site within the pasture may be limiting the potential to provide suitable winter habitat. The short-statured low sage is probably unavailable where snow accumulations exceed the height of most shrubs. Based on the indicators this site is rated as marginal winter habitat because sagebrush heights may not be tall enough to emerge from deep snow and provide available forage for sage-grouse.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability		x	

Figure H-3.22. Summary of winter SG HA in Box T pasture 2 in an undescribed Ecological Site (2012).

Form H-6	Sage-grouse Habitat Suitability Worksheet –		WINTER	0534-02-07S02W08-2012	Undescribed inclusion		
Date:	7/25/2012	County:	Owyhee	State:	Idaho	Subpopulation:	NC NV/ SE OR/ SW ID
Evaluators:	Schroeder, Evans					Home Range Name:	Owyhee Front/Triangle
Legal Description:	T07SR02WS08QNEQQNE		Allotment-Pasture Names:	Box T-Cow Valley		Associated Leks:	2O619, 2O557
Land Cover Type:	ATCA/SIHY					Ecological Site:	Undescribed inclusion
Number of Transects:	1	Area Sampled (ha):	25			Site Info:	Arid
List UTM Coordinates:							
Starting (NAD83)	533454E	4742807N					
Ending (NAD 83)	533494E	4742775N					

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	χ	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	0.0	>10%		5-10%		<5%	X
Sagebrush Height above Snow 0 cm snow (annual mean) 15 cm snow (annual mean) 30 cm snow (annual mean)	0.0	>25 cm >40 cm >55 cm		10-25 cm 25-40 cm 40-55 cm		<10 cm <25 cm <40 cm	X

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	χ	Suitability	Rationale
Predominant Sagebrush Shape (mode)	NA	Unsuitable	Suitable winter habitat should have sagebrush species representation
Other Shrub Canopy Cover (mean)	76.0	Marginal	Other shrub CC may be providing concealment and thermal cover
Other Shrub Height (mean)	50.1	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Canopy Cover (mean)	76.0	Marginal	Shrub CC may be providing concealment and thermal cover; absence of sagebrush makes forage unavailable
Sagebrush and Other Shrub Height (mean)	50.1	Suitable	Appropriate based on Ecological Site potential

Does ecological site potential limit suitability potential?	YES	NO
	X	

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	Unknown-not noted
Evidence of recent livestock use?	Unknown-not noted

Rationale for Overall Suitability Rating:	Overall this vegetation community may be limiting the potential to provide suitable winter habitat. Although ATCA would provide concealment and thermal cover, critical winter forage would be absent within these stands without sagebrush present. It is important to note that this undescribed ecological site is restricted in extent to one locale within the allotment and is only indicative of highly localized conditions.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability			X

Figure H-3.23. Summary of breeding SG HA in Box T pasture 3 in the Loamy 13-16 ARTRV/PSSPS-FEID Ecological Site (2012).

Form H-3	Sage-grouse Habitat Suitability Worksheet –		BREEDING	0534-3-07S02W06-2012 R025XY011ID			
Date:	7/26/2012	County:	Owyhee	State:	Idaho	Subpopulation:	NC NV/ SE OR/ SW ID
Evaluators:	Schroeder, Evans					Home Range Name:	Owyhee Front/Triangle
Legal Description:	T07SR02WS06QSWQQNE		Allotment-Pasture Names:	Box T-Riparian		Associated Leks:	2O619, 2O557
Land Cover Type:	ARTRV/PSSPS-FEID					Ecological Site:	R025XY011ID
Number of Transects:	1	Area Sampled (ha):	25			Site Info:	Mesic
List UTM Coordinates:							
Starting (NAD83)	530868E	4743515N					
Ending (NAD 83)	530914E	4743492N					

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	χ	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	22.0	15-25%	X	5-<15% or >25%		<5%	
Sagebrush Height Mesic Site (mean) Arid Site (mean)	66.5	40-80 cm 30-80 cm	X	20-<40 cm or >80 cm 20-<30 cm or >80 cm		<20 cm <20 cm	
Predominant Sagebrush Shape (mode)	Mixed	Spreading		Mix of Spreading and Columnar	X	Columnar	
Perennial Grass and Forb Height (mean)	11.7	≥18 cm		10-18 cm	X	<10 cm	
Perennial Grass Canopy Cover Mesic Site (mean) Arid Site (mean)	10.0	≥15% ≥10%		5-<15% 5-<10%	X	<5% <5%	
Perennial Forb Canopy Cover Mesic Site (mean) Arid Site (mean)	12.0	≥10% ≥5%	X	5-<10% 3-<5%		<5% <3%	
Preferred Forb Availability (relative to site potential)	Abundant	Preferred forbs are common with several species present	X	Preferred forbs are common but only a few species are present		Preferred forbs are rare	
Number of Preferred Forb Species (*n*)	12.0						

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	χ	Suitability	Rationale
Other Shrub Canopy Cover (mean)	16.0	Suitable	Appropriate based on Ecological Site Potential
Other Shrub Height (mean)	36.6	Suitable	Appropriate based on Ecological Site Potential
Sagebrush and Other Shrub Canopy Cover (mean)	38.0	Suitable	Suitable breeding habitat should be ≤42% total shrub CC
Sagebrush and Other Shrub Height (mean)	53.9	Suitable	Suitable breeding habitat should have shrub heights between 40-80cm
Perennial Grass Height (excluding Poa spp.) (mean)	15.4	Marginal	Suitable breeding habitat should have perennial grass height of at least 18 cm
Poa Spp. Canopy Cover (mean)	4.0	Suitable	Appropriate based on Ecological Site Potential
Annual Grass Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site Potential
Annual Forb Canopy Cover (mean)	4.0	Suitable	Appropriate based on Ecological Site Potential
Bare Ground Canopy Cover (relative to site potential) (mean)	10.0	Marginal	Higher representation than expected at HCPC reference conditions; however, more than likely not limiting use by sage-grouse

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	Unknown-not noted
Evidence of recent livestock use?	Unknown-not noted

Rationale for Overall Suitability Rating: Although assessment was not conducted at the appropriate time of year, many of the components necessary for suitable breeding habitat fall within the correct ranges (sagebrush CC and height, perennial herbaceous vegetation CC, forb diversity and abundance) and the ecological site would provisionally be rated suitable. Some issues may arise due to the mixed spreading/columnar sagebrush form and the marginal perennial herbaceous vegetation heights, and perennial grass CC which in combination may be limiting nesting cover. Forb diversity and abundance is expected to be similar during the breeding season especially considering that more moisture will be available. Considering how close the transect is to several disturbance features (road and livestock resting area), herbaceous vegetation heights seem to be faring well. Bitterbrush and rabbitbrush are additional major shrub species in the area.

Site-Scale Suitability	Suitable	Marginal	Unsuitable
	P		

Figure H-3.24. Summary of breeding SG HA in Box T pasture 3 in the Shallow Claypan 12-16 ARAR8/FEID Ecological Site (2012).

Form H-3	Sage-grouse Habitat Suitability Worksheet –		BREEDING	0534-03-07S02W07b-2012 R025XY010ID			
Date:	7/26/2012	County:	Owyhee	State:	Idaho	Subpopulation:	NC NV/ SE OR/ SW ID
Evaluators:	EVANS,SCHROEDER					Home Range Name:	Owyhee Front/Triangle
Legal Description:	T07SR02WS07QSWQQNW		Allotment-Pasture Names:	Box T-Riparian		Associated Leks:	2O619, 2O557
Land Cover Type:	ARAR/FEID					Ecological Site:	R025XY010ID
Number of Transects:	1	Area Sampled (ha):	2			Site Info:	Arid
List UTM Coordinates:							
Starting (NAD83)	530646E	4742028N					
Ending (NAD 83)	530625E	4741979N					

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	χ	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	16.0	15-25%	X	5-<15% or >25%		<5%	
Sagebrush Height Mesic Site (mean) Arid Site (mean)	36.5	40-80 cm 30-80 cm	X	20-<40 cm or >80 cm 20-<30 cm or >80 cm		<20 cm <20 cm	
Predominant Sagebrush Shape (mode)	Spreading	Spreading	X	Mix of Spreading and Columnar		Columnar	
Perennial Grass and Forb Height (mean)	13.5	≥18 cm		10-18 cm	X	<10 cm	
Perennial Grass Canopy Cover Mesic Site (mean) Arid Site (mean)	10.0	≥15% ≥10%	X	5-<15% 5-<10%		<5% <5%	
Perennial Forb Canopy Cover Mesic Site (mean) Arid Site (mean)	6.0	≥10% ≥5%	X	5-<10% 3-<5%		<5% <3%	
Preferred Forb Availability (relative to site potential)	Abundant	Preferred forbs are common with several species present	X	Preferred forbs are common but only a few species are present		Preferred forbs are rare	
Number of Preferred Forb Species (*n*)	7.0						

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	χ	Suitability	Rationale
Other Shrub Canopy Cover (mean)	18.0	Suitable	Appropriate based on Ecological Site potential
Other Shrub Height (mean)	16.0	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Canopy Cover (mean)	34.0	Suitable	Suitable breeding habitat should be ≤42% total shrub CC; providing additional nesting cover
Sagebrush and Other Shrub Height (mean)	25.6	Suitable	Suitable breeding habitat should have shrub heights between 30-80 cm; however, because sagebrush falls within the suitable range, total shrub height should not be limiting sage-grouse use
Perennial Grass Height (excluding Poa spp.) (mean)	20.4	Suitable	Suitable breeding habitat should have perennial grass height of at least 18 cm
Poa Spp. Canopy Cover (mean)	4.0	Suitable	Appropriate based on Ecological Site potential
Annual Grass Canopy Cover (mean)	4.0	Suitable	Appropriate based on Ecological Site potential
Annual Forb Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site potential
Bare Ground Canopy Cover (relative to site potential) (mean)	38.0	Suitable	Appropriate based on Ecological Site potential

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	Unknown-not noted
Evidence of recent livestock use?	Unknown-not noted

Rationale for Overall Suitability Rating:

Although assessment was not conducted at the appropriate time of year, most of the components necessary for suitable breeding habitat fall within the correct ranges (sagebrush CC, height, growth form, perennial herbaceous CC, forb diversity and abundance) and the ecological site would provisionally be rated suitable. Perennial herbaceous vegetation height was in the marginal range due to the inclusion of short-statured *Phlox*, however, perennial bunchgrasses are providing suitable nesting cover. The presence of the noxious week Ranunculus testiculatus, although scarce currently, could be an issue in the future should it expand.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability	P		

Figure H-3.25. Summary of upland summer SG HA in Box T pasture 3 in the Loamy 13-16 ARTRV/PSSPS-FEID Ecological Site (2012).

Form H-4	Sage-grouse Habitat Suitability Worksheet –		UPLAND SUMMER	0534-3-07S02W06-2012 R025XY011ID			
Date:	7/26/2012	County:	Owyhee	State:	Idaho	Subpopulation:	NC NV/ SE OR/ SW ID
Evaluators:	Schroeder, Evans					Home Range Name:	Owyhee Front/Triangle
Legal Description:	T07SR02WS06QSWQQNE		Allotment-Pasture Names:	Box T-Riparian		Associated Leks:	2O619, 2O557
Land Cover Type:	ARTRV/PSSPS-FEID					Ecological Site:	R025XY011ID
Number of Transects:	1	Area Sampled (ha):	25			Site Info:	Mesic
List UTM Coordinates:							
Starting (NAD83)	530868E	4743515N					
Ending (NAD 83)	530914E	4743492N					

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	χ	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	22.0	10-25%	X	5-<10% or >25%		<5%	
Sagebrush Height (mean)	66.5	40-80 cm	X	20-<40 cm or >80 cm		<20 cm	
Perennial Grass and Forb Canopy Cover (mean)	22.0	≥15%	X	5-15%		<5%	
Preferred Forb Availability (relative to site potential)	Abundant	Preferred forbs are common with several species present	X	Preferred forbs are common but only a few species are present		Preferred forbs are rare	
Number of Preferred Forb Species (*n*)	12.0						

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	χ	Suitability	Rationale
Predominant Sagebrush Shape (mode)	Mixed	Suitable	Although the predominant growth form is mixed, spreading growth form is close in abundance so horizontal concealment cover is not compromised
Perennial Grass and Forb Height (mean)	11.7	Suitable	Perennial grass and forbs are providing adequate horizontal concealment cover
Perennial Grass Canopy Cover (mean)	10.0	Marginal	Lower than expected based on Ecological Site potential
Perennial Forb Canopy Cover (mean)	12.0	Suitable	Belt transect reveals abundant and diverse forb component relative to Ecological Site potential
Other Shrub Canopy Cover (mean)	16.0	Suitable	Appropriate base on Ecological Site potential
Other Shrub Height (mean)	36.6	Suitable	Appropriate base on Ecological Site potential
Sagebrush and Other Shrub Canopy Cover (mean)	38.0	Suitable	Appropriate base on Ecological Site potential
Sagebrush and Other Shrub Height (mean)	53.9	Suitable	Appropriate base on Ecological Site potential
Perennial Grass Height (excluding Poa spp.) (mean)	15.4	Suitable	Perennial grasses are providing adequate horizontal concealment cover
Poa Spp. Canopy Cover (mean)	4.0	Suitable	Appropriate base on Ecological Site potential
Annual Grass Canopy Cover (mean)	0.0	Suitable	Appropriate base on Ecological Site potential
Annual Forb Canopy Cover (mean)	4.0	Suitable	Appropriate base on Ecological Site potential
Bare Ground Canopy Cover (relative to site potential) (mean)	10.0	Marginal	Higher representation than expected at HCPC reference conditions; however, more than likely not limiting use by sage-grouse

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	Unknown-not noted
Evidence of recent livestock use?	Unknown-not noted

Rationale for Overall Suitability Rating:	Upland summer habitat in the pasture in this ecological site is rated as suitable because all of the primary indicators and most of the supplementary indicators fall within the suitable ranges. Forbs are adequately diverse and abundant. Marginal perennial grass CC is lower than expected at HCPC reference conditions which might be indicative of some community health issues but is not limiting sage-grouse use or compromising concealment cover.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability	X		

Figure H-3.26. Summary of upland summer SG HA in Box T pasture 3 in the Shallow Claypan 12-16 ARAR8/FEID Ecological Site (2012).

Form H-4	Sage-grouse Habitat Suitability Worksheet –		UPLAND SUMMER	0534-03-07S02W07b-2012	R025XY010ID		
Date:	7/26/2012	County:	Owyhee	State:	Idaho	Subpopulation:	NC NV/ SE OR/ SW ID
Evaluators:	EVANS,SCHROEDER					Home Range Name:	Owyhee Front/Triangle
Legal Description:	T07SR02WS07QSWQQNW		Allotment-Pasture Names:	Box T-Riparian		Associated Leks:	2O619, 2O557
Land Cover Type:	ARAR/FEID					Ecological Site:	R025XY010ID
Number of Transects:	1	Area Sampled (ha):	2			Site Info:	Arid
List UTM Coordinates:							
Starting (NAD83)	530646E	4742028N					
Ending (NAD 83)	530625E	4741979N					

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	χ	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	16.0	10-25%	X	5-<10% or >25%		<5%	
Sagebrush Height (mean)	36.5	40-80 cm		20-<40 cm or >80 cm	X	<20 cm	
Perennial Grass and Forb Canopy Cover (mean)	16.0	≥15%	X	5-15%		<5%	
Preferred Forb Availability (relative to site potential)	Abundant	Preferred forbs are common with several species present	X	Preferred forbs are common but only a few species are present		Preferred forbs are rare	
Number of Preferred Forb Species (*n*)	7.0						

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	χ	Suitability	Rationale
Predominant Sagebrush Shape (mode)	Spreading	Suitable	Spreading sagebrush growth form provides adequate concealment cover
Perennial Grass and Forb Height (mean)	13.5	Suitable	Suitable upland summer habitat should have perennial herbaceous vegetation heights of at least 10 cm to provide some concealment cover
Perennial Grass Canopy Cover (mean)	10.0	Suitable	Appropriate based on Ecological Site potential
Perennial Forb Canopy Cover (mean)	6.0	Suitable	Suitable upland summer habitat should have perennial forb CC of at least 5%
Other Shrub Canopy Cover (mean)	18.0	Suitable	Appropriate based on Ecological Site potential
Other Shrub Height (mean)	16.0	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Canopy Cover (mean)	34.0	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Height (mean)	25.6	Marginal	Suitable upland summer habitat should have shrub heights of at least 40 cm to provide some concealment cover
Perennial Grass Height (excluding Poa spp.) (mean)	20.4	Suitable	Suitable upland summer habitat should have perennial grass heights of at least 10 cm to provide some concealment cover
Poa Spp. Canopy Cover (mean)	4.0	Suitable	Appropriate based on Ecological Site potential
Annual Grass Canopy Cover (mean)	4.0	Suitable	Appropriate based on Ecological Site potential
Annual Forb Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site potential
Bare Ground Canopy Cover (relative to site potential) (mean)	38.0	Suitable	Appropriate based on Ecological Site potential

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	Unknown-not noted
Evidence of recent livestock use?	Unknown-not noted

Rationale for Overall Suitability Rating:	Although sagebrush CC and perennial herbaceous vegetation understory heights were suitable, sagebrush heights may be limiting the ability of sage-grouse to conceal themselves. However, because forbs were relatively diverse and abundant, and perennial grasses are providing additional and adequate concealment cover, the site is rated suitable. Although not consistent across the landscape, in this setting the ecological site does not appear to be limiting the potential to provide adequate sagebrush concealment cover.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability	X		

Figure H-3.27. Summary of winter SG HA in Box T pasture 3 in the Loamy 13-16 ARTRV/PSSPS-FEID Ecological Site (2012).

Form H-6	Sage-grouse Habitat Suitability Worksheet –		WINTER	0534-3-07S02W06-2012 R025XY011ID			
Date:	7/26/2012	County:	Owyhee	State:	Idaho	Subpopulation:	NC NV/ SE OR/ SW ID
Evaluators:	Schroeder, Evans					Home Range Name:	Owyhee Front/Triangle
Legal Description:	T07SR02WS06QSWQQNE		Allotment-Pasture Names:	Box T-Riparian		Associated Leks:	2O619, 2O557
Land Cover Type:	ARTRV/PSSPS-FEID					Ecological Site:	R025XY011ID
Number of Transects:	1	Area Sampled (ha):	25			Site Info:	Mesic
List UTM Coordinates:							
Starting (NAD83)	530868E	4743515N					
Ending (NAD 83)	530914E	4743492N					

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	χ	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	22.0	>10%	X	5-10%		<5%	
Sagebrush Height above Snow 0 cm snow (annual mean) 15 cm snow (annual mean) 30 cm snow (annual mean)	66.5	>25 cm >40 cm >55 cm	X	10-25 cm 25-40 cm 40-55 cm		<10 cm <25 cm <40 cm	

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	χ	Suitability	Rationale
Predominant Sagebrush Shape (mode)	Mixed	Suitable	Although the predominant growth form is mixed, spreading growth form is close in abundance so horizontal concealment cover is not compromised
Other Shrub Canopy Cover (mean)	16.0	Suitable	Appropriate based on Ecological Site potential
Other Shrub Height (mean)	36.6	Suitable	Other shrub heights are providing additional concealment and thermal cover
Sagebrush and Other Shrub Canopy Cover (mean)	38.0	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Height (mean)	53.9	Suitable	Sagebrush height is providing available forage, and in combination with other shrub height is providing effective concealment and thermal cover

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	Unknown-not noted
Evidence of recent livestock use?	Unknown-not noted

Rationale for Overall Suitability Rating:	Overall the ecological site within the pasture is rated as suitable winter habitat because the amount (CC) and height of sagebrush would provide forage above persistent snow. Sagebrush and other shrub CC provide adequate concealment and thermal cover also.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability	X		

Figure H-3.28. Summary of winter SG HA in Box T pasture 3 in the Shallow Claypan 12-16 ARAR8/FEID Ecological Site (2012).

Form H-6	Sage-grouse Habitat Suitability Worksheet –		WINTER	0534-03-07S02W07b-2012	R025XY010ID		
Date:	7/26/2012	County:	Owyhee	State:	Idaho	Subpopulation:	NC NV/ SE OR/ SW ID
Evaluators:	EVANS,SCHROEDER					Home Range Name:	Owyhee Front/Triangle
Legal Description:	T07SR02WS07QSWQQNW		Allotment-Pasture Names:	Box T-Riparian		Associated Leks:	2O619, 2O557
Land Cover Type:	ARAR/FEID					Ecological Site:	R025XY010ID
Number of Transects:	1	Area Sampled (ha):	2			Site Info:	Arid
List UTM Coordinates:							
Starting (NAD83)	530646E	4742028N					
Ending (NAD 83)	530625E	4741979N					

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	X	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	16.0	>10%	X	5-10%		<5%	
Sagebrush Height above Snow 0 cm snow (annual mean) 15 cm snow (annual mean) 30 cm snow (annual mean)	36.5	>25 cm >40 cm >55 cm		10-25 cm 25-40 cm 40-55 cm	X	<10 cm <25 cm <40 cm	

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	X	Suitability	Rationale
Predominant Sagebrush Shape (mode)	Spreading	Suitable	Spreading sagebrush growth form provides adequate horizontal concealment cover
Other Shrub Canopy Cover (mean)	18.0	Suitable	Appropriate based on Ecological Site potential
Other Shrub Height (mean)	16.0	Marginal	Other shrub heights are providing marginal vertical concealment cover under typical snow accumulation for the elevation and area
Sagebrush and Other Shrub Canopy Cover (mean)	34.0	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Height (mean)	25.6	Marginal	Shrub heights are providing marginal vertical concealment cover and available forage under typical snow accumulation for the elevation and area

Does ecological site potential limit suitability potential?	YES	NO
	X	

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	Unknown-not noted
Evidence of recent livestock use?	Unknown-not noted

Rationale for Overall Suitability Rating:	Overall the ecological site within the pasture may be limiting the potential to provide suitable winter habitat. The short-statured low sage at times may be unavailable where snow accumulations exceed the height of most shrubs. Based on the indicators this site is rated as marginal winter habitat because sagebrush heights may not be tall enough to emerge from deep snow and provide available forage for sage-grouse. The site also does not appear to be on a windswept ridge (i.e., less snow accumulation) either, which also is maintaining the unavailability of forage.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability		X	

Figure H-3.29. Summary of breeding SG HA in Alder Creek FFR in the South Slope Granitic 12-16 ARTRV/PSSPS-ACTH7 Ecological Site (2012).

Form H-3	Sage-grouse Habitat Suitability Worksheet –	BREEDING	R025XY027ID			
Allotment-Pasture Names:	Alder Creek FFR-01	**Allotment-Pasture Number:**	0639-01	**Number of Transects:**	2	**Subpopulation:** NC NV/ SE OR/ SW ID
Ecological Site ID:	R025XY027ID	**Ecological Site Name:**	South Slope Granitic 12-16 ARTRV/PSSPS-ACTH7			**Home Range Name:** Owyhee Front
Site IDs:	**Land Cover Type/s:**	**Area Sampled (ha):**	**Date:**			**Associated Leks:** 2O642
0639-01-06S01W18a-2012	ARTRV-PUTR-JUOC/BRTE-POSE	10	9/26/2012			
0639-01-06S01W18b-2012	ARTRV/BRTE-POSE	15	9/26/2012			**Site Info:** Mesic

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	χ	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	**52.0**	15-25%		5-<15% or >25%	X	<5%	
Sagebrush Height Mesic Site (mean) Arid Site (mean)	**113.1**	40-80 cm 30-80 cm		20-<40 cm or >80 cm 20-<30 cm or >80 cm	X	<20 cm <20 cm	
Predominant Sagebrush Shape (mode)	**Mixed**	Spreading		Mix of Spreading and Columnar	X	Columnar	
Perennial Grass and Forb Height (mean)	**23.9**	≥18 cm	X	10-18 cm		<10 cm	
Perennial Grass Canopy Cover Mesic Site (mean) Arid Site (mean)	**0.0**	≥15% ≥10%		5-<15% 5-<10%		<5% <5%	X
Perennial Forb Canopy Cover Mesic Site (mean) Arid Site (mean)	**7.0**	≥10% ≥5%		5-<10% 3-<5%	X	<5% <3%	
Preferred Forb Availability (relative to site potential)	**Sparse**	Preferred forbs are common with several species present		Preferred forbs are common but only a few species are present		Preferred forbs are rare	X
Number of Preferred Forb Species (*n*)	**2.5**						5 sp. total

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	χ	Suitability	Rationale
Other Shrub Canopy Cover (mean)	**5.0**	Suitable	Appropriate based on Ecological Site Potential
Other Shrub Height (mean)	**82.0**	Suitable	Appropriate based on Ecological Site Potential
Sagebrush and Other Shrub Canopy Cover (mean)	**57.0**	Marginal	Higher representation than expected at HCPC reference conditions due to excessive representation of big sagebrush
Sagebrush and Other Shrub Height (mean)	**118.4**	Marginal	Nearly 30% taller than suitable habitat range; although accounting for taller PUTR and it's contribution, habitat quality is affected by ARTRV height contribution
Perennial Grass Height (excluding Poa spp.) (mean)	**0.0**	Unsuitable	Suitable breeding habitat should have perennial grass representation
Poa Spp. Canopy Cover (mean)	**31.0**	Marginal	As a co-dominant understory species, indicative of a shift in community composition (State 1A to 1C); higher representation than expected, usually at the expense of deep-rooted, tall-structured perennial species
Annual Grass Canopy Cover (mean)	**52.0**	Unsuitable	Exceedingly high BRTE cover indicative of invasive weed issue; increased risk of wildfire and irreversible potential community State shift
Annual Forb Canopy Cover (mean)	**0.0**	Suitable	Appropriate based on Ecological Site Potential
Bare Ground Canopy Cover (relative to site potential) (mean)	**7.0**	Marginal	Lower than expected based on Ecological Site potential; possibly indicative of fine fuel (litter) build-up due to BRTE

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	unknown-not noted
Evidence of recent livestock use?	unknown-not noted

Rationale for Overall Suitability Rating: Although assessment was not conducted at the appropriate time of year, many of the components necessary for suitable breeding habitat probably would not fall within the correct ranges (excessive sagebrush CC, absence of perennial grass understory cover, excessive BRTE) even if assessment were conducted in the proper season. The total absence of deep-rooted, tall-structured perennial grass cover is also a major issue in regards to nesting cover and, with the excessive BRTE cover, community composition and health. BRTE cover ranged from 42-62%. Perennial herbaceous understory cover was only present at one site and composed of one species (*Lupinus* sp.) which is not a preferred forage species. Although it's not certain what forage forb diversity and abundance would be in the spring based on these surveys, most other components appear to be providing unsuitable breeding habitat conditions.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability			P

Figure H-3.30. Summary of upland summer SG HA in Alder Creek FFR in the South Slope Granitic 12-16 ARTRV/PSSPS-ACTH7 Ecological Site (2012).

Form H-4	Sage-grouse Habitat Suitability Worksheet –	UPLAND SUMMER	R025XY027ID			
Allotment-Pasture Names	Alder Creek FFR-01	Allotment-Pasture Number:	0639-01	Number of Transects:	2	Subpopulation: NC NV/ SE OR/ SW ID
Ecological Site ID:	R025XY027ID	Ecological Site Name:	South Slope Granitic 12-16 ARTRV/PSSPS-ACTH7			Home Range Name: Owyhee Front
Site IDs:	Land Cover Type/s:		Area Sampled (ha):	Date:		Associated Leks: 2O642
0639-01-06S01W18a-2012	ARTRV-PUTR-JUOC/BRTE-POSE		10	9/26/2012		
0639-01-06S01W18b-2012	ARTRV/BRTE-POSE		15	9/26/2012		Site Info: Mesic

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	X	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	52.0	10-25%		5-<10% or >25%	X	<5%	
Sagebrush Height (mean)	113.1	40-80 cm		20-<40 cm or >80 cm	X	<20 cm	
Perennial Grass and Forb Canopy Cover (mean)	7.0	≥15%		5-15%	X	<5%	
Preferred Forb Availability (relative to site potential)	Sparse	Preferred forbs are common with several species present		Preferred forbs are common but only a few species are present		Preferred forbs are rare	X
Number of Preferred Forb Species (*n*)	2.5						5 sp. total

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	X	Suitability	Rationale
Predominant Sagebrush Shape (mode)	Mixed	Marginal	Mix of sagebrush growth form in the absence or lack of herbaceous understory cover may not be providing adequate concealment cover
Perennial Grass and Forb Height (mean)	23.9	Marginal	Although on average adequate, understory concealment cover due to these components is an issue as it is entirely absent at one site, and only provided by perennial forbs at the other site
Perennial Grass Canopy Cover (mean)	0.0	Unsuitable	Suitable upland summer habitat should have perennial grass representation
Perennial Forb Canopy Cover (mean)	7.0	Marginal	Suitable upland summer habitat should have abundant and diverse forb representation
Other Shrub Canopy Cover (mean)	5.0	Suitable	Appropriate based on Ecological Site potential
Other Shrub Height (mean)	82.0	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Canopy Cover (mean)	57.0	Marginal	Higher representation than expected at HCPC reference conditions due to excessive representation of big sagebrush
Sagebrush and Other Shrub Height (mean)	118.4	Marginal	Nearly 30% taller than suitable habitat range; although accounting for taller PUTR and it's contribution, habitat quality is affected by ARTRV height contribution
Perennial Grass Height (excluding Poa spp.) (mean)	0.0	Unsuitable	Suitable upland summer habitat should have perennial grass representation
Poa Spp. Canopy Cover (mean)	31.0	Marginal	As a co-dominant understory species, indicative of a shift in community composition (State 1A to 1C); higher representation than expected, usually at the expense of deep-rooted, tall-structured perennial species
Annual Grass Canopy Cover (mean)	52.0	Unsuitable	Exceedingly high BRTE cover indicative of invasive weed issue; increased risk of wildfire and irreversible potential community State shift
Annual Forb Canopy Cover (mean)	0.0	Suitable	Appropriate based on Ecological Site potential
Bare Ground Canopy Cover (relative to site potential) (mean)	7.0	Marginal	Lower than expected based on Ecological Site potential; possibly indicative of fine fuel (litter) build-up due to BRTE

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	unknown-not noted
Evidence of recent livestock use?	unknown-not noted

Rationale for Overall Suitability Rating: This ecological site is on the lower end of the marginal rating. Although most of the primary indicators are within the marginal ranges, few forbs are present for forage overall and are providing understory concealment cover only at one site indicating issues with potential predator detection due to excessive sagebrush height and mediocre form. The total absence of deep-rooted, tall-structured perennial grass cover is also a major issue in regards to concealment cover and, with the excessive BRTE cover, community composition and health. Excessive BRTE cover may be inhibiting movement through the understory in addition to depressing ability to detect predators as well as potentially increasing predators ability to detect grouse.

	Suitable	Marginal	Unsuitable
Site-Scale Suitability		X	

Figure H-3.31. Summary of winter SG HA in Alder Creek FFR in the South Slope Granitic 12-16 ARTRV/PSSPS-ACTH7 Ecological Site (2012).

Form H-6	Sage-grouse Habitat Suitability Worksheet –		WINTER	R025XY027ID		
Allotment-Pasture Names:	Alder Creek FFR-01	**Allotment-Pasture Number:**	0639-01	**Number of Transects:**	2	**Subpopulation:** NC NV/ SE OR/ SW ID
Ecological Site ID:	R025XY027ID	**Ecological Site Name:**	South Slope Granitic 12-16 ARTRV/PSSPS-ACTH7			**Home Range Name:** Owyhee Front
Site IDs:	**Land Cover Type/s:**		**Area Sampled (ha):**	**Date:**		**Associated Leks:** 2O642
0639-01-06S01W18a-2012	ARTRV-PUTR-JUOC/BRTE-POSE		10	9/26/2012		
0639-01-06S01W18b-2012	ARTRV/BRTE-POSE		15	9/26/2012		**Site Info:** Mesic

Habitat Indicator Suitability Range (Primary)

Habitat Indicator	χ	Suitable	✓	Marginal	✓	Unsuitable	✓
Sagebrush Canopy Cover (mean)	52.0	>10%	X	5-10%		<5%	
Sagebrush Height above Snow 0 cm snow (annual mean) 15 cm snow (annual mean) 30 cm snow (annual mean)	113.1	>25 cm >40 cm >55 cm	X	10-25 cm 15-40 cm 40-55 cm		<10 cm <15 cm <40 cm	

Habitat Indicator Suitability Range (Supplemental)

Habitat Indicator	χ	Suitability	Rationale
Predominant Sagebrush Shape (mode)	Mixed	Suitable	Mix of sagebrush forms is not a limiting factor as availability of forage is more important and excessive sagebrush and other shrub CC probably is providing effective concealment cover
Other Shrub Canopy Cover (mean)	5.0	Suitable	Appropriate based on Ecological Site potential
Other Shrub Height (mean)	82.0	Suitable	Appropriate based on Ecological Site potential
Sagebrush and Other Shrub Canopy Cover (mean)	57.0	Suitable	Excessive sagebrush CC is proving available forage, and in combination with other shrub CC is providing effective concealment cover
Sagebrush and Other Shrub Height (mean)	118.4	Suitable	Excessive sagebrush height is proving available forage, and in combination with other shrub height is providing effective concealment cover

Does ecological site potential limit suitability potential?	YES	NO
		X

Drought Condition:	Extreme Drought	Severe Drought	Moderate Drought	Mid-Range	Moderately Moist	Very Moist	Extremely Moist
			X				

Evidence of sage-grouse use?	unknown-not noted
Evidence of recent livestock use?	unknown-not noted

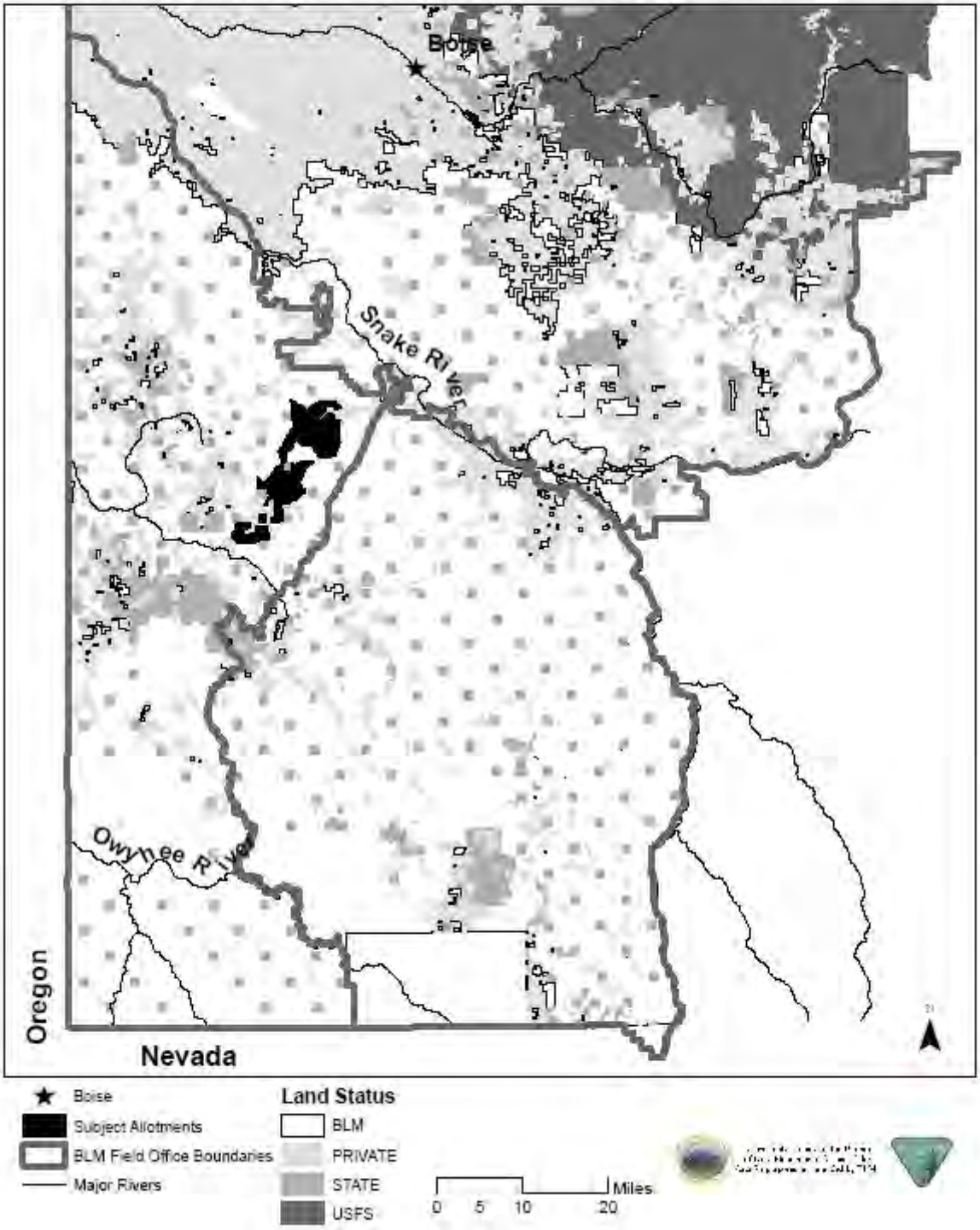
Rationale for Overall Suitability Rating:

Overall the area is rated as suitable winter habitat because the amount (CC) and height of sagebrush would provide forage above persistent snow. The excessive sagebrush and other shrub CC would provide adequate concealment and thermal cover also. However, in the absence of management actions to reduce junipers in parts of the allotment/pasture, the area will degrade into marginal habitat primarily due to a future increase of small to medium junipers as evidenced by their current presence and abundant recruitment. Due to juniper encroachment, parts of the allotment/pasture appear to be on the lower end of suitable winter habitat and may be limiting sage-grouse use.

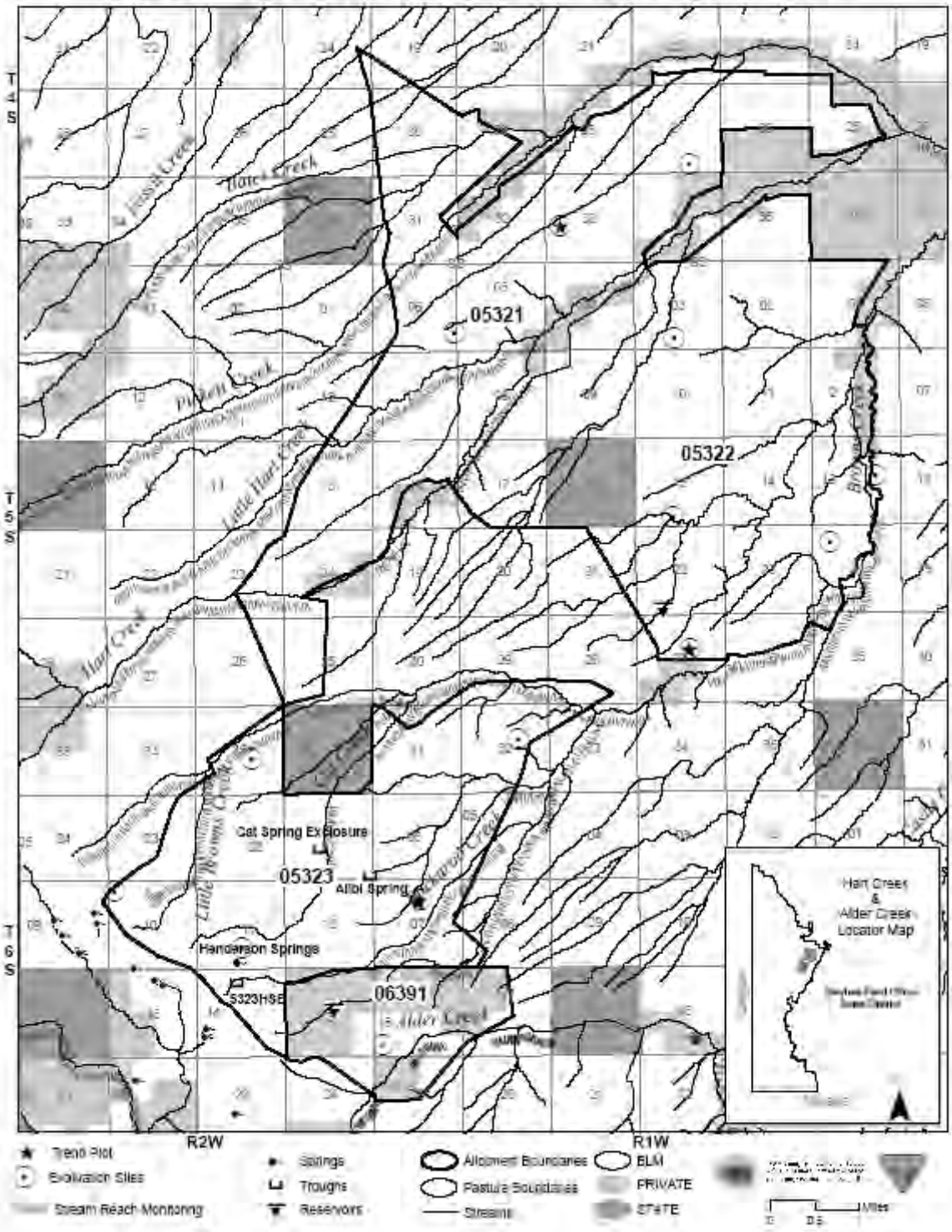
	Suitable	Marginal	Unsuitable
Site-Scale Suitability	X		

APPENDIX I: MAPS

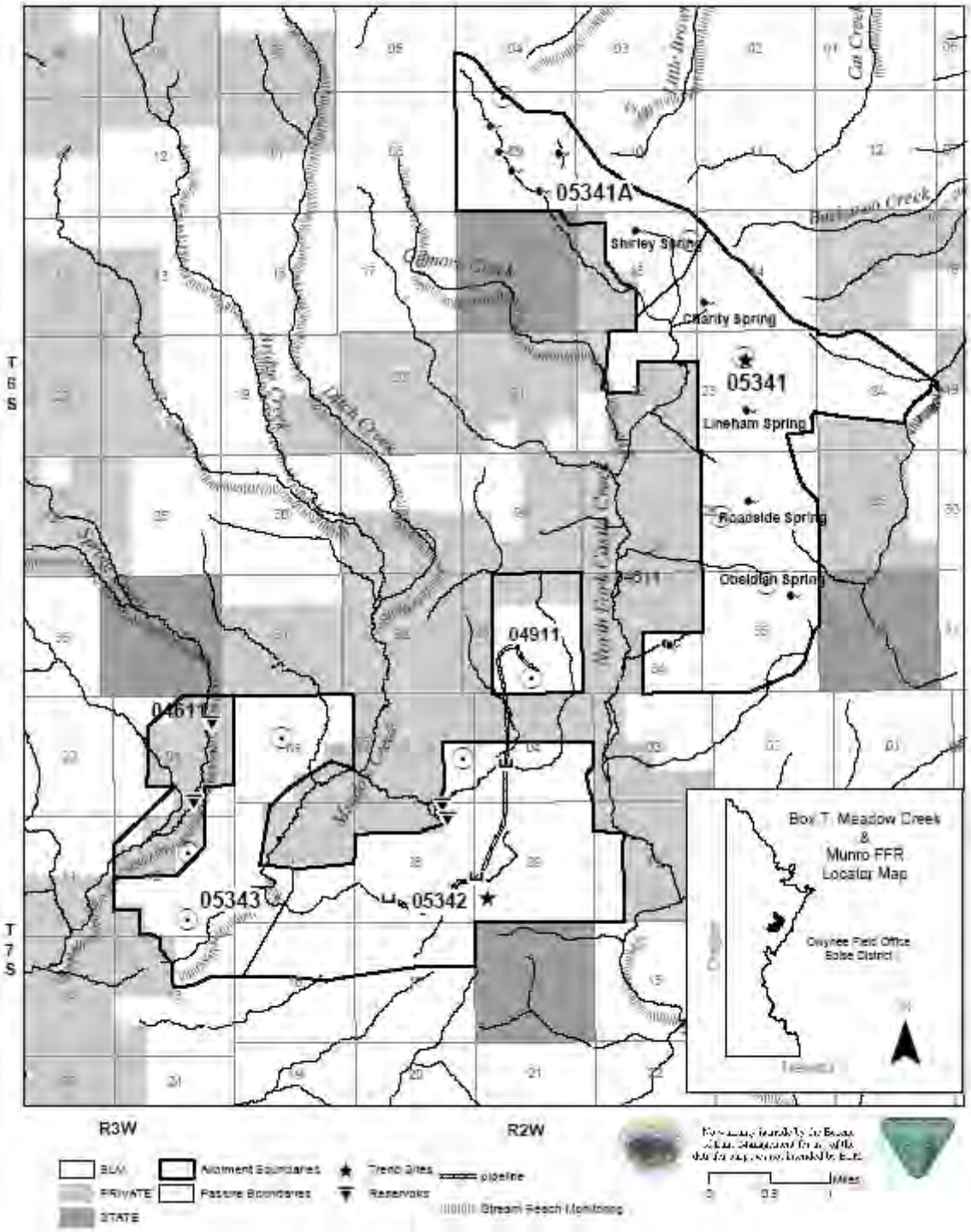
Map 1: Hart Creek (0532) Alder Creek (0639) , Box T (0534), Meadow Creek (0491) and Munro FFR (0461) allotment locations.



Map 2: Hart Creek (0532) and Alder Creek (0639) Allotments



Map 3: Box T (00534), Meadow Creek (00491) and Munro FFR (00461)



APPENDIX J: EVALUATIONS AND DETERMINATIONS

EVALUATION AND DETERMINATION HART CREEK

Achieving the Idaho Standards for Rangeland Health
and
Conformance with the Guidelines for Livestock Grazing Management

Field Office: Owyhee Determination Date(s): September 11, 2006
Grazing Allotment Name/Number: *Hart Creek #0532*
Name of Permittee(s): Robert Thomas

Standard 1 (Watersheds) ☐ Standard doesn't apply

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: Final Rangeland Health Assessment for Hart Creek 0532, Box T 0534, and Alder Creek FFR 0639 Allotments, June 14, 2006; site photos; rangeland health evaluation worksheets; field visits; nested plot frequency data; Whisenant, Steven G. 1999. Repairing Damaged Wildlands: A Process-Oriented, Landscape Scale Approach. Cambridge University Press. Cambridge.

Rangeland Health: Conditions in pastures 1 and 2 are indicative of a historic change in vegetation structure and distribution that alters hydrologic cycling, nutrient cycling, and energy flow. Conditions are currently stabilized in a degraded state. Pasture 3 has an adequate plant community for soil stability and hydrologic function.
Pasture 1 – Hydrologic function is most altered in the Loamy ecological sites in this pasture. Hydrologic function is also somewhat altered in the Sandy Loam ecological sites. These sites are dominated by shrubs, and lack herbaceous vegetation in interspaces, which influences infiltration and runoff rates and patterns. Soil stability is adequate at both of these ecological sites, and active erosion is limited due to land form and coarse surface fragments. Soil stability and hydrologic function are appropriate for nutrient cycling and energy flow at the Calcareous Loam sites in Pasture 1.
Pasture 2 – Hydrologic function at the Loamy and Loamy Bottom ecological sites in Pasture 2 is somewhat compromised due to distribution and composition of vegetation. These sites are dominated by shrubs, and lack herbaceous vegetation in interspaces, altering infiltration and runoff rates and patterns. Soil stability is adequate at these ecological sites, and active erosion is limited due to land form and coarse surface fragments. Soil stability and hydrologic function are appropriate for nutrient cycling and energy flow at the Calcareous Loam ecological sites in Pasture 2.
Pasture 3 – Standard 1 is being met in Pasture 3. Perennial bunchgrasses are present, though frequency is lower than site potential. The existing plant community is generally supporting

proper watershed function, and active erosion is minimal. Coarse fragments on the soil surface are also contributing to site stability.

Rangeland Health Changes: Long-term upland plant community monitoring data show a static plant community condition, although site potential is altered due to historic degradation. Few changes in ground cover were noted during the monitoring period, and bunchgrass frequencies did not change significantly. Recruitment and regeneration were not noted during 2002. This may be attributed to long-term drought, coupled with inadequate "safe sites" for germination and establishment, as well as limited on-site seed sources for recruitment of desired species.

2013 Supplement to the Hart Creek Allotment Rangeland Health Standards and Guidelines Assessment
Long-term ground cover trend data taken since 2006 reflect a static to downward trend for two sites in pastures 1 and 2 and a slight upward trend in pasture 3. Quantitative trend data are consistent with information from grass frequency trend and rangeland health assessments, identifying an increase in invasive annuals and the absence of deep-rooted bunchgrasses.

Livestock Grazing Management: Many erosional features and hydrologic shortcomings in the allotment are the result of historic livestock grazing practices. Current grazing management is not further exacerbating these conditions. Utilization of key perennial grasses has averaged 22% in Pasture 1, and 30% in Pasture 2 between 1993 and 2002. Pasture 1 has been used only 6 of the last 17 years, and Pasture 2 has been used 7 of the last 17 years. Use has occurred primarily in March and April, which is expected to allow perennial bunchgrasses to recover and set seed following grazing. Pasture 3 is used annually from mid April to late May, and utilization levels are light (21-40%). Resource conditions in Pasture 3 are expected to continue to meet Standard 1 under continuation of current management.

[Check box 1, 2, 3, 4, or 5, and either box 6, or 7]

1. ☐ Meeting the Standard	5. ☐ Not Meeting the Standard, cause not determined
2. ☐ Not Meeting the Standard, **but making significant progress towards**	
3. ■ Not Meeting the Standard, **current** livestock grazing management practices are **not** significant factors (list important causal agents) *Historic livestock management, particularly in Pasture1 and Pasture 2*	6. ■ Conforms with Guidelines for Livestock Grazing Management
4. ☐ Not Meeting the Standard, current livestock grazing management practices are significant factors (list important causal agents)	7. ☐ Does not conform with Guidelines for Livestock Grazing Management

Standard 2 (Riparian Areas and Wetlands) ☐ Standard doesn't 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: Final Rangeland Health Assessment for Hart Creek 0532, Box T 0534, and Alder Creek FFR 0639 Allotments, June 14, 2006; riparian proper functioning condition assessments, riparian habitat evaluation forms, stream survey forms, riparian aquatic data sheets, Idaho Department of Environmental Quality (IDEQ) Beneficial Use Reconnaissance Project (BURP) data, Total Maximum Daily Load (TMDL) data.

Rangeland Health: Eighty-four percent of the streams (13.4 of 16.0 miles) within this allotment are properly functioning or functional-at risk with an upward trend.
Pasture 1 – The upper reach of Hart Creek in Pasture 1 supports an appropriate riparian community and is meeting the standard. The lower portion of Hart Creek lacks the late-season flow necessary to fully support riparian graminoids, but woody riparian species occur along this reach. Scotch thistle and whitetop, both Idaho noxious weed species, occur at some locations along Hart Creek. Pickett Creek supports appropriate woody riparian vegetation, but upland species such as Kentucky bluegrass dominate the understory. Little Hart Creek supports an appropriate riparian plant community and is well armored by rock.
Pasture 2 – Browns Creek contains healthy populations of riparian shrub communities, which stabilize streambanks. However, herbaceous riparian species are underrepresented, and Canada thistle occurs along a segment of this creek.
Pasture 3 – Herbaceous riparian plants are present along Brown's Creek, but populations are not adequate to stabilize streambanks during high flow events. Active bank erosion is within acceptable ranges for streams in this pasture, and streambanks are adequately armored with vegetation or rock. Of seven known springs in Pasture 3, one is in PFC, one is FAR with an upward trend, one is FAR-static, and three are FAR-downward. Downward trend on springs is mostly associated with improperly placed or unmaintained exclosures.

Rangeland Health Changes: In general, riparian shrub and cottonwood communities are improving more rapidly than graminoid communities, and the majority of riparian areas in the allotment that are not currently meeting standards appear to be making significant progress. Improvement in herbaceous understory species composition and density is expected to lag behind that observed for the riparian woody species because many of the desirable species occur in low densities and are poorly distributed.

Pasture 1 – Lower Hart Creek is functional-at risk with no apparent trend, the middle reaches of Hart Creek are functional-at risk with an upward trend, and the upper reaches of Hart Creek are properly functioning. Little Hart Creek is properly functioning.
2013- no data for Little Hart Creek/ Pickett Creek- 1.0 mile FAR
Pasture 2 – The majority of Browns Creek is properly functioning (2.3 of 2.5 miles), and active bank erosion is minimal on all segments.
Pasture 3 – Browns Creek, Little Browns Creek and Buckaroo Creek are functional-at risk with an upward trend. Tributaries to Buckaroo Creek are functioning properly. Little Browns Creek tributary is functional-at risk with no apparent trend. The lower reach of Cat Creek is functional-at risk with an upward trend and the upper reach is properly functioning. Maintenance or implementation of trough developments and/or exclosures is needed to improve conditions on

FAR-static and FAR-downward springs. PFC and FAR-upward springs are expected to make progress, or continue to meet standards under current management.

Livestock Grazing Management: In 1997, the current grazing permittee voluntarily applied for 1,000 AUM's nonuse and agreed to implement a rest rotation grazing system to help decrease livestock use in riparian areas, and allow for recovery of key species. The current season of use (March-May) is compatible with improving riparian conditions to meet riparian objectives on streams. The pastures are used early in the year, when cool temperatures encourage livestock distribution across the uplands, so that use is not concentrated in riparian areas.

[Check box 1, 2, 3, 4, or 5, and either box 6, or 7]

1. ☐ Meeting the Standard	5. ☐ Not Meeting the Standard, cause not determined
2. ■ Not Meeting the Standard, **but making significant progress** towards meeting standards	
3. ☐ Not Meeting the Standard, current livestock grazing management practices are **not** significant factors (list important causal agents)	6. ■ Conforms with Guidelines for Livestock Grazing Management
4. ☐ Not Meeting the Standard, current livestock grazing management practices are significant factors (list important causal agents)	7. ☐ Does not conform with Guidelines for Livestock Grazing Management (list Guideline No(s). in non-conformance)

Standard 3 (Stream Channel/Flood Plain) ☐ Standard doesn't 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 (*required regardless of which box is checked)*: Final Rangeland Health Assessment for Hart Creek 0532, Box T 0534, and Alder Creek FFR 0639 Allotments, June 14, 2006; riparian proper functioning condition assessments; riparian habitat evaluation forms; stream survey forms; riparian aquatic data sheets; Idaho Department of Environmental Quality (IDEQ) Beneficial Use Reconnaissance Project (BURP) data; Total Maximum Daily Load (TMDL) data.

Rangeland Health: Eighty-four percent of the streams (13.4 of 16.0 miles) within this allotment are properly functioning or functional-at risk with an upward trend. Many stream channels have become incised as a result of past flood events, and are now stable at their current elevations. In general, channel morphologies are in the range expected for streams in this environmental setting. Exceptions are listed below:
Pasture 1 – Along Lower Hart Creek and Pickett Creek, stream channels are wider and shallower than expected due to streambank instability. The dense riparian shrub communities needed to stabilize these banks are not supported due to lack of late-season stream flow.

Pasture 3 – Streambank stability is lower than expected along a tributary to Little Browns Creek due to inadequate amounts of riparian species with deep, binding root masses.

Rangeland Health Changes: Eighty-four percent of the stream reaches (13.4 of 16.0 miles) within this allotment are properly functioning or functional-at risk with an upward trend.
Pasture 1 – Lower Hart Creek (which is dewatered by a diversion during the summer months) is functional-at risk with no apparent trend, the middle reaches of Hart Creek are functional-at risk with an upward trend, and the upper reaches of Hart Creek are properly functioning.
Pasture 2 – The majority of Browns Creek is properly functioning (2.3 of 2.5 miles).
Pasture 3 – Browns Creek, Little Browns Creek and Buckaroo Creek are functional-at risk with an upward trend. Tributaries to Buckaroo Creek are functioning properly. The lower reach of Cat Creek is functional-at-risk with an upward trend and the upper reach is properly functioning. As conditions improve on the FAR reaches, stream channel morphology is expected to improve, and floodplains are expected to develop further, providing for proper nutrient cycling, hydrologic cycling, and energy flow.

Livestock Grazing Management: In 1997, the current grazing permittee voluntarily applied for 1,000 AUM's nonuse and agreed to implement a rest rotation grazing system to help decrease livestock use in riparian areas, and allow for recovery of key species. The early (March-May) season of use on the Hart Creek allotment is compatible with maintenance and improvement of functioning stream channel and floodplain conditions, and eventual attainment of standards.

[Check box 1, 2, 3, 4, or 5, and either box 6, or 7]

1. ☐ Meeting the Standard	5. ☐ Not Meeting the Standard, cause not determined
2. ■ Not Meeting the Standard, **but making significant progress towards**	
3. ☐ Not Meeting the Standard, current livestock grazing management practices are **not** significant factors (list important causal agents)	6. ■ Conforms with Guidelines for Livestock Grazing Management
4. ☐ Not Meeting the Standard, current livestock grazing management practices are significant factors (list important causal agents)	7. ☐ Does not conform with Guidelines for Livestock Grazing Management (list Guideline No(s). in non-conformance)

Standard 4 (Native Plant Communities) ☐ Standard doesn't apply

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 Final Rangeland Health Assessment for Hart Creek 0532, Box T 0534, and Alder Creek FFR 0639 Allotments, June 14, 2006; site photos; rangeland health evaluation worksheets; field visits; nested plot frequency data; Whisenant, Steven G. 1999.

Repairing Damaged Wildlands: A Process-Oriented, Landscape Scale Approach. Cambridge University Press. Cambridge.

Rangeland Health: *Pasture 1* – Historic livestock grazing practices appear to have negatively impacted native plant community composition and distribution in Pastures 1. Large, long-lived bunchgrasses such as bluebunch wheatgrass, Thurber's needlegrass, and bottlebrush squirreltail are lacking, except at the Loamy 7-10" site, where these species are reduced in numbers and vigor. Field notes indicate that squirreltail plants occur mainly in the protective cover of shrubs, and are significantly reduced in interspaces.

2013 Supplement to the Hart Creek Allotment Rangeland Health Standards and Guidelines Assessment
Standard 4 is not met in pasture 1 of the Hart Creek allotment. Rangeland health assessments at three sites identify slight-moderate or moderate departure of biotic integrity with functional/structural groups that lack co-dominance by deep-rooted perennial bunchgrasses in association with Wyoming big sagebrush. Presence of cheatgrass is noted at all three sites. Quantitative trend data are consistent with information from rangeland health assessments identifying increasing frequency of cheatgrass and Sandberg bluegrass, while squirreltail frequency is decreasing. In not meeting Standard 4 within pasture 1, the ORMP management objective to improve unsatisfactory vegetation health/condition on all areas is not met.

Pasture 2 – Squirreltail and other small perennial bunchgrasses are common throughout the area, particularly under shrub canopy. Large, long-lived bunchgrasses such as bluebunch wheatgrass and Idaho fescue are missing from the site, and the understory is dominated by cheatgrass. Shrub density is somewhat higher than appropriate at this site.

2013 Supplement to the Hart Creek Allotment Rangeland Health Standards and Guidelines Assessment
Standard 4 is not met in pasture 2 of the Hart Creek allotment. Rangeland health assessments at four sites identify slight-moderate or moderate departure of biotic integrity, with functional/structural groups that lack co-dominance by deep-rooted perennial bunchgrasses in association with shrubs. Dominance of cheatgrass is noted in a number of site write-ups. Quantitative trend data are consistent with information from rangeland health assessments, identifying increasing frequency of cheatgrass while frequency data for Sandberg bluegrass and squirreltail are inconclusive. Vegetation trend within pasture 2 is static to downward. In not meeting Standard 4 within pasture 2, the ORMP management objective to improve unsatisfactory vegetation health/condition on all areas is not met.

Pasture 3 –At the upland monitoring site the dominant perennial bunchgrass is Sandberg bluegrass. Cheatgrass occurs in scattered patches throughout the pasture. Field observations noted that decreaser bunchgrasses such as bluebunch wheatgrass and Idaho fescue were common and vigorous within the mountain ridge and shallow claypan ecological sites in this pasture, but showed reduced vigor and decadence in parts of the pasture. Western juniper is present in

Pasture 3, but review of aerial photos indicates that cover and distribution are not excessive for maintenance of healthy, diverse native plant communities. The range sites within this pasture are generally functioning as properly with respect to maintenance of native plant communities.

2013 Supplement to the Hart Creek Allotment Rangeland Health Standards and Guidelines Assessment
Standard 4 is met in pasture 3 of the Hart Creek allotment. Rangeland health assessments at five sites identify none-slight, slight-moderate, or moderate departure of biotic integrity with functional/structural groups at some of the sites represented by co-dominance of deep-rooted perennial bunchgrasses in association with shrubs adequate to provide for hydrologic cycling, nutrient cycling, and energy flow. Dominance of cheatgrass is noted in two site write-ups. Quantitative trend data are consistent with information from rangeland health assessment at that trend monitoring site, although vegetation communities more similar to reference site conditions are recorded in the majority of rangeland health assessments. The vegetation trend within pasture 3 is static. Although Standard 4 is met in pasture 4, static trend and no deep-rooted perennial grasses recorded at the trend plot in this pasture leads to the conclusion that the ORMP management objective to improve unsatisfactory vegetation health/condition on all areas is not met.

Rangeland Health Changes: Monitoring data for Pastures 1 and 2 indicate that the plant community is stable, with no apparent trend. Bare ground, lack of seed sources and organic matter, in addition to competition with cheatgrass, reduce the likelihood of significant perennial grass establishment in Pastures 1 and 2. Conditions in Pasture 3 are most conducive to maintaining diverse native plant communities. In Pasture 1, Squirreltail frequency has remained relatively level since 1987, while Sandberg bluegrass has increased. In Pasture 2, frequency data indicate that squirreltail has increased significantly since 1987 and frequency of Sandberg bluegrass has remained high. No trends in bunchgrass frequency are apparent based on monitoring data for Pasture 3.

Livestock Grazing Management: In 1997, the current grazing permittee voluntarily applied for 1,000 AUM's nonuse and agreed to implement a rest rotation grazing system to help decrease livestock use in riparian areas, and allow for recovery of key species. Utilization data indicate that use of key species has been light (21-40%) since instituting these management changes. These grazing management practices are expected to allow continued recovery of desirable native plant communities during favorable climatic conditions, and where existing site potential allows.

[Check box 1, 2, 3, 4, or 5, and either box 6, or 7]

1. ☐ Meeting the Standard	5. ☐ Not Meeting the Standard, cause not determined
2. ☐ Not Meeting the Standard, **but making significant progress towards meeting the standard**	

3. ■ Not Meeting the Standard, current livestock grazing management practices are **not** significant factors (list important causal agents) *Historic livestock management, particularly in Pasture1 and Pasture 2*	6. ■ Conforms with Guidelines for Livestock Grazing Management.
4. ☐ Not Meeting the Standard, current livestock grazing management practices are significant factors (list important causal agents)	7. ☐ Does not conform with Guidelines for Livestock Grazing Management (list Guideline No(s). in non-conformance)

Standard 5 (Seedings) ■ Standard doesn't apply

Rangelands seeded with mixtures, including predominantly non-native plants, are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and hydrologic cycling.

Rationale for not applying Standard 5: A review of allotment files, site photos and field notes indicate that no areas of the Hart Creek allotment are dominated by seeded species, therefore this standard is not applied to this allotment.

Standard 6 (Exotic Plant Communities, other than Seedings) ■ Standard doesn't apply

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.

Rationale for not applying Standard 6: Although exotic plant species occur in this allotment and some areas are dominated by exotic plant species, no pasture is compromised so extensively that the entire pasture is managed to meet the minimum requirements of soil stability and maintenance of existing perennial communities, therefore this standard is not applied to this allotment.

Standard 7 (Water Quality) ☐ Standard doesn't apply

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

Evaluation and Information Sources: Riparian inventories, riparian proper functioning condition assessments, riparian habitat evaluation forms, stream survey forms, riparian aquatic data sheets, BLM thermograph data, water quality monitoring data, IDEQ BURP data ,TMDL.

Rangeland Health: IDEQ has determined that Pickett, Browns, Buckaroo, and Cat Creeks do not support beneficial uses for cold water aquatic life (CWAL). Beneficial use support status has not been assessed in Hart Creek. Browns Creek was de-listed for sediment and temperature and Pickett Creek was de-listed for sediment in the most recent TMDL report. Limited BLM data indicate that Hart Creek fully supported CWAL criteria for temperature in 2002 and that Browns Creek did not fully support CWAL criteria for temperature, but supported secondary contact

recreational uses in 1996. BLM does not have adequate E. coli data to evaluate contact recreational use criteria.

Rangeland Health Changes: Water quality criteria are linked to standards 2 and 3, where PFC inventories indicate a predominant upward trend. As streambank stability and stream channel shading increase, water quality parameters of sediment and temperature are expected to make progress towards attainment of Idaho Water Quality Standards.

Livestock Grazing Management: The current season of use is compatible with improving riparian conditions to meet riparian objectives that contribute to attainment of water quality standards. The pastures are used early in the year, when cool temperatures encourage livestock to distribute across the uplands, rather than concentrating in riparian areas. In addition, riparian species are allowed adequate time to recover following grazing.

[Check box 1, 2, 3, 4, or 5, and either box 6, or 7]

1. ☐ Meeting the Standard: Hart Creek	5. ☐ Not Meeting the Standard, cause not determined
2. ■ Not Meeting the Standard, **but making significant progress towards.**	
3. ☐ Not Meeting the Standard, current livestock grazing management practices are **not** significant factors (list important causal agents)	6. ■ Conforms with Guidelines for Livestock Grazing Management
4. ☐ Not Meeting the Standard, current livestock grazing management practices are significant factors (list important causal agents)	7. ☐ Does not conform with Guidelines for Livestock Grazing Management

Standard 8 (Threatened and Endangered Plants and Animals) ☐ Standard doesn't apply

Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

Evaluation and Information Sources (*required regardless of which box is checked)*:
Redband trout: Riparian inventories, riparian proper functioning condition assessments, riparian habitat evaluation forms, stream survey forms, riparian aquatic data sheets, BLM thermograph data, water quality monitoring data, Idaho Department of Environmental Quality (IDEQ) Beneficial Use Reconnaissance Project (BURP) data, Total Maximum Daily Load (TMDL) data. Standard 8 is dependent on Standards 2, 3 and 7. In lieu of site-specific fish habitat data, or to supplement fish habitat data, evaluations and determinations for Standard 8 utilize information from Standards 2, 3 and 7.

Wildlife: Riparian proper functioning condition assessments, sage-grouse lek surveys, sage-grouse habitat assessments, pygmy rabbit surveys, rangeland health assessments for upland plant communities.

Botany: Conservation data center database, BLM botany database and files. Rangeland health evaluation worksheets, nested plot frequency data, photo plot monitoring, utilization monitoring, actual use reports, grazing bills and applications, allotment case files, and operator case files.

Rangeland Health:

Pasture 1 –
Redband trout: Pickett Creek - one redband trout was observed in Pickett Creek in July 2001. This stream reach generally only flows during spring runoff and has not been evaluated for redband trout spawning. Hart Creek contains redband trout in the upper reaches, but BLM has not completed population inventories.

Wildlife: Much of the stream riparian habitat in this pasture is in proper functioning condition or functioning-at-risk with and upward trend and generally providing for the needs of dependant special status species and other wildlife. However, a significant portion is still lacking in structural diversity, composition and vigor of riparian vegetation and not providing suitable habitat for these species. They are also lacking adequate hydric vegetation for streambank protection, leaving them vulnerable to loss of habitat during high flow events. Sage-grouse habitat quality is limited due to lack of large perennial bunchgrasses and low forb diversity.

Botany: Two BLM Sensitive species (type 4), white-margined waxplant (*Glyptopleura marginata*) and white eatonella (*Eatonella nivea*), occur in this pasture. Both populations were reported to be in good condition 1997, and habitat is suitable to maintain these populations.

2013 Supplement to the Hart Creek Allotment Rangeland Health Standards and Guidelines Assessment
Standard 8 Wildlife is not met in pasture 1 of the Hart Creek allotment. Upland habitats are not providing adequate conditions for many ground dwelling, nesting and foraging species due to the dominance of short-statured bluegrass (*Poa* sp.) and invasive cheatgrass and a lack of deep-rooted, tall-statured perennial bunchgrasses that would be expected for ecological site reference State conditions. In addition, the aforementioned composition of understory herbaceous vegetation is not providing suitable sage-grouse breeding (i.e., nesting and early-brood rearing) habitat conditions. The ORMP management objectives to maintain an abundance, structural stage, and distribution of plant communities and special habitat features to support a high diversity and desired populations of wildlife, and thus averting the need for listing of special status species under the ESA are not met.

Pasture 2 –
Redband trout: Browns Creek has not been inventoried for redband trout. If redband trout surveys show fish presence, habitat quality should be further evaluated.

Wildlife: All stream riparian habitats in this pasture are rated as properly functioning or functioning-at-risk with an upward trend and provide at least marginally suitable habitat for dependant special-status species. Sage-grouse breeding habitat is unsuitable due to a lack of

desirable herbaceous vegetation structure for nesting and early brood-rearing. Abundance and diversity of preferred forb species is also limited.

Botany: No federally listed plant species are known in this pasture. Known populations of BLM Sensitive plant species appear to be in good condition, and are supported by the existing habitat.

2013 Supplement to the Hart Creek Allotment Rangeland Health Standards and Guidelines Assessment
Standard 8 Wildlife is not met in pasture 2 of the Hart Creek allotment. Upland habitats are not providing adequate conditions for many ground dwelling, nesting and foraging species due to the dominance of short-statured bluegrass (*Poa* sp.) and invasive cheatgrass and a lack of deep-rooted, tall-statured perennial bunchgrasses that would be expected for ecological site reference State conditions. In addition, the aforementioned composition of understory herbaceous vegetation is not providing suitable sage-grouse breeding (i.e., nesting and early-brood rearing) habitat conditions. The ORMP management objectives to maintain an abundance, structural stage, and distribution of plant communities and special habitat features to support a high diversity and desired populations of wildlife, and thus averting the need for listing of special status species under the ESA are not met.

Pasture 3 –
Redband trout: Neither Little Browns nor Cat Creeks has been inventoried for redband trout.
Wildlife: Much of the stream riparian habitat in this pasture is in proper functioning condition or functioning-at-risk with and upward trend and generally providing for the needs of dependant special status species and other wildlife. However, a portion is still lacking in structural diversity, composition and vigor of riparian vegetation, and is not providing suitable habitat for dependent species. Streambanks of functional-at-risk reaches are lacking adequate hydric vegetation, and remain vulnerable to degradation during high-flow events. Most of the springs in this pasture are rated as functional-at-risk with either a static or downward trend, and do not provide adequate habitat for dependant wildlife. Large bunchgrasses are below potential and display decreased vigor at some locations. Cheatgrass occurs at two of the four upland Rangeland Health Evaluation locations, and is affecting habitat quality at these sites. Increases in cover and distribution of western juniper in the upper portions of Pasture 3 are adversely affecting habitat for sagebrush steppe obligates such as sage-grouse, which are sensitive to alterations in vegetation structure. Sagebrush decadence is also negatively affecting habitat quality for sagebrush steppe obligate species in this pasture.

2013 Supplement to the Hart Creek Allotment Rangeland Health Standards and Guidelines Assessment
Standard 8 Wildlife is not met in pasture 3 of the Hart Creek allotment. Riparian habitats (lotic and lentic systems) are not providing adequate breeding and foraging conditions for many dependent wildlife species. Additionally, conditions in riparian vegetation communities are not providing suitable brood-rearing and summer riparian habitats for sage-grouse. The ORMP management objectives to maintain an abundance, structural stage, and distribution of plant communities and special habitat features to support a high diversity and desired

populations of wildlife, and thus averting the need for listing of special status species under the ESA are not met.

Rangeland Health Changes: Most riparian habitat on the allotment shows an upward trend. Upland site potential is reduced due to historic degradation in Pastures 1 and 2.

Pasture 1 –
Redband trout: The majority of Hart Creek riparian habitat is in PFC or improving, and temperature data indicate that water quality standards are being met. Habitat along the majority of Hart Creek is expected to continue to expand and improve. Trend on Pickett Creek appears to be static, due to lack of late-season flow, which limits aquatic habitat potential.

Wildlife: One of the three functional-at risk reaches of Hart Creek demonstrates no apparent trend, while the others are in an apparent upward trend, with healthy, expanding populations of hydric species. Upland habitats demonstrate no trend, and are expected to continue providing marginal sagebrush habitat.

Pasture 2 –
Redband trout: The majority of stream riparian habitat along Browns Creek is being maintained in properly functioning condition, but no trend data are available.

Wildlife: The majority of stream riparian habitat along Browns Creek is being maintained in properly functioning condition and continues to provide at least marginally suitable habitat. Trend data do not show significant changes in bunchgrass species, which are limiting upland habitat quality.

Pasture 3 –
Redband trout: Much of the stream riparian habitat in this pasture is in PFC or functioning-at-risk with an upward trend. If redband trout surveys show fish presence, the habitat quality should be further evaluated. The upper reaches of Little Browns Creek are functional-at risk with a static trend, indicative of unsatisfactory habitat conditions.

Wildlife: Juniper encroachment has the potential to further reduce habitat quality in the upper portions of Pasture 3, particularly for sagebrush steppe obligate species. Monitoring data indicate no trend in perennial bunchgrass frequency, which is limiting habitat quality in the majority of the pasture.

Livestock Grazing Management: In 1997, the current grazing permittee voluntarily applied for 1,000 AUM's nonuse and agreed to implement a rest rotation grazing system to help decrease livestock use in riparian areas, and allow for recovery of key species. The early (March-May) season of use on the Hart Creek allotment is compatible with maintenance and improvement of functioning stream channel and floodplain conditions. Utilization data indicate that use of key species has been light (21-40%) since instituting these management changes. These grazing management practices are expected to allow continued recovery of desirable native plant communities during favorable climatic conditions, and where existing site potential allows.

[Check box 1, 2, 3, 4, or 5, and either box 6, or 7]

1. ☐ Meeting the Standard	5. ☐ Not Meeting the Standard, cause not determined
2. ■ Not Meeting the Standard, **but making significant progress towards** meeting the standard – *Upward trend of riparian habitat*	
3. ☐ Not Meeting the Standard, current livestock grazing management practices are **not** significant factors	6. ■ Conforms with Guidelines for Livestock Grazing Management
4. ☐ Not Meeting the Standard, current livestock grazing management practices are significant factors (list important causal agents)	7. ☐ Does not conform with Guidelines for Livestock Grazing Management (list Guideline No(s). in non-conformance)

Field Manager's Determination Rationale:

I have determined that the Hart Creek allotment is currently not meeting Standards 1 and 4 and current livestock grazing management practices are not a significant factor. Historic livestock management practices are the primary reason for not meeting these standards. The allotment is not meeting Standards 2, 3, 7, and 8, but is making significant progress towards meeting these standards under current livestock grazing management practices. Standards 5 and 6 do not apply to this allotment. Site potential of uplands on the Hart Creek allotment has been altered due to historic degradation. Cheatgrass is present in many portions of this allotment. These populations may expand in response to wildfire, and have the potential to negatively affect native plant community integrity and wildlife habitat. If unchecked, juniper encroachment has the potential to negatively impact native plant communities and wildlife habitat in Pasture 3.

(s) Ron Kay 9/11/2006

Field Manager
(Acting)

EVALUATION AND DETERMINATION BOX T

Achieving the Idaho Standards for Rangeland Health
and
Conformance with the Guidelines for Livestock Grazing Management

Field Office: Owyhee Determination Date(s): September 16, 2013
Grazing Allotment Name/Number: *Box "T" #0534*
Name of Permittee(s): Robert Thomas

Standard 1 (Watersheds) ☐ Standard doesn't apply

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: Final Rangeland Health Assessments for Hart Creek 0532, Box T 0534, and Alder Creek FFR 0639 Allotments, June 14, 2006; Rangeland Health Evaluation Worksheets; site photos; field visits; nested plot frequency data; Oregon State University Technical Bulletin 152: Biology, Ecology and Management of Western Juniper.

Rangeland Health Overall, Standard 1 is being met in Pastures 1, 1A and 2, though soil stability is somewhat compromised due to soil surface characteristics. Standard 1 is not being met in Pasture 3, due to soil and plant community conditions.

2013 Supplement to the Box T Allotment Rangeland Health Standards and Guidelines Assessment
Overall, Standard 1 is being met in pasture 4 (formerly 1A) though soil stability is somewhat compromised due to soil surface characteristics. Standard 1 is not being met in pastures 1, 2, and 3 due to deteriorating soil and plant community conditions and lingering impacts from past fire in pasture 2.

Pasture 1: Site stability is somewhat compromised at the Loamy 13-16" ecological site in this pasture, as evidenced by water flow patterns and plant community composition and distribution relative to infiltration and runoff. Watershed standards are being met at the Shallow-Claypan sites in Pasture 1, but further increases in western juniper have the potential to affect infiltration and runoff processes in portions of these sites.

Pasture 1A: Hydrologic cycling and site stability are marginally adequate to meet Standard 1. Pedestaled plants were primarily associated with slopes, and reflect natural erosional processes. Historical erosional features were present at some sites within the pasture, and appear to be currently stable. Western juniper is scattered through the pasture and has the potential to affect infiltration runoff processes due to alteration of plant community distribution and structure.

This pasture is now labeled as pasture 4.

Pasture 2: Bare ground and soil surface resistance to erosion are impacting soil stability and hydrologic function in Pasture 2, but the majority of indicators related to this standard are within acceptable parameters. The plant community in this pasture is dominated by perennial bunchgrasses, which are stabilizing soils and facilitating hydrologic function.

Pasture 3: The most notable departures from reference site conditions relating to Standard 1 were observed in Pasture 3. Pronounced water flow patterns and pedestals/terracettes were noted, as well evidence of active erosion. At both the Shallow-Claypan and Loamy sites, bare ground is excessive and physical soil crusts were noted, indicating that soils are not adequately protected, and are not allowing for proper hydrologic functioning.

Rangeland Health Changes: The majority of erosional features appear to be attributable to historic overuse of the range. Pastures 1A and 2 appear to be stable, and are expected to continue meeting Standard 1. Conditions in pasture 1 and parts of pasture 3 are static. In other parts of pasture 3, conditions may be in a slight downward trend evidenced by active water flow patterns and plant pedestaling processes.

Livestock Grazing Management: Pastures 1, 1A, and 3 have been grazed at the same time each year, without deferment or rest-rotation. This has not allowed for recovery and establishment of perennial grasses, particularly in Pasture 3, which has been grazed primarily in June each year, during the critical growth period for key perennial bunchgrasses, and only rested in one of the past eight years. Deferred grazing has been practiced in Pasture 2 in six of the past eight years, allowing perennial grasses to complete annual growth and set seed before grazing. While current grazing practices are not further exacerbating watershed standard-related issues on the Box T allotment, establishment of a deferred grazing and/or rest-rotation system is needed to make significant progress towards meeting standards. Livestock trailing in the spring and fall is also contributing to livestock impacts on the Box T allotment, due to soil surface damage.

[Check box 1, 2, 3, 4, or 5, and either box 6, or 7]

1. ☐ Meeting the Standard	5. ☐ Not Meeting the Standard, cause not determined
2. ☐ Not Meeting the Standard, **but making significant progress towards** (Pasture 1, 1A, 2)	
3. ☐ Not Meeting the Standard, current livestock grazing management practices are **not** significant factors (list important causal agents)	6. ☐ Conforms with Guidelines for Livestock Grazing Management
4. ■ Not Meeting the Standard, current livestock grazing management practices are significant factors - *Pasture 3 - not rested or deferred – grazed during perennial grass growth period each year. Soil surface*	7. ■ Does not conform with Guidelines for Livestock Grazing Management No 1, 3, 8

conditions altering infiltration and runoff.	

Standard 2 (Riparian Areas and Wetlands) ☐ Standard doesn't apply

Evaluation and Information Sources: Final Rangeland Health Assessments for Hart Creek 0532, Box T 0534, and Alder Creek FFR 0639 Allotments, June 14, 2006; riparian inventories; riparian proper functioning condition (PFC) assessments; riparian habitat evaluation forms; stream survey forms; riparian aquatic data sheets; repeat photography; Idaho Department of Environmental Quality (IDEQ) Beneficial Use Reconnaissance Project (BURP) data; Total Maximum Daily Load (TMDL) data.

Rangeland Health: Of 5.3 miles of streams supporting riparian vegetation within the Box T allotment, only 0.3 miles, or 6%, were rated in PFC. 1.9 miles were functioning-at-risk (upward trend), 1.2 miles FAR (static), 0.7 miles FAR (no apparent trend), and 1.2 miles were FAR (downward trend). Of 19 known springs on the allotment, 1 is in PFC, 3 are FAR (static), 8 are FAR (downward), 4 are non-functional, and 3 were not rated.

Pasture 1: In pasture 1, outside of the Charity Spring exclosure, stream banks tend to be dominated by upland species. North Fork Castle Creek is also dominated with upland species. Riparian species represented along the reach are inadequate to stabilize banks. Alder Creek maintains diverse and healthy riparian communities that are stabilizing banks, and is meeting overall riparian and wetland standards; however, whitetop, an Idaho noxious weed, is present along this reach.

Pasture 1A: North Fork Castle Creek is dominated by upland species. Riparian species along the reach are inadequate to stabilize banks. An active headcut exists in the lower portion of North Fork Castle Creek. Three spring developments exist in this pasture. At three unprotected springs, flow paths are altered, and riparian species diversity is diminished; riparian species present are indicative of disturbance.
Pasture 2: No drainages or springs capable of supporting riparian communities exist in Pasture 2.
Pasture 3: Meadow Creek is not meeting standards, but is making significant progress. The reach of Meadow Creek that is located in Pasture 3 is dominated by a variety of woody and herbaceous riparian species, which appear to be currently expanding along the reach. However, vegetation is not yet adequate to stabilize banks during episodic high runoff events.

Rangeland Health Changes: Conditions on Charity Spring appear to be static and inadequate for streambank protection. Along North Fork Castle Creek herbaceous riparian species have increased slightly. However, species present are indicative of disturbance. Trend on North Fork Castle Creek in Pasture 1A appears to be downward, due to active headcutting, and inadequate streambank cover. Establishment of riparian vegetation is not evident along this reach. Meadow Creek in Pasture 3 appears to be in an upward trend, with expansion of riparian graminoids, and occurrence of some willow recruitment.

Livestock Grazing Management: Generally, this Standard is not being met where continuous summer grazing has occurred (pasture 1 and 1A). Since 1997, pastures 1 and 1A have been grazed from 45 to 60 days during the July, August, and September. This hot season use encourages livestock concentration in riparian areas, and amplifies impacts to riparian vegetation due to repeated grazing and trampling during the growing season. Spring and fall livestock trailing is leading to additional impacts in riparian areas.

[Check box 1, 2, 3, 4, or 5, and either box 6, or 7]

1. ☐ Meeting the Standard	5. ☐ Not Meeting the Standard, cause not determined
2. ☐ Not Meeting the Standard, **but making significant progress towards**	
3. ☐ Not Meeting the Standard, current livestock grazing management practices are **not** significant factors (list important causal agents)	6. ☐ Conforms with Guidelines for Livestock Grazing Management
4. ■ Not Meeting the Standard, current livestock grazing management practices are significant factors (list important causal agents) *Headcutting and lack of riparian vegetation on North Fork Castle Creek in Pasture 1A. Bank instability, vegetation on Charity Spring.*	7. ■ Does not conform with Guidelines for Livestock Grazing Management (list Guideline No(s). in non-conformance) 5, **6, 7**

Standard 3 (Stream Channel/Flood Plain) ☐ Standard doesn't 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 (*required regardless of which box is checked)*: Final Rangeland Health Assessments for Hart Creek 0532, Box T 0534, and Alder Creek FFR 0639 Allotments, June 14, 2006; riparian inventories; riparian proper functioning condition (PFC) assessments; riparian habitat evaluation forms; stream survey forms; riparian aquatic data sheets; repeat photography; Idaho Department of Environmental Quality (IDEQ) Beneficial Use Reconnaissance Project (BURP) data; Total Maximum Daily Load (TMDL) data.

Rangeland Health: **Pasture 1:** The North Fork Castle Creek stream channel is incised, and active headcut near the confluence of Charity Spring and North Fork Castle Creek is indicative of stream channel instability and vulnerability of the floodplain to future degradation. Runoff from Bachman Grade Road contributes to flows during high runoff events, exacerbating headcut and incisement activity.
Pasture 1A: Several active headcuts are present along North Fork Castle Creek in this pasture, indicating stream channel instability and vulnerability of the floodplain to degradation or abandonment as the stream channel incises.

Pasture 2: Only ephemeral channels occur in Pasture 2, and these have not been evaluated for conformance with Standard 3.
Pasture 3: The channel of Meadow Creek is straightened and incised, and stream bank and floodplain features are not yet adequate to dissipate erosional energy generated during high flow events. However, overall trend is upward, and stream channel and floodplain conditions are making significant progress towards meeting Standard 3.

Rangeland Health Changes: In Pasture 1 the floodplain of North Fork Castle Creek is slowly developing. However, in Pasture 1A, trend is downward along North Fork Castle Creek and Charity Spring. Conditions along Meadow Creek in Pasture 3 appear to be improving, with the floodplain developing, and the stream channel narrowing and becoming more sinuous.

Livestock Grazing Management: Generally, this Standard is not being met where continuous summer grazing has occurred (pasture 1 and 1A). Since 1997, pastures 1 and 1A have been grazed for a period of 45 to 60 days during the hot season (July, August, and September). Hot season use encourages livestock concentration in riparian areas, and amplifies impacts to streambanks and floodplains due to repeated grazing and trampling during the growing season. Spring and fall livestock trailing is leading to additional impacts to floodplains and streambanks.

[Check box 1, 2, 3, 4, or 5, and either box 6, or 7]

1. ☐ Meeting the Standard	5. ☐ Not Meeting the Standard, cause not determined
2. ☐ Not Meeting the Standard, **but making significant progress towards**	
3. ☐ Not Meeting the Standard, current livestock grazing management practices are **not** significant factors (list important causal agents)	6. ☐ Conforms with Guidelines for Livestock Grazing Management
4. ■ Not Meeting the Standard, current livestock grazing management practices are significant factors (list important causal agents) *Pasture 1A, downward trend of North Fork Castle Creek and Charity Spring.*	7. ■ Does not conform with Guidelines for Livestock Grazing Management (list Guideline No(s). in non-conformance) 5, 7

Standard 4 (Native Plant Communities) ☐ Standard doesn't apply

Evaluation and Information Sources (*required regardless of which box is checked)*: Final Rangeland Health Assessments for Hart Creek 0532, Box T 0534, and Alder Creek FFR 0639 Allotments, June 14, 2006; Rangeland Health Evaluation Worksheets; site photos; field visits; nested plot frequency data; Oregon State University Technical Bulletin 152: Biology, Ecology and Management of Western Juniper.

Rangeland Health: Overall, the native plant communities standard is being met across the majority of pastures 1, 1A, and 2, though cover and density of western juniper appears to be

increasing. In pasture 3, historic degradation is limiting site potential for recovery of appropriate native plant communities.

Pasture 1: The herbaceous component of the plant community is well represented throughout the pasture. Bluebunch wheatgrass frequency has increased significantly since 1985. Of main concern in Pasture 1 is the continued encroachment of western juniper.

2013 Supplement to the Box T Allotment Rangeland Health Standards and Guidelines Assessment
Standard 4 is not met in pasture 1 of the Box T allotment. Rangeland health assessments at three assessment sites that identify none-slight through moderate departure of biotic integrity with juniper dominance noted in all. All assessments also identify some departure of functional/structural groups from reference site conditions with a reduction of co-dominance by deep-rooted perennial bunchgrasses in association with sagebrush. Recorded trend at the nested frequency monitoring site indicates a static to downward trend. In not meeting Standard 4 within pasture 1, the ORMP management objective to improve unsatisfactory vegetation health/condition on all areas is not met.

Pasture 1A: Western juniper encroachment is occurring and has the potential to significantly impact plant community composition in this pasture. The perennial grass component is well represented, with good vigor and reproductive capability throughout most of the pasture.

2013 Supplement to the Box T Allotment Rangeland Health Standards and Guidelines Assessment
Standard 4 is not met in pasture 4 (pasture 1A in the 2006 Assessment) of the Box T allotment. Rangeland health assessments at two sites identify none-slight and slight-moderate departure of biotic integrity. Both write-ups identify moderate-extreme departures for invasive species due to juniper dominance. Functional/structural groups noted in both write-ups identify at most a slight-moderate departure from reference site conditions from co-dominance by deep-rooted perennial bunchgrasses in association with low sagebrush. Presence of cheatgrass is noted as a trace at one site. In not meeting Standard 4 within pasture 4, the ORMP management objective to improve unsatisfactory vegetation health/condition on all areas is not met.

Pasture 2: Green rabbitbrush cover is relatively high in areas of this pasture that burned in 1994. Western juniper cover and density are somewhat higher than appropriate in unburned portions of the pasture.

2013 Supplement to the Box T Allotment Rangeland Health Standards and Guidelines Assessment
Standard 4 is met in pasture 2 of the Box T allotment, although green rabbitbrush remains present following fire two decades ago. Functional/structural groups noted in all three write-ups identify at most a slight-moderate departure from reference site conditions from co-dominance by deep-rooted perennial bunchgrasses in association with low sagebrush. Within seeded portions of the pasture, slender wheatgrass is present, filling the deep-rooted bunchgrass function of bluebunch wheatgrass. Quantitative trend data are consistent with information from rangeland health assessments identifying increasing frequency of Idaho fescue while trend in the frequency of other grass species is inconclusive. Juniper occurrence was noted as rare or in trace amounts in two of the three write-ups.

In meeting Standard 4 within pasture 2 with the limited departure from reference site conditions and with static to upward trend recorded, the ORMP management objective to improve unsatisfactory vegetation health/condition on all areas is also met.

Pasture 3: Increased bare ground, soil erosion, and reduced litter and biotic crusts are affecting the site's ability to maintain diverse, healthy native plant communities. Western juniper cover is somewhat higher than appropriate for the site.

2013 Supplement to the Box T Allotment Rangeland Health Standards and Guidelines Assessment

Standard 4 is not met in pasture 3 of the Box T allotment. Rangeland health assessments at two sites identify moderate departure of biotic integrity with functional/structural groups that lack co-dominance by deep-rooted perennial bunchgrasses in association with low or Wyoming big sagebrush. Site write-ups identify the dominance of shrubs, including green rabbitbrush, at a level greater than reference site conditions. Juniper occurrence was noted as rare at both write-up sites, but scattered within the pasture.

In not meeting Standard 4 within pasture 3, the ORMP management objective to improve unsatisfactory vegetation health/condition on all areas is not met.

Rangeland Health Changes: Following a 1994 wildfire in Pasture 2, succession appears to be progressing normally, from a rabbitbrush to sagebrush-dominated community. Overall, frequency of perennial grasses has remained relatively stable. Western juniper encroachment has the potential to most significantly alter plant community structure and composition across the Box T allotment. Cover and productivity of desirable shrubs and bunchgrasses are expected to decline significantly if juniper cover and distribution continue to increase. In Pasture 3, ground cover is reduced, and historic soil degradation coupled with yearly summer use appears to be hindering site recovery.

Livestock Grazing Management: Pastures 1, 1A, and 3 have been grazed at the same time each year, without deferment or rest. This grazing system has not allowed for recovery and establishment of perennial grasses, particularly in Pasture 3, which has been grazed primarily in June each year, and only rested in one of the past eight years. Deferred grazing has occasionally been practiced in Pasture 2, allowing perennial grasses to complete annual growth and set seed before grazing. In Pasture 1, utilization of Idaho fescue has exceeded 50% in some years, which is contributing to the decreased vigor noted at one evaluation site. While current grazing practices are not leading to further native plant community degradation, significant progress is not being made towards meeting Standard 4. Establishment of a deferred grazing and/or rest-rotation system would be beneficial to promote vigor and reproductive ability of desirable species.

2013 Supplement to the Box T Allotment Rangeland Health Standards and Guidelines Assessment

Grazing management practices changed somewhat between the completion of the 2006 assessment and 2012. While pasture 4 (1A in the 2006 assessment) was reported in the 2006 assessment as grazed annually during the active growing season, deferment of use until after early July has occurred in all years of the past decade. Similarly, grazing in pasture 2 has been

annually deferred until after the active growing season consistently since the 2006 assessment. Management of pastures 1 and 3 to protect riparian resources continues to allow annual grazing during the spring season when upland bunchgrass species are actively growing.

[Check box 1, 2, 3, 4, or 5, and either box 6, or 7]

1. ☐ Meeting the Standard	5. ☐ Not Meeting the Standard, cause not determined
2. ☐ Not Meeting the Standard, **but making significant progress towards**	
3. ☐ Not Meeting the Standard, current livestock grazing management practices are **not** significant factors (list important causal agents) increase in rabbitbrush due to fire; western juniper due to lack of fir in other areas.	6. ☐ Conforms with Guidelines for Livestock Grazing Management.
4. ■ Not Meeting the Standard, current livestock grazing management practices are significant factors (list important causal agents) - *Although juniper invasion is the main factor in failure to meet standards, over utilization has led to reduced bunchgrass vigor in some areas of the allotment, particularly in Pasture 3.*	7. ■ Does not conform with Guideline for Livestock Grazing Management 4

Standard 5 (Seedings) ■ Standard doesn't apply

Evaluation and Information Sources: Rangeland Health Assessments for Hart Creek 0532, Box T 0534, and Alder Creek FFR 0639 Allotments, June 14, 2006; allotment case files; field review.

No areas of the Box T allotment are dominated primarily by seedings. Therefore, this standard does not apply.

Standard 6 (Exotic Plant Communities, other than Seedings) ■ Standard doesn't apply

Evaluation and Information Sources: Rangeland Health Assessments for Hart Creek 0532, Box T 0534, and Alder Creek FFR 0639 Allotments, June 14, 2006; allotment case files; field review.

Although non-native plants occur on the Box T allotment, no portions of the allotment are dominated by these species to the extent that they are managed as non-native plant communities. Therefore, this standard does not apply.

Standard 7 (Water Quality) ☐ Standard doesn't apply

Evaluation and Information Sources (*required regardless of which box is checked)*: Rangeland Health Assessments for Hart Creek 0532, Box T 0534, and Alder Creek FFR 0639 Allotments, June 14, 2006; riparian inventories; riparian proper functioning condition assessments; riparian habitat evaluation forms; stream survey forms; riparian aquatic data sheets; BLM thermograph data; water quality monitoring data; IDEQ BURP data; TMDL data.

Rangeland Health: IDEQ's 2002 Integrated Report indicates that stream temperatures in Alder Creek support cold water aquatic life (CWAL), CWAL is marginally supported in Meadow Creek, and not supported in North Fork Castle Creek. BLM stream temperature monitoring data indicate that CWAL is supported in Alder Creek and Meadow Creek. All streams met CWAL temperature criteria during monitoring by BLM in 2002, and by IDEQ in 2003. Streams on this allotment have not been evaluated for salmonid spawning, or primary and secondary contact recreation. On Meadow Creek, water pH exceeded acceptable parameters as specified by IDEQ Water Quality Standards. Coliform concentration data indicate that criteria for secondary contact recreation are met in all streams where sampling has been conducted.

Rangeland Health Changes: Water quality data collected between 2001 and 2005 indicate that water quality criteria have been met in most stream segments. However, it is expected that attainment of Idaho Water Quality Standards, particularly for stream temperatures on Meadow Creek and North Fork Castle Creek, will be sporadic until significant progress is made towards attainment of Standards 2 and 3. The cause of failure to meet pH standards on Meadow Creek has not been determined, and therefore it is unknown whether this criterion will be met in the future.

Livestock Grazing Management: Standard 7 is linked to Standards 2 and 3. Livestock grazing management practices are a significant factor in failure to meet Standards 2 and 3 on this allotment. Streams on the allotment lack appropriate riparian vegetative species necessary for stream bank stability, and the plant species present are indicative of disturbance. Changes to livestock management designed allow significant progress to be made towards attainment of Standards 2 and 3 are expected to also support attainment of Standard 7.

[Check box 1, 2, 3, 4, or 5, and either box 6, or 7]

1. ☐ Meeting the Standard	5. ☐ Not Meeting the Standard, cause not determined
2. ■ Not Meeting the Standard, **but making significant progress towards.**	
3. ☐ Not Meeting the Standard, current livestock grazing management practices are **not** significant factors (list important causal agents)	6. ☐ Conforms with Guidelines for Livestock Grazing Management
4. ☐ Not Meeting the Standard, current livestock grazing management practices are significant factors (list important causal agents)	7. ■ Does not conform with Guidelines for Livestock Grazing Management (list Guideline No(s). in non-conformance) 5, 7, 10

2013 Supplement to the Box T Allotment Rangeland Health Standards and Guidelines Assessment
Surface and ground water on public lands comply with the Idaho Water Quality Standards.

Standard 8 (Threatened and Endangered Plants and Animals) ☐ Standard doesn't apply

Evaluation and Information Sources (*required regardless of which box is checked)*:

Rangeland Health Assessments for Hart Creek 0532, Box T 0534, and Alder Creek FFR 0639 Allotments, June 14, 2006.

Redband trout: Riparian inventories, riparian proper functioning condition assessments, riparian habitat evaluation forms, stream survey forms, riparian aquatic data sheets, BLM thermograph data, water quality monitoring data, IDEQ BURP data TMDLs. In the absence of site specific fish habitat data, or to supplement fish habitat data, rangeland health conditions for Standard 8 incorporate Standards 2, 3 and 7.

Wildlife: Riparian proper functioning condition assessments, sage-grouse lek surveys, sage-grouse habitat assessments, pygmy rabbit surveys, rangeland health assessments for upland plant communities.

Botany: Conservation Data Center database, BLM botany database and files. Rangeland health evaluation worksheets, nested plot frequency data, photo plot monitoring, utilization monitoring, actual use reports, grazing bills and applications, allotment case files, and operator case files.

Rangeland Health:
Pasture 1:
Redband trout: Stream temperatures in North Fork Castle Creek did not support cold water aquatic life in 2002, but temperatures in August, 2003 met CWAL temperature criteria.

Sage-grouse: most areas provide suitable habitat, but encroachment of western juniper in a portion of the pasture has resulted in marginal habitat quality. Riparian and wet meadow stability and proximity to sagebrush cover were in the marginal category for late brood-rearing habitat.

2013 Supplement to the Box T Allotment Rangeland Health Standards and Guidelines Assessment
Standard 8 Wildlife is not met in pasture 1 of the Box T allotment. Upland habitats are not providing adequate conditions for many ground dwelling, nesting, and foraging species due to the dominance of short-statured bluegrass (*Poa* sp.) and a lack of deep-rooted, tall-statured perennial bunchgrasses that would be expected for ecological site reference State conditions. In addition, riparian habitats (lotic and lentic systems) are not providing adequate breeding and foraging conditions for many dependent wildlife species. Structural diversity, composition, and vigor of hydric vegetation are all partially lacking resulting in less than suitable habitat for a

diversity of species including spotted frogs and redband trout. Additionally, conditions in riparian vegetation communities are not providing suitable brood-rearing and summer riparian habitats for sage-grouse.

The ORMP management objectives to maintain an abundance, structural stage, and distribution of plant communities and special habitat features to support a high diversity and desired populations of wildlife, and thus averting the need for listing of special status species under the ESA are not met.

Botany: No special-status plants are known to occur in Pasture 1.

Pasture 1A:
Redband trout: Late season flow is limited in the upstream reach of North Fork Castle Creek, but spring runoff would provide suitable flows during the spawning period. Structural diversity, composition, and vigor of hydric vegetation are inadequate along North Fork Castle Creek. Habitat is vulnerable to further loss during high runoff events due to inadequate stream bank stabilization.

2013 Supplement to the Box T Allotment Rangeland Health Standards and Guidelines Assessment
Standard 8 Wildlife is not met in pasture 4 of the Box T allotment. Upland habitats are not providing adequate conditions for many ground-dwelling, nesting, and foraging species primarily due to the conversion of shrub steppe habitat types to woodland/forest habitat types. The increase in woodland habitats in ecological sites where juniper is considered an invasive species and a minor habitat component, at most, comes at the expense of shrub steppe habitats which are the proper plant community reference state and condition for the ecological sites that predominate within the allotment. Although an increase in juniper woodlands in the allotment provides novel habitat for special status species such as flammulated owl, Lewis' woodpecker, and Williamson's sapsucker, a loss of shrub steppe vegetation communities results in a deficiency of adequate habitat for sagebrush-obligate and shrub-dependent special status wildlife species including sage-grouse, pygmy rabbit, Brewer's sparrow, sage sparrow, and loggerhead shrike. In addition, riparian habitats (lotic and lentic systems) are not providing adequate breeding and foraging conditions for many dependent wildlife species. Structural diversity, composition, and vigor of hydric vegetation are all partially lacking resulting in less than suitable habitat for a diversity of species including spotted frogs and redband trout. Additionally, conditions in riparian vegetation communities are not providing suitable brood-rearing and summer riparian habitats for sage-grouse. The ORMP management objectives to maintain an abundance, structural stage, and distribution of plant communities and special habitat features to support a high diversity and desired populations of wildlife, and thus averting the need for listing of special status species under the ESA are not met.

Pasture 2:
Sage-grouse: This pasture is supporting suitable sage-grouse breeding habitat.

Redband trout: There is no potential redband trout habitat in Pasture 2.

2013 Supplement to the Box T Allotment Rangeland Health Standards and Guidelines Assessment
Standard 8 and ORMP Wildlife Habitat and Special Status Species management objectives are met in pasture 2 of the Box T allotment. Upland habitats are providing adequate woody cover, structure, and forage for shrub-obligate and dependent species; deep-rooted, tall statured bunchgrasses are dominant and remain on an upward trend. These conditions are providing adequate habitat quality for many ground-dwelling, nesting, and foraging species. Conditions of breeding, upland summer, and winter seasonal habitats are meeting sage-grouse requirements. Riparian habitats do not occur within pasture 2.

Botany: A large population of BLM Sensitive Type 4 mud flat milkvetch (*Astragalus yoder-williamsii*) is located partially within Pasture 2, and appeared to be in good condition during monitoring in 2005.

Pasture 3:

Redband trout: Stream water temperature monitoring during the end of the salmonid spawning period exceeded water quality standards in 2002, and cold water aquatic life temperatures were within the 10% exceedence criteria in 2000. Standards for pH were met in 1996, but were higher than the acceptable range of established water quality standards in 2005.

Sage-grouse: Breeding habitat is suitable, bordering on marginal, due to slightly higher than desirable sagebrush, and slightly reduced perennial grasses in interspaces.

Wildlife: In some parts of the pasture, juniper is encroaching on sagebrush communities, impacting habitat for sagebrush steppe species including sage-grouse, pygmy rabbit and migratory birds. Herbaceous cover for ground nesting birds, rodents and insects is slightly reduced.

2013 Supplement to the Box T Allotment Rangeland Health Standards and Guidelines Assessment
Significant progress toward meeting Standard 8 Wildlife in pasture 3 is occurring. Upland habitats are providing adequate woody cover, structure, and forage for shrub-obligate and dependent species. Conditions of breeding, upland summer, and winter seasonal habitats are meeting sage-grouse requirements. Riparian habitats are expanding and display continued improvement. A variety of woody and herbaceous species are providing adequate breeding and foraging conditions for many dependent wildlife species including spotted frogs, redband trout, and migratory bird species. Additionally, conditions in riparian vegetation communities are providing suitable brood-rearing and summer riparian habitats for sage-grouse. Therefore, ORMP Wildlife Habitat and Special Status Species management objectives are met in pasture 3.

Botany: A large population of BLM Sensitive Type 4 mud flat milkvetch (*Astragalus yoder-williamsii*) is located partially within Pasture 2, and appeared to be intact during monitoring in 2005.

Rangeland Health Changes:
Following a 1994 wildfire, succession appears to be progressing normally, from a rabbitbrush to sagebrush-dominated community. Frequency of perennial grasses has remained relatively stable. Western juniper encroachment has the potential to negatively impact upland habitat, for sage-grouse and other sagebrush obligate species throughout a majority of the allotment.
Riparian habitat condition along North Fork Castle Creek and Charity Springs appears to be relatively static, and vulnerable to further degradation due to streambank instability. Meadow Creek appears to be in an upward trend, with expansion of riparian graminoids, and some willow recruitment occurring. Alder Creek is supporting riparian habitat communities, as well as pH and CWAL stream temperature criteria.

Livestock Grazing Management:
Current livestock grazing management practices are generally compatible with maintenance of special-status species populations. However, establishment of a deferred or rest-rotation grazing system in Pasture 3 would benefit perennial grasses for sage-grouse breeding habitat. In Pasture 1 and 1A, institution of a deferred or rest-rotation grazing system, in concert with other management measures (i.e. headcut stabilization) would improve riparian conditions on North Fork Castle Creek for support of redband trout habitat.

[Check box 1, 2, 3, 4, or 5, and either box 6, or 7]

1. ☐ Meeting the Standard (plants)	5. ☐ Not Meeting the Standard, cause not determined
2. ☐ Not Meeting the Standard, **but making significant progress towards meeting the Standard**	
3. ☐ Not Meeting the Standard, current livestock grazing management practices are **not** significant factors (list important causal agents)	6. ■ Conforms with Guidelines for Livestock Grazing Management
4. ■ Not Meeting the Standard, current livestock grazing management practices are significant factors (list important causal agents) *Conditions on N. Fork Castle Creek; juniper encroachment.*	7. ☐ Does not conform with Guidelines for Livestock Grazing Management (list Guideline No(s). in non-conformance)

Field Manager's Determination Rationale:

The Box T allotment is not meeting the Standards 1, 2, 3, 4, and 8, and current livestock management practices *are* a significant factor. The allotment is not meeting Standards 7 but *is making significant progress towards meeting Standards.* Standards 5 and 6 do not apply to the Box T Allotment. Soil surface conditions, particularly in Pasture 3, are negatively impacting hydrologic function and recovery of desirable plant communities. Yearly summer grazing is impacting riparian vegetation as well as vigor of perennial bunchgrasses.

(s) Ron Kay 9/11/2006
Field Manager (Acting)

EVALUATION AND DETERMINATION ALDER CREEK

Achieving the Idaho Standards for Rangeland Health and Conformance with the Guidelines for Livestock Grazing Management

Field Office: Owyhee Determination Date(s): September 11, 2006
Grazing Allotment Name/Number: *Alder Creek Allotment #0639*
Name of Permittee(s): Robert Thomas

Standard 1 (Watersheds) ☐ Standard doesn't apply

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: Final Rangeland Health Assessment for Hart Creek 0532, Box T 0534, and Alder Creek FFR 0639 Allotments, June 14, 2006; site photos; field observations; rangeland health evaluation worksheets; Oregon State University Technical Bulletin 152: Biology, Ecology, and Management of Western Juniper.

Rangeland Health: Although some ongoing soil disturbance is occurring due to livestock trailing, erosional features across the landscape appear to be historic in origin, and are currently in various stages of stabilization. Surface rock is also contributing to site stability.

Rangeland Health Changes: Plant distribution relative to infiltration and runoff was noted as impacting hydrologic functioning of the site in the 2002 rangeland health evaluation (during a drought period). However, the site was revisited in 2005, after a break in drought conditions, and vigor and reproductive capability of native perennial bunchgrasses had substantially improved. Given acceptable utilization levels, soil stability and watershed functions are expected to improve, with increased litter, ground cover, and soil organic matter contributions from perennial bunchgrasses. No trend data are available for this allotment.

Livestock Grazing Management: The allotment is managed as fenced federal range (FFR). Livestock management is at the discretion of the permittee, as long as resource degradation is not occurring, and management objectives are being met. The allotment is grazed relatively early each year. Though occasional rest or deferment may provide added benefits to soil and vegetation conditions on the allotment, current livestock management is not adversely impacting conditions related to Standard 1.

[Check box 1, 2, 3, 4, or 5, and either box 6, or 7]

1. ☐ Meeting the Standard	5. ☐ Not Meeting the Standard, cause not determined
2. ■ Not Meeting the Standard, **but making significant progress towards**	
3. ☐ Not Meeting the Standard, current livestock grazing management practices are **not** significant factors (list important causal agents)	6. ■ Conforms with Guidelines for Livestock Grazing Management
4. ☐ Not Meeting the Standard, current livestock grazing management practices are significant factors.	7. ☐ Does not conform with Guidelines for Livestock Grazing Management No

Standard 2 (Riparian Areas and Wetlands) ☐ Standard doesn't 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: Final Rangeland Health Assessment for Hart Creek 0532, Box T 0534, and Alder Creek FFR 0639 Allotments, June 14, 2006; Riparian inventories; riparian proper functioning condition (PFC) assessments; riparian habitat evaluation forms; stream survey forms; riparian aquatic data sheets; repeat photography; IDEQ BURP data; TMDL data.

Rangeland Health: The segment of Alder Creek that is located on this allotment maintains a diverse and healthy riparian shrub community. However, riparian graminoids are underrepresented, and whitetop (*Cardaria draba*) which is a listed noxious weed in the state of Idaho, was noted along this reach in 2000.

Rangeland Health Changes: Alder Creek is functioning at risk, with an upward trend that is expected to continue under current management. Riparian shrub and graminoid communities are expected to expand, leading to adequately stabilized banks, and eventual attainment of PFC. However, active weed management will be necessary control the spread of whitetop.

Livestock Grazing Management: See Standard 1 for a discussion of livestock management. The early season of use appears to be compatible with attainment of standards on Alder Creek, and allows recovery of riparian species during the growing season after the grazing period.

[Check box 1, 2, 3, 4, or 5, and either box 6, or 7]

1. ☐ Meeting the Standard	5. ☐ Not Meeting the Standard, cause not determined
2. ■ Not Meeting the Standard, **but making significant progress towards**	

3. ☐ Not Meeting the Standard, current livestock grazing management practices are **not** significant factors (list important causal agents) Whitetop in drainage.	6. ■ Conforms with Guidelines for Livestock Grazing Management
4. ☐ Not Meeting the Standard, current livestock grazing management practices are significant factors (list important causal agents)	7. ☐ Does not conform with Guidelines for Livestock Grazing Management (list Guideline No(s). in non-conformance)

Standard 3 (Stream Channel/Flood Plain) ☐ Standard doesn't 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: (*required regardless of which box is checked)*: Final Rangeland Health Assessment for Hart Creek 0532, Box T 0534, and Alder Creek FFR 0639 Allotments, June 14, 2006; Riparian inventories; riparian proper functioning condition assessments; riparian habitat evaluation forms; stream survey forms; riparian aquatic data sheets; IDEQ BURP data; TMDL data.

Rangeland Health: Alder Creek is passing the range of flows and sediment without downcutting or aggrading. The majority of streambanks on this reach are stable. Stream channel and floodplain characteristics are appropriate to the landscape setting, and are functioning properly to provide for nutrient cycling, hydrologic cycling, and energy flow. This stream reach is functioning at risk due to inadequate cover of riparian graminoid species, though riparian shrubs are stabilizing streambanks. Graminoid cover is not yet adequate to stabilize streambanks in the event of episodic high flow events.

Rangeland Health Changes: Streambank cover of stabilizing herbaceous vegetation has not yet reached site potential, leaving the stream channel and floodplain vulnerable to degradation during episodic high flow events. However, the stream is in good condition overall, and herbaceous cover is increasing, leading to greater bank stability.

Livestock Grazing Management: See Standard 1 for a discussion of livestock management. Livestock grazing management appears to be allowing significant progress towards attainment of Standard 3.

[Check box 1, 2, 3, 4, or 5, and either box 6, or 7]

1. ☐ Meeting the Standard	5. ☐ Not Meeting the Standard, cause not determined
2. ■ Not Meeting the Standard, **but making significant progress towards**	
3. ☐ Not Meeting the Standard, current livestock grazing management practices are **not** significant factors (list important causal agents)	6. ■ Conforms with Guidelines for Livestock Grazing Management

4. ☐ Not Meeting the Standard, current livestock grazing management practices are significant factors (list important causal agents)	7. ☐ Does not conform with Guidelines for Livestock Grazing Management (list Guideline No(s). in non-conformance)

Standard 4 (Native Plant Communities) ☐ Standard doesn't apply

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: Final Rangeland Health Assessment for Hart Creek 0532, Box T 0534, and Alder Creek FFR 0639 Allotments, June 14, 2006; photos; field observations; trend data; rangeland health evaluation worksheets; Oregon State University Technical Bulletin 152: Biology, Ecology, and Management of Western Juniper.

Rangeland Health: The main concerns on this allotment related to Standard 4 are invasive species and functional/structural groups. Although native bunchgrass composition is somewhat altered from site potential, components are present on site for recovery of these grasses when favorable climatic conditions occur. Juniper invasion is a concern, with scattered to common western juniper of various age classes evident in site photos. Cheatgrass occurs in trace amounts on the allotment, and may expand in response to fire or other disturbance. Overall, healthy, diverse and productive native plant communities are supported on the Alder Creek FFR allotment.

Rangeland Health Changes: During the 2003 rangeland health evaluation, poor vigor and reproductive capacity of bunchgrasses was noted. However, in 2005, the site was revisited following two seasons of above average precipitation, and bunchgrasses, including bluebunch wheatgrass, were vigorous, and reproductive capacity was good. Juniper invasion is a concern, based on spatial and age-class distribution in site photos and aerial photos. Increases in cover and density of western juniper are associated with reductions in herbaceous cover, and therefore have the potential to alter plant community composition in the absence of fire or other control methods. No trend data are available for this allotment.

Livestock Grazing Management: See Standard 1 for a discussion of livestock management. Occasionally resting or deferring use to fall would allow the plants to complete their growth cycle. When plants are grazed during dormancy, a growth response is not activated, which provides use without taxing the plant. No utilization data are available for this allotment, but livestock grazing management appears to be compatible with attainment of Standard 4.

[Check box 1, 2, 3, 4, or 5, and either box 6, or 7]

1. ■ Meeting the Standard	5. ☐ Not Meeting the Standard, cause not determined
2. ☐ Not Meeting the Standard, **but making significant progress towards**	

3. ☐ Not Meeting the Standard, current livestock grazing management practices are **not** significant factors (list important causal agents)	6. ■ Conforms with Guidelines for Livestock Grazing Management:
4. ☐ Not Meeting the Standard, current livestock grazing management practices are significant factors (list important causal agents) – *Annual spring grazing particularly during drought periods.*	7. ☐ Does not conform with Guidelines for Livestock Grazing Management (list Guideline No(s). in non-conformance) 4

Standard 5 (Seedings) ■ Standard doesn't apply

Rangelands seeded with mixtures, including predominantly non-native plants, are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle.

Rangeland seedings do not exist on this allotment, therefore this standard does not apply.

Standard 6 (Exotic Plant Communities, other than Seedings) ■ Standard doesn't apply

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.

Evaluation and Information Sources: Final Rangeland Health Assessment for Hart Creek 0532, Box T 0534, and Alder Creek FFR 0639 Allotments, June 14, 2006; allotment files; field notes. Available information indicates that no areas of the Alder Creek FFR allotment are dominated by seedings. Therefore, this standard does not apply.

Standard 7 (Water Quality) ☐ Standard doesn't apply

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

Evaluation and Information Sources (*required regardless of which box is checked)*: Final Rangeland Health Assessment for Hart Creek 0532, Box T 0534, and Alder Creek FFR 0639 Allotments, June 14, 2006; Riparian inventories, riparian proper functioning condition assessments, riparian habitat evaluation forms, stream survey forms, riparian aquatic data sheets, BLM thermograph data, water quality monitoring data, IDEQ BURP data, TMDL.

Rangeland Health: IDEQ data indicate that cold water aquatic life (CWAL) was not supported in Alder Creek in 2004. However, BLM data from 2002 and 2003 indicate that stream temperatures fully support CWAL. Fecal coliform and pH data meet water quality standards for secondary contact beneficial use.

Rangeland Health Changes: Standard 7 is linked to standards 2 and 3, which are making significant progress towards meeting standards. Alder Creek is expected to make significant

progress towards consistently meeting water temperature criteria for support of CWAL as riparian vegetation conditions improve and stream shading increases.

Livestock Grazing Management: Livestock management appears to be compatible with attainment of Standard 7.

[Check box 1, 2, 3, 4, or 5, and either box 6, or 7]

1. ☐ Meeting the Standard: Alder Creek.	5. ☐ Not Meeting the Standard, cause not determined:
2. ■ Not Meeting the Standard, **but making significant progress towards.**	
3. ☐ Not Meeting the Standard, current livestock grazing management practices are **not** significant factors (list important causal agents)	6. ■ Conforms with Guidelines for Livestock Grazing Management
4. ☐ Not Meeting the Standard, current livestock grazing management practices are significant factors (list important causal agents)	7. ☐ Does not conform with Guidelines for Livestock Grazing Management (list Guideline No(s). in non-conformance)

Standard 8 (Threatened and Endangered Plants and Animals) ☐ Standard doesn't apply

Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

Evaluation and Information Sources: Riparian PFC, photos, field observations, rangeland health indicators, botany databases, reports.

Evaluation and Information Sources (*required regardless of which box is checked)*:
June 14, 2006 Final Rangeland Health Assessment for Hart Creek, Box T and Alder Creek FFR Allotments; Riparian PFC; photos; field observations; rangeland health evaluation worksheets; Oregon State University Technical Bulletin 152: Biology, Ecology, and Management of Western Juniper.

2013 Supplement to the Alder Creek FFR Allotment Rangeland Health Standards and Guidelines Assessment
Additional information and sources for the present Standard 8 (Wildlife) determination incorporate 2007-2013 data included in supplemented sections within the supplemented Rangeland Health Assessment for Hart Creek 0532, Box T 0534, and Alder Creek FFR 0639 Allotments, 2013 document. **Wildlife** Standard 8 is not met in the Alder Creek FFR allotment. Upland habitats are not providing adequate conditions for many ground-dwelling, nesting, and foraging species due to the dominance of short-statured bluegrass (*Poa* sp.) and invasive cheatgrass, a lack of deep-rooted, tall-statured perennial bunchgrasses that would be expected for ecological site reference state conditions, and the conversion of shrub steppe habitat types to woodland/forest habitat types. In addition, the aforementioned composition of understory herbaceous vegetation is not providing

suitable sage-grouse breeding (i.e., nesting and early-brood rearing) or upland summer habitat conditions. Current as well as historic livestock management practices are significant casual factors for not meeting Standard 8.

Although riparian habitats (Alder Creek) appear to be providing adequate breeding and foraging conditions for many dependent wildlife species such as migratory birds, conditions in these communities are only providing marginal brood-rearing and summer riparian habitats for sage-grouse. Current livestock grazing management practices are significant causal factors for not meeting Standard 8.

Because the condition, abundance, structural stage, and distribution of plant communities required for diverse and desired wildlife populations are not maintained or enhanced and because special status species' habitats are inadequate to increase or maintain populations so as to preclude an impetus for listing (for sagebrush and shrub obligates and dependent species in particular), these major ecological site alterations from their reference states discussed above do not conform with ORMP objectives WDLF-1 and SPSS-1.

Rangeland Health:

Overall, wildlife habitat on the Alder Creek FFR allotment is adequate to support special-status species with potential to occur in the area. Riparian condition on the allotment is functioning-at-risk with an upward trend. Structural diversity, composition, and vigor of hydric vegetation are all adequate to provide for the needs of special status animals. However, herbaceous vegetation is not yet adequate to protect streambanks during episodic high flow events, leaving riparian habitat vulnerable to degradation. Sagebrush and other shrubs provide good cover, structure and forage for sage-grouse and other sagebrush steppe obligates, but habitat is impacted by reductions in perennial bunchgrass cover and increases in western juniper. Although native bunchgrass composition is somewhat altered from site potential, components are present on site for recovery of these grasses when favorable climatic conditions occur.

No special-status plants are known to occur on the Alder Creek FFR allotment.

Rangeland Health Changes: As riparian conditions improve, Alder Creek is expected to make further progress towards fully supporting cold water aquatic life, and streambanks are expected to stabilize. Sagebrush obligate species may be impacted in the future by further increases in western juniper, a plant community change that is correlated with decreases in cover of large perennial bunchgrasses. This trend is most often attributed to inadequate fire-return intervals for juniper suppression. Cheatgrass occurs in trace amounts on the allotment, and may expand in response to fire or other disturbance. No trend data are available for this allotment.

Livestock Grazing Management: See Standard 1 for a discussion of livestock grazing management. Current livestock management practices appear to be compatible with maintenance of appropriate habitat for sensitive species.

[Check box 1, 2, 3, 4, or 5, and either box 6, or 7]

1. ☐ Meeting the Standard	5. ☐ Not Meeting the Standard, cause not determined
2. ■ Not Meeting the Standard, **but making significant progress towards** *Upland habitat adequate, upward trend of riparian conditions*	
3. ☐ Not Meeting the Standard, current livestock grazing management practices are **not** significant factors (list important causal agents)	6. ■ Conforms with Guidelines for Livestock Grazing Management
4. ☐ Not Meeting the Standard, current livestock grazing management practices are significant factors -	7. ☐ Does not conform with Guidelines for Livestock Grazing Management (list Guideline No(s). in non-conformance)

Field Manager's Determination Rationale:

I have determined that in the Alder Creek FFR allotment, Standards 1, 2, 3, 7 and 8 are not being met, but significant progress is being made towards meeting these standards. Standard 4 is being met. Western juniper is present in the allotment, but is not currently impacting watershed functionality. However, juniper encroachment could potentially have a negative affect on watershed functionality, native plant community integrity, and wildlife habitat in the future. Standards 5 and 6 do not apply to the Alder Creek FFR Allotment. The Alder Creek FFR allotment is managed as fenced federal range (FFR), and livestock management is at the discretion of the permittee, as long as resource degradation is not occurring, and management objectives are being met.

(s) Ron Kay 9/11/2006

Field Manager
(Acting)

2013 DETERMINATIONS

Hart Creek Allotment

2013 Supplement to the Hart Creek Allotment Rangeland Health Standards and Guidelines Assessment

2013 Evaluation Findings and Determination

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.

Standard

□ Standard does not apply
□ Meeting the Standard
□ Not meeting the Standard, Current livestock grazing management practices are significant factors
□ Not Meeting the Standard; Making significant progress toward
■ Not Meeting the Standard; Current livestock grazing management practices are not significant factors

Guidelines

■ Conforms with Guidelines for Livestock Grazing Management
□ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).

Rationale for Evaluation Finding and Determination

Historic livestock grazing management practices are significant causal factors for not meeting watershed standards in pastures 1 and 2 of the Hart Creek allotment; pasture 3 is meeting. While soil stability is currently stabilized in a degraded state, hydrologic function is altered and primarily connected with past grazing practices.

Much of the decline in infiltration and runoff rates and patterns can be associated with a change of deep-rooted perennial bunchgrasses to more shallow-rooted species. The steady reduction of species diversity and the localized invasion of annuals have compromised soil nutrient replenishment and result in decreased watershed function due to a lack of ability for proper nutrient cycling, hydrologic cycling, and energy flow.

Declining ecological function and impaired soils indicate that soil and hydrologic function are compromised. Historic livestock grazing management is the cause for not meeting Standard 1 and the ORMP soil management objective of improving unsatisfactory watershed health/condition in the Hart Creek allotment.

Standard 2 (Riparian Areas and 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.

Standard

□ Standard does not apply
□ Meeting the Standard
■ Not meeting the Standard, Current livestock grazing management practices are significant factors
□ Not Meeting the Standard; Making significant progress toward
□ Not Meeting the Standard; Current livestock grazing management practices are not significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management
■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 5

Rationale for Evaluation Finding and Determination

Standard 2 is not being met in pastures 1 and 3 of the Hart Creek allotment. Two reaches of Hart Creek that traverses pasture 1 were rated FAR because they lacked the late-season flow necessary to fully support riparian graminoids, but woody riparian species occur along the reaches. Scotch thistle and whitetop, both Idaho noxious weed species, occur at some locations along Hart Creek. In 2008, the two reaches of Hart Creek were re-assessed FAR. There was lateral instability and the channel meandered and was braided. There were noxious weeds present, and the bank shearing was introducing sediment into the stream. The reach of Pickett Creek that occurs in pasture 1 supported appropriate woody riparian vegetation, but upland species such as Kentucky bluegrass dominated the understory; thus, it was rated FAR.

Brown's Creek, which traverses pasture 3, was rated FAR because there were not adequate hydric species to stabilize stream banks during high flow events. Also within pasture 3, approximately 2.2 miles of Buckaroo Creek, 0.9 mile of a tributary to Buckaroo Creek, 1.2 miles of Cat Creek, 1.1 miles of Little Brown's Creek, and 0.8 mile of a tributary to Little Browns Creek were also most recently rated FAR (see assessment table). Issues identified include: inadequate soil moisture and lack of floodplain inundation to support hydric species that would protect the stream banks, a lack of plant composition and vigor, erosion was occurring, the stream was overwide, and the stream banks and channel were unstable.

Five known springs that occur in pasture 3 were assessed in 2003, 2005, and 2008; one was most recently in PFC, one was FAR, and three were NF. A rating lower than PFC for the springs was mostly associated with improperly placed or unmaintained exclosures. Three of the springs that were originally assessed in 2003 were re-assessed in 2008; Cat Spring was again rated FAR, Alibi Spring was NF (a downward trend), and the PFC protocol was not applied to Buckaroo

Spring. However, photos were taken and the area appears to have been trampled and the vegetation was in poor health.

Current livestock grazing management practices are significant causal factors for not meeting Standard 2. Residual vegetation has not been sufficient to maintain or improve riparian-wetland function, the recent grazing schedule has not allowed for rest years, and the spring developments were not designed to protect the ecological function of the riparian-wetland areas. Therefore, current livestock grazing management practices do not conform with the Idaho Guidelines for Livestock Grazing Management applicable to Standard 2.

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.

Standard

□ Standard does not apply
□ Meeting the Standard
■ Not meeting the Standard, Current livestock grazing management practices are significant factors
□ Not Meeting the Standard; Making significant progress toward
□ Not Meeting the Standard; Current livestock grazing management practices are not significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management
■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 7

Rationale for Evaluation Finding and Determination

Standard 3 is not being met in pastures 1 and 3 of the Hart Creek allotment. Two reaches of Hart Creek that traverses pasture 1 were originally rated FAR because the channel was over-wide and straightened. In 2008, the two reaches were re-assessed FAR. There was lateral instability and the channel meandered and was braided. There were noxious weeds present, and the bank shearing was introducing sediment into the stream. Pickett Creek, which occurs in pasture 1, was FAR because the channel bed meandered and was over-wide.

Within pasture 3, segments of Brown's Creek, Buckaroo Creek and its tributaries, and Little Brown Creek and its tributaries were all rated FAR. Brown's and Buckaroo Creeks had overwide channels and lacked lateral stability, Brown's Creek tributaries, Little Brown's, and its tributaries had unstable and eroding banks.

Current livestock grazing management practices are significant causal factors for not meeting Standard 3. Residual vegetation has not been sufficient to maintain or improve riparian-wetland

function, the recent grazing schedule has not allowed for rest years, and the stream channel and bank function have been compromised. Therefore, current livestock grazing management practices do not conform with the Idaho Guidelines for Livestock Grazing Management applicable to Standard 3.

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.

Standard

□ Standard does not apply
□ Meeting the Standard
□ Not meeting the Standard, Current livestock grazing management practices are significant factors
□ Not Meeting the Standard; Making significant progress toward
■ Not Meeting the Standard; Current livestock grazing management practices are not significant factors (list important causal agents) *Historic livestock management, particularly in Pasture 1 and Pasture 2*

Guidelines

■ Conforms with Guidelines for Livestock Grazing Management
□ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).

Rationale for Evaluation Finding and Determination

Standard 4 is not met in pastures 1 and 2, but is met in pasture 3. Review of the 2006 Evaluation/Determination for Standard 4 within the Hart Creek allotment and additional data and information available since its completion, including sage-grouse habitat assessments completed in 2012, does not lead to a change in the conclusion that the Standard is not met and that current livestock management practices are not significant factors. Current livestock management practices in pastures 1 and 2 include grazing of upland vegetation communities during no more than one in two years during the active growing season (May-June) and utilization that is consistently less than the Owyhee Resource Management Plan maximum allowable level of 50 percent. The causal factor for not meeting the standard in pastures 1 and 2 of the allotment is historic grazing practices that reduced the composition of deep-rooted perennial herbaceous species within the vegetation communities.

In not meeting Standard 4 within the allotment, the ORMP management objective to improve unsatisfactory vegetation health/condition on all areas is not met. While livestock management practices in pastures where the standard is not met conform to the Guidelines, appropriate livestock management practices can be implemented to allow progress toward meeting the ORMP vegetation management objective and attaining progress toward reference-site vegetation communities with a co-dominance of deep-rooted perennial bunchgrasses and shrubs.

Standard 5 (Seedings)

Rangelands seeded with mixtures, including predominantly non-native plants, are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and hydrologic cycling.

■ Standard does not apply

Rationale for not applying Standard 5

A review of allotment files, site photos and field notes indicate that no areas of the Hart Creek allotment are dominated by seeded species, therefore this standard is not applied to this allotment.

Standard 6 (Exotic Plant Communities, other than Seedings)

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

■ Standard does not apply

Rationale for not applying Standard 6

Although exotic plant species occur in this allotment and some areas are dominated by exotic plant species, no pasture is compromised so extensively that the entire pasture is managed to meet the minimum requirements of soil stability and maintenance of existing perennial communities, therefore this standard is not applied to this allotment.

Standard 7 (Water Quality)

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

Standard

□ Standard does not apply
□ Meeting the Standard
■ Not meeting the Standard, Current livestock grazing management practices are significant factors
□ Not Meeting the Standard; Making significant progress toward
□ Not Meeting the Standard; Current livestock grazing management practices are not significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management
■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 10

Rationale for Evaluation Finding and Determination

Idaho Department of Environmental Quality (IDEQ) designates basins, sub-basins, and

assessment units in order to manage the State's waterways. The 2010 Integrated Report (303(d)/305(b)) uses assessment units (AUs) within the sub-basin. 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 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).

According to the Clean Water Act, each state must develop Total Maximum Daily Loads (TMDLs) for all the waters on the 303(d) list. The objective of a TMDL is to determine the loading capacity of the water body and to allocate that load among different pollutant sources so that the appropriate control actions can be taken and water quality standards achieved. The TMDL process is important for improving water quality because it links the development and implementation of control actions to the attainment of water quality standards. Once a TMDL is developed for a particular pollutant or pollution, it is effectively removed from the 303(d) list.

Current IDEQ information identifies that the BLM portion of the three pastures within the Hart Creek allotment contain approximately 44.6 miles of stream that are not supporting the watershed's beneficial uses. The allotment contains portions of nine AUs (Table RIPN-5) with associated beneficial uses and pollutants. Four of the AUs are currently not supporting the beneficial uses, and all of the streams that occur within them are also on the 303(d) list of impaired waters.

Based on the streams presence on the 303(d) list of impaired waters, Standard 7 is not being met in any of the pastures within the Hart Creek allotment and the allotment is not in conformance with Guideline #10 for Livestock Grazing Management.

Table RIPN-5: IDEQ watershed information for the Hart Creek allotment

AU #	AU Name	Beneficial Use Not Being Met	Pollutant/ Pollution	TMDL
ID17050103SW013_02	Fossil Creek - 1st and 2nd order	not assessed		
ID17050103SW016_02	Pickett Creek - 1st & 2nd order	CWAL[1]	sedimentation/ siltation temperature	No
ID17050103SW018_02	Bates Creek - 1st and 2nd order	not assessed		
ID17050103SW017_03	Bates Creek - 3rd order	not assessed		
ID17050103SW018_02	Hart and Little Hart Creeks - 1st and 2nd order	not assessed		
ID17050103SW018_03	Hart Creek - 3rd order	not assessed		
ID17050103SW019_02	Brown Creek - 1st & 2nd order	CWAL	sedimentation/ siltation	No
ID17050103SW019_03	Brown Creek - 3rd order	CWAL	sedimentation/ siltation	No

ID17050103SW019_04	Brown Creek - 4th order	CWAL	sedimentation/ siltation	No

[1]CWAL = cold water aquatic life

Standard 8 (Threatened and Endangered Plants and Animals)

Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

Standard

□ Standard does not apply
□ Meeting the Standard
■ Not meeting the Standard, Current livestock grazing management practices are significant factors
□ Not Meeting the Standard; Making significant progress toward
□ Not Meeting the Standard; Current livestock grazing management practices are not significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management
■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 5, 8, 12

Rationale for Evaluation Finding and Determination

Botany

Standard 8 for botany is met in the Hart Creek allotment. There are no federally listed plant species and there is insufficient information to determine site-specific impacts of livestock grazing on any special status plants that occur in this allotment.

Wildlife

Standard 8 for wildlife is not met in the Hart Creek allotment. Upland habitats in pastures 1 and 2 are not providing adequate conditions for many ground dwelling, nesting and foraging species. In addition, riparian habitats in pasture 3 are not providing adequate breeding and foraging conditions for many dependent wildlife species. The causal factor for not meeting Standard 8 in upland habitats in pastures 1 and 2 is historic grazing practices that reduced the composition of deep-rooted perennial herbaceous vegetation. However, current livestock grazing management practices in riparian habitats are significant causal factors for not meeting Standard 8.

Because the condition, abundance, structural stage, and distribution of plant communities required for diverse and desired wildlife populations are not maintained or enhanced and because special status species' habitats are inadequate to increase or maintain populations so as to preclude an impetus for listing (for sagebrush and shrub obligates and dependent species in particular), these major ecological site alterations from their reference states discussed above do not conform with ORMP objectives WDLF-1 and SPSS-1.

Determination

I have determined that Standards 1, 2, 3, 4, 7, and 8 of the applicable Standards for Rangeland Health are not being met in the Hart Creek allotment. Standards 5 and 6 are not applicable to this allotment. Current livestock grazing management practices are significant factors in not meeting Standards 2, 3, 7, and 8, whereas current livestock management practices are not significant factors toward not meeting Standards 1 and 4. Livestock management practices do not conform with the applicable Livestock Grazing Management Guidelines 5, 7, 8, 10, and 12 for several Standards.

[signature] 10/30/13

Field Manager **Date**

Owyhee Field Office

Errata (2013 Determination page 29)

2013 Evaluation Findings and Determination

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.

Standard

□ Standard does not apply
□ Meeting the Standard
■ Not meeting the Standard, Current livestock grazing management practices are significant factors– *Pastures 1 and 3 - not rested or deferred – grazed during perennial grass growth period each year; pasture 2 – historic grazing and past fire*
□ Not Meeting the Standard; Making significant progress toward
□ Not Meeting the Standard; Current livestock grazing management practices are not significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management
■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 1, 3, 4, 8

Rationale for Evaluation Finding and Determination

Current livestock grazing management practices are significant causal factors for not meeting upland watershed Standard 1 in pastures 1 and 3 of the Box T allotment; pasture 2 is not meeting due to historic livestock grazing and past fire impacts while pasture 4 (formerly 1A) is meeting but is considered to be at-risk for juniper invasion. This conclusion differs for pastures 1 and 2 from the 2006 evaluation using the same qualitative assessments from 2002 and 2005 and additional quantitative long-term trend data to 2012. Juniper trees currently do not appear to be driving negative soil and hydrologic functions at this time, although the potential for continued invasion is apparent.

For pastures 1 and 3, erosional patterns show departures from reference conditions that are attributed to changes in the plant community. While pasture 1 displays mechanical damage and a mixture of ongoing and historic soil loss in various stages of stabilization, it is the recent increase in bare ground and coinciding decline in ground cover trend that failed the pasture. Conditions in pasture 3 are further deteriorated by widespread loss of the soils surface horizon, active erosional features, extensive bare ground, and increased amounts of trails that have resulted in localized gullying.

The reduction in soil and hydrologic function is associated with altered plant community

composition and distribution due to decreased relative abundance of large, deep-rooted native perennial bunchgrasses. As a result, historic and active accelerated erosional processes have increased pedestaling of plants that, along with accelerated physical damage from hoof action and mechanical damage to soils by livestock, has also affected the biological soil crust component, especially in the interspatial areas.

Pasture 2 continues to have a significant reduction in biological soil crusts after a fire in 1994. Historic erosion relics, high potential for soil movement, and the long- and short-term increase in bare ground in pasture 2 reflect little improvement in watershed health despite an increase in biotic components.

Degraded soil conditions along with a declining trend do not project improvement and indicate that ecological function is compromised due to the decreased ability for proper nutrient cycling, hydrologic cycling, and energy flow. This leads to the conclusion that current and historic livestock management is the primary causal factor in not meeting Standard 1 and the ORMP soil management objective of improving unsatisfactory watershed health/condition for the Box T allotment.

Standard 2 (Riparian Areas and 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.

Standard

□ Standard does not apply
□ Meeting the Standard
■ Not meeting the Standard, Current livestock grazing management practices are significant factors
□ Not Meeting the Standard; Making significant progress toward
□ Not Meeting the Standard; Current livestock grazing management practices are not significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management
■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 5

Rationale for Evaluation Finding and Determination

Standard 2 is not being met in pastures 1, 3, and 4 (1A) of the Box T allotment. Segments of Alder Creek and the North Fork of Castle Creeks that traverse pasture 1 were rated FAR because there was a high percent of the herbaceous vegetation foraged, and erosion and deposition was occurring, contributing excessive sediment into the stream. Within pasture 3, a reach of Meadow Creek was most recently rated FAR based on heavy use of riparian vegetation and excessive sediment. Subsequently, a MIM site was established on the same reach of Meadow Creek. The

bank alteration was 22 percent, exceeding the ORMP objective. However, the stability rating was high and the wetland rating was very good. Segments of the North Fork of Castle Creek and its tributary that traverse pasture 4 were assessed FAR because there was inadequate hydric vegetation present to protect streambanks, and there were headcuts present on the upper reach of the NF Castle Creek which increases vertical instability.

Six springs occur on BLM lands within pasture 1 and have been assessed; five were most recently rated FAR, and one was rated NF. Five springs that occur within pasture 4 (1A) have been assessed; four were most recently assessed in PFC, and one was rated FAR.

The majority of the springs were losing extent of the riparian-wetland area and there was generally inadequate vegetation present to aid in stabilizing riparian soils and maintaining hydric vegetation. There were also typically altered flow patterns created by mechanical damage from livestock trampling as well as the presence of noxious weeds.

Current livestock grazing management practices are significant causal factors for not meeting Standard 2. Residual vegetation has not been sufficient to maintain or improve riparian-wetland function, and the recent grazing schedule has not allowed for rest years. Therefore, current livestock grazing management practices do not conform with the Idaho Guidelines for Livestock Grazing Management applicable to Standard 2.

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.

Standard

□ Standard does not apply
□ Meeting the Standard
■ Not meeting the Standard, Current livestock grazing management practices are significant factors
□ Not Meeting the Standard; Making significant progress toward
□ Not Meeting the Standard; Current livestock grazing management practices are not significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management
■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 7

Rationale for Evaluation Finding and Determination

Standard 3 is not being met in pastures 1, 3, and 4 (1A) of the Box T allotment. Segments of Alder Creek and North Fork Castle Creek that traverse pasture 1 were rated FAR because there was both vertical and lateral instability, an incised channel, and erosion and deposition was

occurring contributing excessive sediment. Within pasture 3, a reach of Meadow Creek was most recently rated FAR because there was an incised channel, eroded banks, and excessive sediment. Subsequently, a MIM site was established on the same reach of Meadow Creek. The bank alteration was 22 percent, exceeding the ORMP objective. However, the stability rating was high and the wetland rating was very good. Segments of North Fork Castle Creek and its tributary that traverse pasture 4 were assessed FAR because there was inadequate hydric vegetation present to protect streambanks, and there were headcuts present on the upper reach of the NF Castle Creek which increases vertical instability.

Current livestock grazing management practices are significant causal factors for not meeting Standard 3. Residual vegetation has not been sufficient to maintain or improve riparian-wetland function, the recent grazing schedule has not allowed for rest or deferment years, and the stream channel and bank function have been compromised. Therefore, current livestock grazing management practices do not conform with the Idaho Guidelines for Livestock Grazing Management applicable to Standard 3.

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.

Standard

□ Standard does not apply
□ Meeting the Standard
■ Not meeting the Standard, Current livestock grazing management practices are significant factors – *Historic and current livestock management practices; Western Juniper dominance*
□ Not Meeting the Standard; Making significant progress toward
□ Not Meeting the Standard; Current livestock grazing management practices are not significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management
■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 4, 9, 12

Rationale for Evaluation Finding and Determination

Standard 4 is not met in the Box T allotment. Review of the 2006 Evaluation/Determination for Standard 4 within the Box T allotment and additional data and information compiled since its completion, including 2012 sage-grouse habitat assessment data, does not lead to a change in the conclusion that the Standard is not met and that current as well as historic livestock management practices are significant casual factors. The increase in juniper dominance is also a contributing factor toward not meeting the Standard. Current livestock management practices include grazing of upland vegetation communities during the active growing season (May-June) in pastures 1 and 3 annually. Frequent growing season grazing use in pastures 1 and 3, to benefit riparian

resources, has led to the continuing decline of bunchgrass vigor and a decline in the frequency of desirable deep-rooted perennial bunchgrass species. Recorded utilization levels have not exceeded the maximum allowable level of 50 percent during the past decade, a limit established in the Owyhee Resource Management Plan.

In addition, juniper occurrence was noted as scattered to common at a number of sites and contributes to not meeting Standard 4. Juniper invasion is a causal factor in failure to meet the Standard in pastures 1 and 4. Juniper encroachment is a product of altered fire regimes from natural levels of disturbance.

In not meeting Standard 4 within the Box T allotment, the ORMP management objective to improve unsatisfactory vegetation health/condition on all areas is not met. State-and-transition models identify that appropriate livestock management practices can be implemented to allow progress toward meeting the ORMP vegetation management objective and attaining progress toward reference-site vegetation communities with a co-dominance of deep-rooted perennial bunchgrasses and shrubs.

Standard 5 (Seedings)

Rangelands seeded with mixtures, including predominantly non-native plants, are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and hydrologic cycling.

- Standard does not apply

Rationale for not applying Standard 5

No areas of the Box T allotment are dominated primarily by seedings. Therefore, this standard does not apply.

Standard 6 (Exotic Plant Communities, other than Seedings)

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

- Standard does not apply

Rationale for not applying Standard 6

Although non-native plants occur on the Box T allotment, no portions of the allotment are dominated by these species to the extent that they are managed as non-native plant communities. Therefore, this standard does not apply.

Standard 7 (Water Quality)

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

Standard

□ Standard does not apply
□ Meeting the Standard
□ Not meeting the Standard, Current livestock grazing management practices are significant factors
□ Not Meeting the Standard; Making significant progress toward
■ Not Meeting the Standard; Current livestock grazing management practices are not significant factors

Guidelines

■ Conforms with Guidelines for Livestock Grazing Management
□ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).

Rationale for Evaluation Finding and Determination

Idaho Department of Environmental Quality (IDEQ) designates basins, sub-basins, and assessment units in order to manage the State's waterways. The 2010 Integrated Report (303(d)/305(b)) uses assessment units (AUs) within the sub-basin. 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 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).

According to the Clean Water Act, each state must develop Total Maximum Daily Loads (TMDLs) for all the waters on the 303(d) list. The objective of a TMDL is to determine the loading capacity of the water body and to allocate that load among different pollutant sources so that the appropriate control actions can be taken and water quality standards achieved. The TMDL process is important for improving water quality because it links the development and implementation of control actions to the attainment of water quality standards. Once a TMDL is developed for a particular pollutant or pollution, it is effectively removed from the 303(d) list.

Current IDEQ information identifies that the BLM portions of the four pastures within the Box T allotment contain approximately 11.2 miles of stream that are not supporting the watershed's beneficial uses. The Box T allotment contains portions of five AUs (Table RIPN-6) with associated beneficial uses and pollutants. Although the AUs are currently not supporting the beneficial uses, all of the streams that occur within the allotment and were on the 303(d) list of impaired waters for temperature in the 2010 Integrated Report have approved TMDLs with actions identified to de-list streams. However, the streams that occur within ID17050108SW015_02 and ID17050108SW015_03 AUs are also not meeting the beneficial uses based on flow alteration. A TMDL has not been developed for the flow alteration pollutant; thus, the streams that occur within these AUs are currently 303(d) listed.

Potential Natural Vegetation (PNV) TMDLs were developed for temperature for the AUs that occur within the allotment. Idaho water quality standards include a provision (IDAPA

58.01.02.200.09), which establishes that if natural conditions exceed numeric water quality criteria, exceedance of the criteria is not considered to be a violation of water quality standards. In these situations, natural conditions essentially become the water quality standard, and the natural level of shade and channel width become the target of the TMDL. The in-stream temperature that results from attainment of these conditions is consistent with the water quality standards, even though it may exceed numeric temperature criteria. (Jordan Creek TMDL, 2009). However, current IDEQ information indicates that all of the streams that occur within the allotment and have been evaluated for temperature using the PNV approach are not meeting the shade target established.

Based on the streams removal from the 303(d) list of impaired waters, Standard 7 is being met in pastures 1 and 4 (1A) of the Box T allotment and the allotment is in conformance with the Guidelines for Livestock Grazing Management. However, implementation plans associated with the TMDLs are in development, and actions on the ground will not take place immediately. Standard 7 is not currently being met in pastures 2 and 3 since there are streams on the 303(d) list due to flow alterations. The allotment is in conformance with the Guidelines for Livestock Grazing Management because livestock are not the causal factor.

Table RIPN-6: IDEQ watershed information for the Box T allotment

AU #	AU Name	Beneficial Use Not Meeting	Pollutant/ Pollution	TMDL
ID17050103SW014_02	Castle Creek (1st and 2nd order rangeland tribs)	CWAL[1]	temperature	Yes- all streams
ID17050103SW014_02a	Castle Creek (1st and 2nd order forested tribs),	CWAL SS[2]	temperature temperature	Yes- all streams Yes- all streams
ID17050108SW015_02	Spring and Meadow Creeks (1st and 2nd order)	CWAL	temperature flow alterations	Yes- all streams NO
ID17050108SW015_03	Spring and Meadow Creeks (3rd order sections)	CWAL	temperature flow alterations	Yes- all streams NO
ID17050108SW015_03L	Spencer Reservoir	not assessed		NA

[1]CWAL = cold water aquatic life
[2]SS = salmonid spawning

Standard 8 (Threatened and Endangered Plants and Animals)

Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

Standard

□ Standard does not apply
□ Meeting the Standard
■ Not meeting the Standard, Current livestock grazing management practices are significant factors
□ Not Meeting the Standard; Making significant progress toward
□ Not Meeting the Standard; Current livestock grazing management practices are not significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management
■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 5, 8, 12

Rationale for Evaluation Finding and Determination

Botany

Standard 8 for botany is met in the Box T allotment. There are no federally listed plant species and there is insufficient information to determine site-specific impacts of livestock grazing on any special status plants that occur in this allotment.

Wildlife

Overall, Standard 8 for wildlife is not met in the Box T allotment. Upland and riparian habitats in pastures 1 and 4 are not providing adequate conditions for many shrub-obligate and riparian-dependent species. The causal factor for not meeting Standard 8 in upland habitats in pastures 1 and 4 is juniper encroachment, which comes at the expense of shrub steppe habitats, which are the proper plant community reference state and condition for the ecological sites that predominate within the allotment. Riparian habitats (lotic and lentic systems) in pastures 1 and 4 are not providing adequate breeding and foraging conditions for many dependent wildlife species due to a lack of structural diversity, composition, and vigor of hydric vegetation due to current livestock grazing management practices. Lack of these habitat components results in less-than-suitable habitat for a diversity of species including spotted frogs and redband trout. Additionally, conditions in riparian vegetation communities in pastures 1 and 4 are not providing suitable brood-rearing and summer riparian habitats for sage-grouse.

Because the condition, abundance, structural stage, and distribution of plant communities required for diverse and desired wildlife populations are not maintained or enhanced and because special status species' habitats are inadequate to increase or maintain populations so as to preclude an impetus for listing (for sagebrush and shrub obligates and dependent species in particular), these major ecological site alterations from their reference states discussed above do not conform with ORMP objectives WDLF-1 and SPSS-1.

Determination

I have determined that Standards 1, 2, 3, 4, 7, and 8 of the applicable Standards for Rangeland Health are not being met in the Box T allotment. Standards 5 and 6 are not applicable to this allotment. Current livestock grazing management practices are significant factors in not meeting Standards 1, 2, 3, 4, and 8. Current livestock grazing is not the causal factor for not meeting Standard 7. Livestock management practices do not conform with the applicable Livestock Grazing Management Guidelines 1, 3, 4, 5, 7, 8, 9, and 12 for several Standards.

Field Manager
Owyhee Field Office

12/21/13
Date

2013 Evaluation Findings and Determination

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.

Standard

□ Standard does not apply
□ Meeting the Standard
■ Not meeting the Standard, Current livestock grazing management practices are significant factors– *Allotment grazed in the spring without rest or deferment; soil surface conditions and hydrologic function impaired.*
□ Not Meeting the Standard; Making significant progress toward
□ Not Meeting the Standard; Current livestock grazing management practices are not significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management
■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 1, 3, 8

Rationale for Evaluation Finding and Determination

Current livestock grazing management practices are significant causal factors for not meeting upland watershed Standard 1 in the Alder Creek FFR allotment. This conclusion differs from the 2006 evaluation using the same qualitative assessment from 2002 but changing the 2005 interpretation.

The additional 2005 rangeland health evaluation gives no indication of any substantially improved conditions for vigor and reproductive capability of native perennial bunchgrasses. Furthermore, the attributes for soil and hydrologic function moved from overall slight-to-moderate ratings in 2002 to primarily moderate ratings in 2005 and reflect considerable deteriorating conditions.

Signs of increased erosion, such as water flow patterns and historic and active pedestaling, indicate decreased watershed function. Soil surface resistance to erosion is reduced, especially where native deep-rooted bunchgrasses are missing and where interspaces are not stabilized by persistent cover. This is especially important on granitic soils due to their erosive nature and the steep topography that dominate much of the higher elevations of the allotment.

Observations during a field trip in 2013 (see project record) confirmed the above stated impacts,

along with mechanical damage from hoof action, increased water flow patterns, and reduced microbiotic crusts. Juniper trees do not appear to be driving negative hydrologic functions at this site, although the potential for continued invasion is apparent.

The decreased ecological function, impaired soils, and repeated spring use in the absence of rest indicate that soil and hydrologic function are compromised. Livestock management is the primary contributing factor for not meeting Standard 1 and ORMP soil management objectives of improving unsatisfactory watershed health/conditions in the Alder Creek FFR allotment.

Standard 2 (Riparian Areas and 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.

Standard

□ Standard does not apply
□ Meeting the Standard
■ Not meeting the Standard, Current livestock grazing management practices are significant factors
□ Not Meeting the Standard; Making significant progress toward
□ Not Meeting the Standard; Current livestock grazing management practices are not significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management
■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 5

Rationale for Evaluation Finding and Determination

Standard 2 is not being met in the Alder Creek FFR allotment. The reach of Alder Creek that traverses BLM lands in the allotment was most recently rated PFC because the stream was protected with and armored with large boulders and dense willows. However, a MMIM site was established on the same reach and the median stubble height was 4.0 inches, the bank alteration was 37 percent, and the woody use was 75 percent. These short-term indicators indicate impacts associated with livestock use were exceeding appropriate limits. One unnamed seep was assessed FAR in 2013 because the flow patterns had been altered by excessive trampling and there was heavy use of riparian vegetation.

Current livestock grazing management practices are significant causal factors for not meeting Standard 2. Residual vegetation has not been sufficient to maintain or improve riparian-wetland function, and the recent grazing schedule has not allowed for rest or deferment years. Therefore, current livestock grazing management practices do not conform with the Idaho Guidelines for Livestock Grazing Management applicable to Standard 2

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.

Standard

□ Standard does not apply
□ Meeting the Standard
■ Not meeting the Standard, Current livestock grazing management practices are significant factors
□ Not Meeting the Standard; Making significant progress toward
□ Not Meeting the Standard; Current livestock grazing management practices are not significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management
■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 7

Rationale for Evaluation Finding and Determination

Standard 3 is not being in the Alder Creek FFR allotment. The reach of Alder Creek that traverses BLM lands in the allotment was most recently rated PFC because the stream was protected and armored with large boulders and dense willows. However, a MMIM site was established on the same reach and the median stubble height was 4.0 inches, the bank alteration was 37 percent, and the woody use was 75 percent. These short-term indicators indicate impacts associated with livestock use were exceeding appropriate limits.

Current livestock grazing management practices are significant causal factors for not meeting Standard 3. Residual vegetation has not been sufficient to maintain or improve riparian-wetland function, the recent grazing schedule has not allowed for rest or deferment years, and the stream channel and bank function have been compromised. Therefore, current livestock grazing management practices do not conform with the Idaho Guidelines for Livestock Grazing Management applicable to Standard 3.

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.

Standard

□ Standard does not apply
□ Meeting the Standard
■ Not meeting the Standard, Current livestock grazing management practices are significant factors – *Annual spring grazing particularly during drought periods.*
□ Not Meeting the Standard; Making significant progress toward

□ Not Meeting the Standard; Current livestock grazing management practices are not significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management

■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 4, 9, 12

Rationale for Evaluation Finding and Determination

Standard 4 is not met in the Alder Creek FFR allotment. Additional data and information available since the completion of the 2006 Evaluation/Determination for Standard 4 within the Alder Creek FFR allotment include actual use data from 2005 through 2012 and 2012 sage-grouse habitat assessment data that record bunchgrass cover. Those actual use data are consistent with reported periods of grazing use in the 2006 assessment/evaluation. The 2012 sage-grouse habitat assessment data identify a lack of mid- to deep-rooted perennial bunchgrass cover at two sites in Wyoming big sagebrush vegetation communities. Further review of the available information leads to change in the conclusion and determination that Standard is not met and that current livestock management practices are significant casual factors.

The rangeland health assessment at one site in 2002 identifies a slight-moderate departure of biotic integrity, although with functional/structural groups that lack co-dominance by deep-rooted perennial bunchgrasses in association with mountain big sagebrush. The 2002 rangeland health assessment identifies a great departure from reference site production levels for deep-rooted decreaser bunchgrasses, an increase in shallow-rooted bunchgrasses, and the dominance of shrubs at a level greater than reference site conditions. A partially completed assessment in 2005 does not conflict with the more thorough 2002 assessment in that it identifies departure of land health indicators for biotic integrity in the none-to-slight through moderate categories. Juniper occurrence was noted as scattered to common throughout the site, a product of altered fire regimes from natural levels of disturbance. This assessment information leads to the conclusion that altered functional/structural groups do not provide for proper nutrient cycling, hydrologic cycling, or energy flow.

Current livestock management practices include grazing of upland vegetation communities during the active growing season (May-June) annually. Annual growing season livestock grazing use has resulted in a decline in the frequency of desirable deep-rooted perennial bunchgrass species. Annual growing season use leads to a determination that in addition to historic livestock use that led to the loss of deep-rooted perennial bunchgrasses, current livestock management practices are a causal factor contributing toward not meeting Standard 4. Juniper encroachment is also a causal factor in failure to meet the Standard.

In not meeting Standard 4 within the Alder Creek FFR allotment, the ORMP management objective to improve unsatisfactory vegetation health/condition on all areas is not met. Appropriate livestock management practices can be implemented to allow progress toward meeting the ORMP vegetation management objective and attaining progress toward reference-

site vegetation communities with a co-dominance of deep-rooted perennial bunchgrasses and shrubs.

Standard 5 (Seedings)

Rangelands seeded with mixtures, including predominantly non-native plants, are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and hydrologic cycling.

■ Standard does not apply

Rationale for not applying Standard 5

Rangeland seedings do not exist on this allotment, therefore this standard does not apply.

Standard 6 (Exotic Plant Communities, other than Seedings)

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

■ Standard does not apply

Rationale for not applying Standard 6

Available information indicates that no areas of the Alder Creek FFR allotment are dominated by seedings. Therefore, this standard does not apply.

Standard 7 (Water Quality)

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

Standard

□ Standard does not apply
■ Meeting the Standard
□ Not meeting the Standard, Current livestock grazing management practices are significant factors
□ Not Meeting the Standard; Making significant progress toward
□ Not Meeting the Standard; Current livestock grazing management practices are not significant factors

Guidelines

■ Conforms with Guidelines for Livestock Grazing Management
□ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). __

Rationale for Evaluation Finding and Determination

Idaho Department of Environmental Quality (IDEQ) designates basins, sub-basins, and assessment units in order to manage the State's waterways. The 2010 Integrated Report

(303(d)/305(b)) uses assessment units (AUs) within the sub-basin. 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 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).

According to the Clean Water Act, each state must develop Total Maximum Daily Loads (TMDLs) for all the waters on the 303(d) list. The objective of a TMDL is to determine the loading capacity of the water body and to allocate that load among different pollutant sources so that the appropriate control actions can be taken and water quality standards achieved. The TMDL process is important for improving water quality because it links the development and implementation of control actions to the attainment of water quality standards. Once a TMDL is developed for a particular pollutant or pollution, it is effectively removed from the 303(d) list.

Current IDEQ information identifies that the BLM portions of the Alder Creek allotment contain approximately 0.6 miles of stream that are not supporting the watershed's beneficial uses. The allotment contains portions of two AUs (Table RIPN-7) with associated beneficial uses and pollutants. Both of the AUs are currently not supporting the beneficial uses, and all of the streams that occur within AU# ID17050103SW019_02 are also on the 303(d) list of impaired waters for sediment. The streams within AU# ID17050103SW014_02 are not supporting the CWAL beneficial use; however, they have been removed from the 303(d) list because a temperature TMDL has been developed and approved with actions identified to de-list streams.

Potential Natural Vegetation (PNV) TMDLs were developed for temperature for AU # ID17050103SW014_02. Idaho water quality standards include a provision (IDAPA 58.01.02.200.09), which establishes that if natural conditions exceed numeric water quality criteria, exceedance of the criteria is not considered to be a violation of water quality standards. In these situations, natural conditions essentially become the water quality standard, and the natural level of shade and channel width become the target of the TMDL. The in-stream temperature that results from attainment of these conditions is consistent with the water quality standards, even though it may exceed numeric temperature criteria. However, current IDEQ information indicates that segments of streams that occur on BLM lands within the allotment and have been evaluated for temperature using the PNV approach are not meeting the shade target established.

The streams that are on the 303(d) list of impaired waters occur on the private land within the allotment; therefore, Standard 7 is being met in the Hart Creek allotment and the allotment is in conformance with Guideline 10 for Livestock Grazing Management.

Table RIPN-7: IDEQ watershed information for the Alder Creek FFR allotment

AU #	AU Name	Beneficial Use Not Being Met	Pollutant/ Pollution	TMDL
ID17050103SW019_02	Brown Creek - 1st & 2nd	CWAL	sedimentation/ siltation	NO

	order			
ID17050103SW014_02	Castle Creek - 1st & 2nd order rangeland tributaries	CWAL	temperature	All Streams

[1]CWAL = cold water aquatic life

Standard 8 (Threatened and Endangered Plants and Animals)

Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

Standard

□ Standard does not apply
□ Meeting the Standard
■ Not meeting the Standard, Current livestock grazing management practices are significant factors
□ Not Meeting the Standard; Making significant progress toward
□ Not Meeting the Standard; Current livestock grazing management practices are not significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management
■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 5, 8, 12

Rationale for Evaluation Finding and Determination

Botany

Standard 8 for botany is met in the Alder Creek allotment. There are no federally listed plant species and there is insufficient information to determine site-specific impacts of livestock grazing on any special status plants that occur in this allotment.

Wildlife

Standard 8 is not met in the Alder Creek FFR allotment. Upland habitats are not providing adequate conditions for many ground dwelling, nesting, and foraging species due to the dominance of short-statured bluegrass (*Poa* sp.) and invasive cheatgrass and a lack of deep-rooted, tall-statured perennial bunchgrasses that would be expected for ecological site reference State conditions and the conversion of shrub steppe habitat types to woodland/forest habitat types. In addition, the aforementioned composition of understory herbaceous vegetation is not providing suitable sage-grouse breeding (i.e., nesting and early-brood rearing) or upland summer habitat conditions. Current as well as historic livestock management practices are significant casual factors for not meeting Standard 8.

Although riparian habitats (Alder Creek) appear to be providing adequate breeding and foraging conditions for many dependent wildlife species such as migratory birds, conditions in these communities are only providing marginal brood-rearing and summer riparian habitats for sage-grouse. Current livestock grazing management practices are significant causal factors for not meeting Standard 8.

Because the condition, abundance, structural stage, and distribution of plant communities required for diverse and desired wildlife populations are not maintained or enhanced and because special status species' habitats are inadequate to increase or maintain populations so as to preclude an impetus for listing (for sagebrush- and shrub-obligates and -dependent species in particular), these major ecological site alterations from their reference states discussed above do not conform with ORMP objectives WDLF-1 and SPSS-1.

Determination

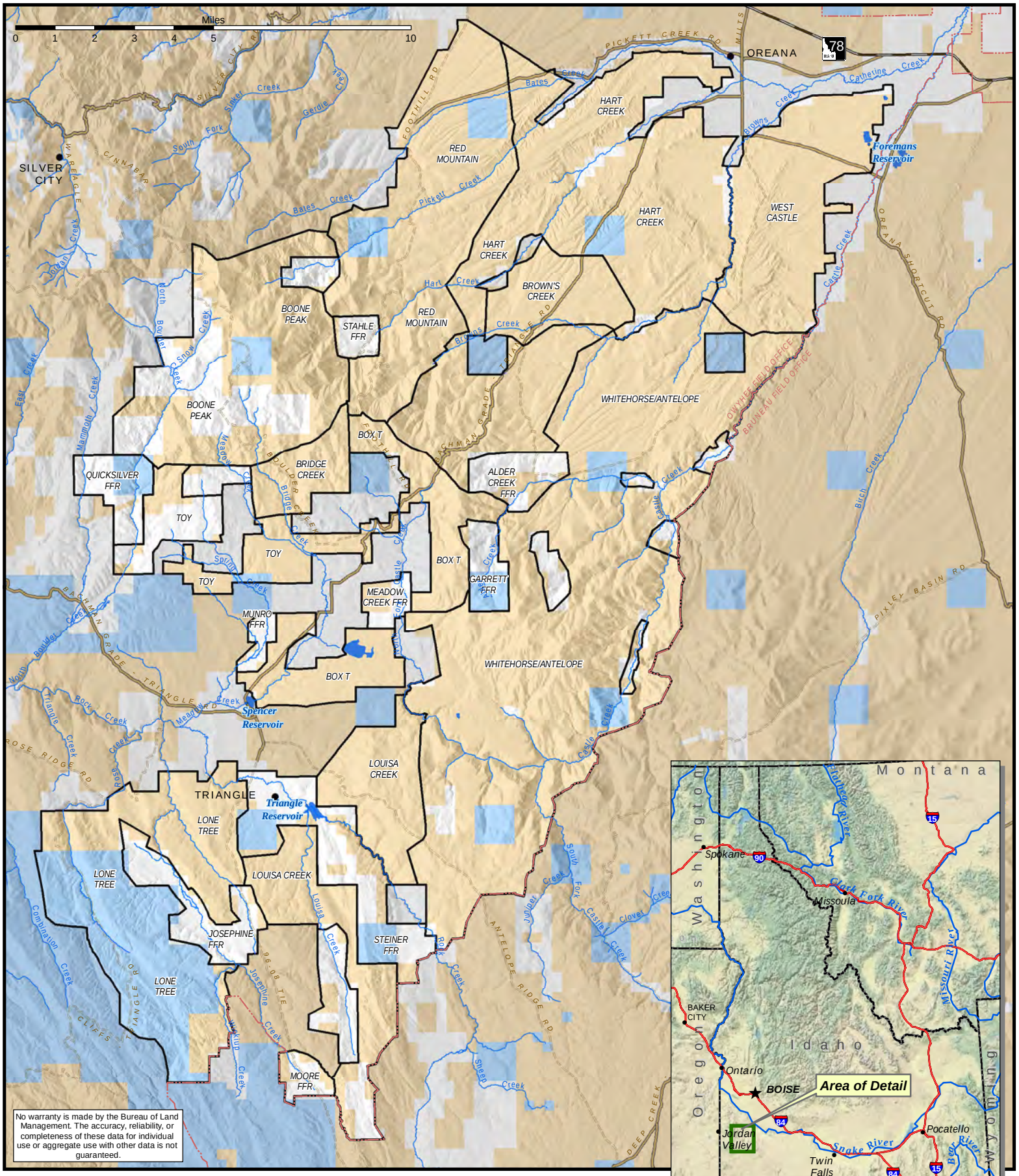
I have determined that Standards 1, 2, 3, 4, and 8 of the applicable Standards for Rangeland Health are not being met in the Alder Creek allotment, whereas Standard 7 has been met. Standards 5 and 6 are not applicable to this allotment. Current livestock grazing management practices are significant factors in not meeting Standards 1, 2, 3, 4, and 8. Livestock management practices do not conform with the applicable Livestock Grazing Management Guidelines 1, 3, 4, 5, 7, 8, 9, and 12 for several Standards.

Lorello V Chanda

Field Manager
Owyhee Field Office

10/21/13
Date

GEN-1, Toy Mountain Allotments Overview



Legend

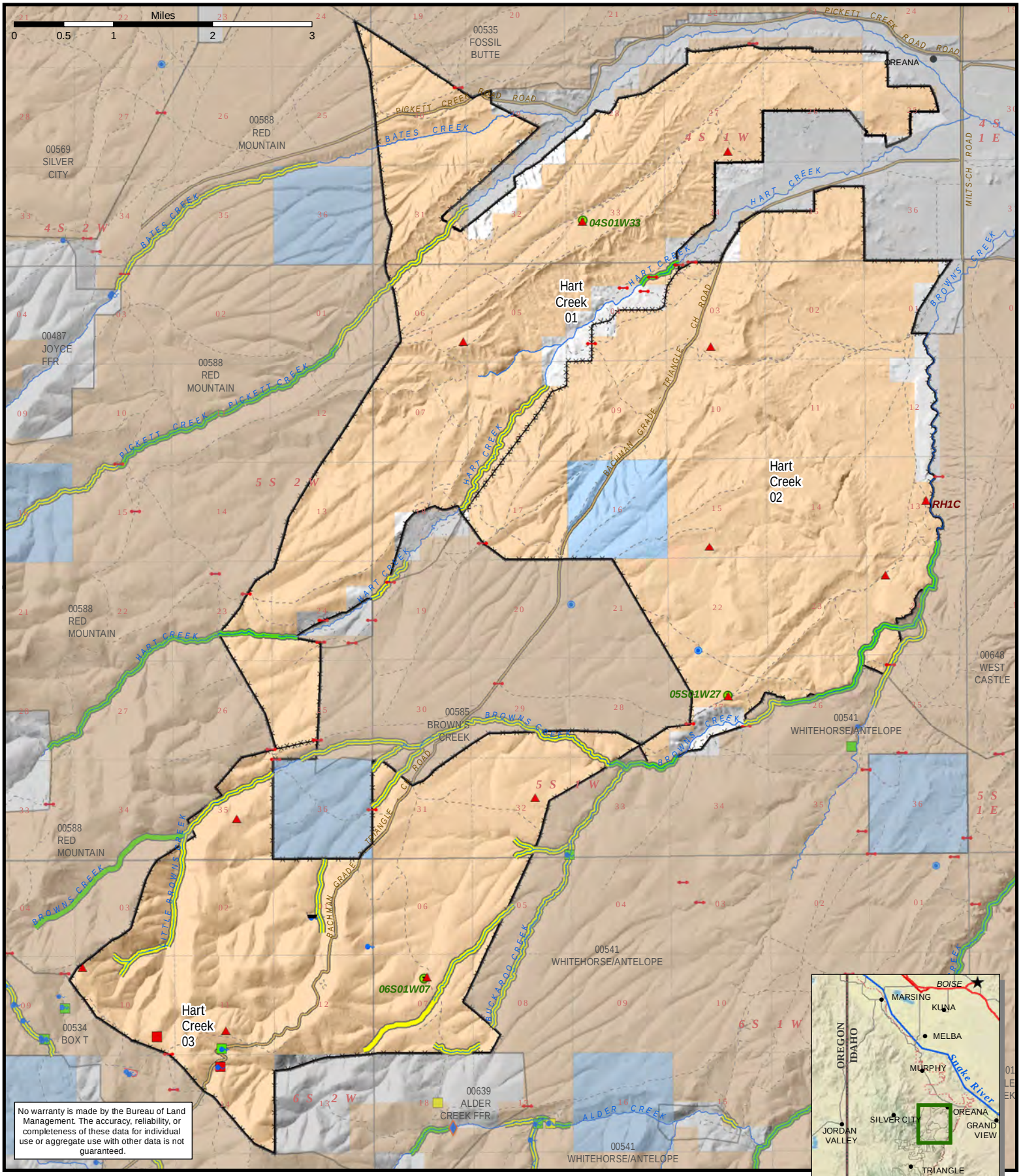
- Allotment Boundary
- Highway
- Improved Road
- Unimproved Road
- Perennial Stream
- Lake/Reservoir
- Town/City
- BLM Field Office Boundary

Surface Management Agency

- *Bureau of Land Management*
- *Private*
- *State*

1:200,000

RNGE-1A: Hart Creek (00532), Range and Riparian Overview



Nested Plot Frequency Trend
Rangeland Health Assessment Point
Allotment of Interest Boundary
Other Allotment Boundary
Pasture Boundary
Exclosure

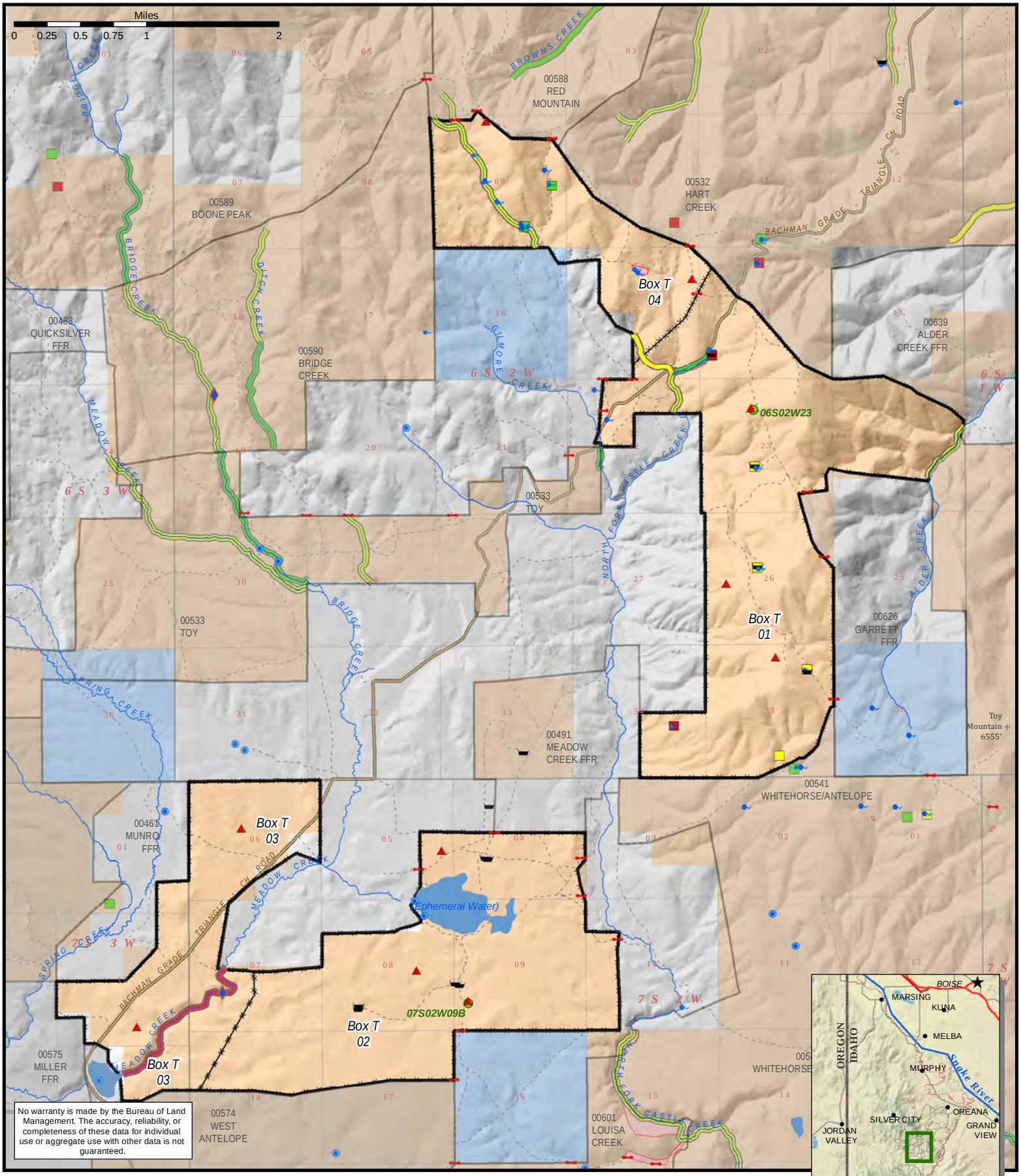
Spring/Stream Assessment Rating
PFC (Proper Functioning Condition)
FAR (Functioning At Risk)
NF (Non-Functioning)
MIM Riparian Monitoring
Perennial Stream

Improved Road
4WD Road
Gate
Stock Pond
Spring
Trough

Management
BLM
State
Private
Lake/Reservoir

1:80,000

RNGE-1B: Box T (00534), Range and Riparian Overview



- Nested Plot Frequency Trend
- Rangeland Health Assessment Point
- Allotment of Interest Boundary
- Pasture Boundary
- Other Allotment Boundary
- Exclosure

Spring/Stream Assessment Rating

- *PFC (Proper Functioning Condition)*
- *FAR (Functioning At Risk)*
- *NF (Non-Functioning)*
- MIM Riparian Monitoring
- Perennial Stream

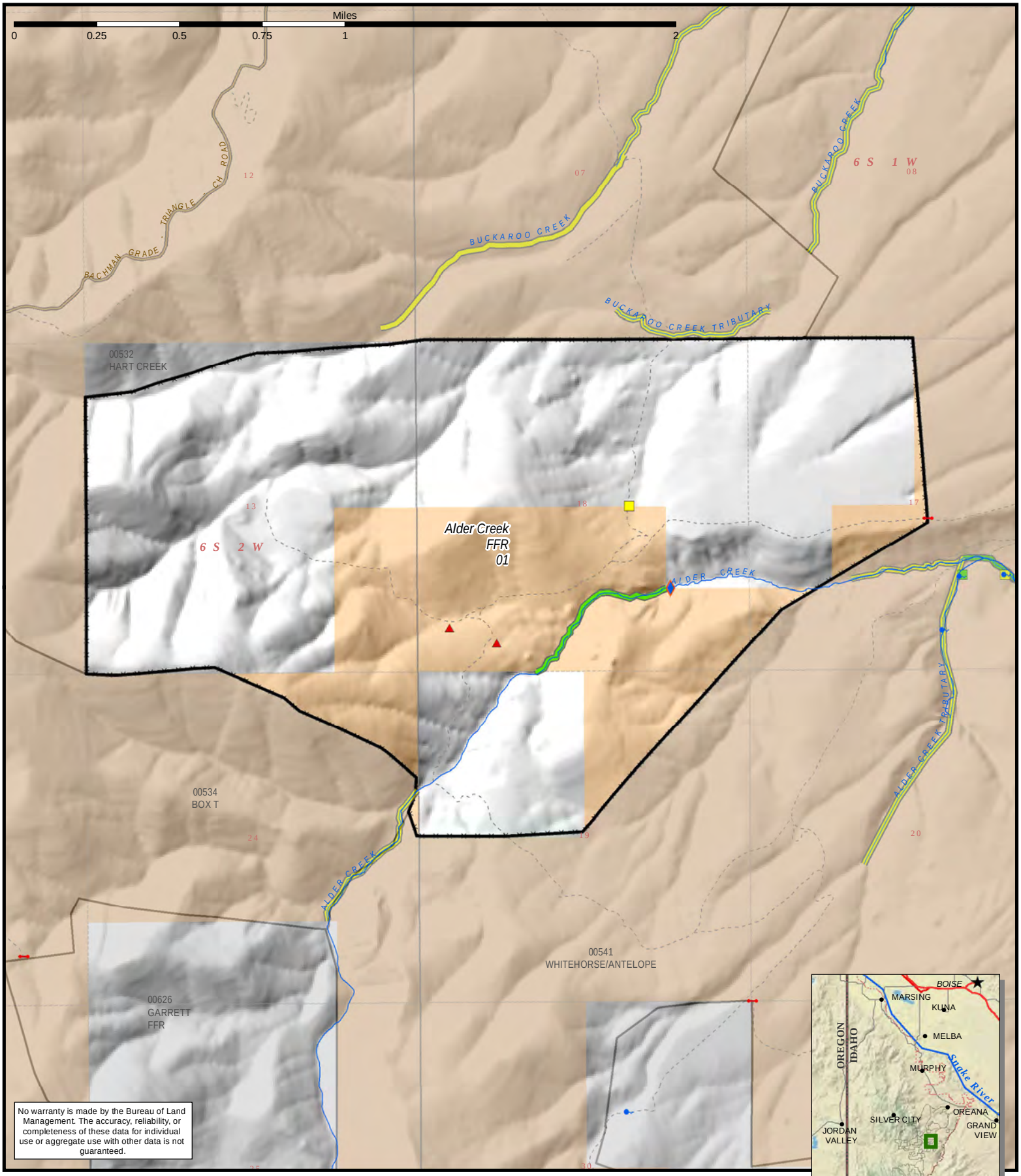
- Improved Road
- 4WD Road
- Gate
- Stock Pond
- Spring
- Trough

Management

- BLM
- State
- Private
- Lake/Reservoir

1:60,000

RNGE-1C: Alder Creek FFR (00639), Range and Riparian Overview



Nested Plot Frequency Trend
Rangeland Health Assessment Point
Allotment of Interest Boundary
Pasture Boundary
Other Allotment Boundary
Exclosure

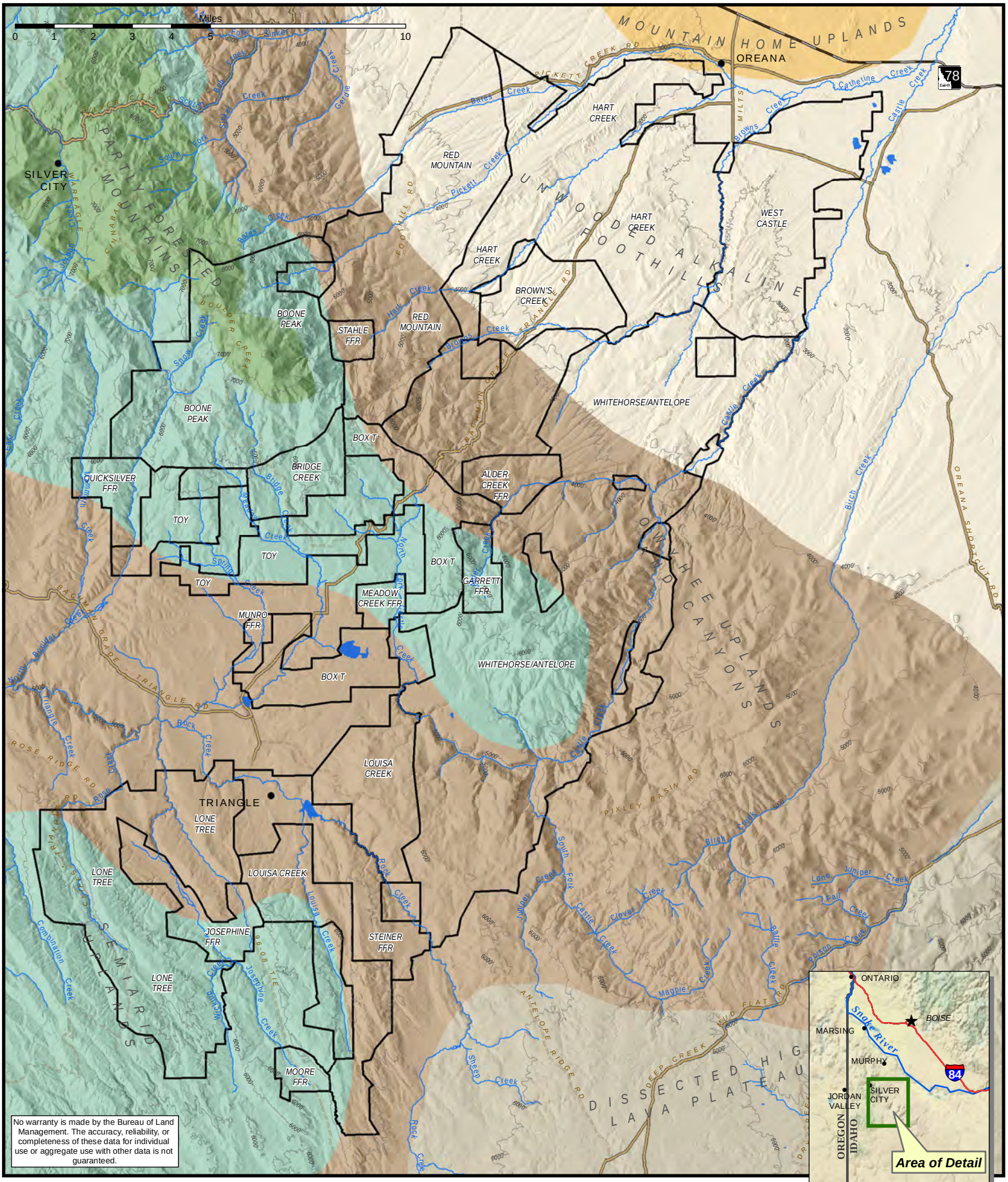
Spring/Stream Assessment Rating
PFC (Proper Functioning Condition)
FAR (Functioning At Risk)
NF (Non-Functioning)
MIM Riparian Monitoring
Perennial Stream

Improved Road
4WD Road
Gate
Stock Pond
Spring
Trough

Management
BLM
State
Private
Lake/Reservoir

1:24,000

WDLF-1, Ecoregions, Toy Mountain Allotments



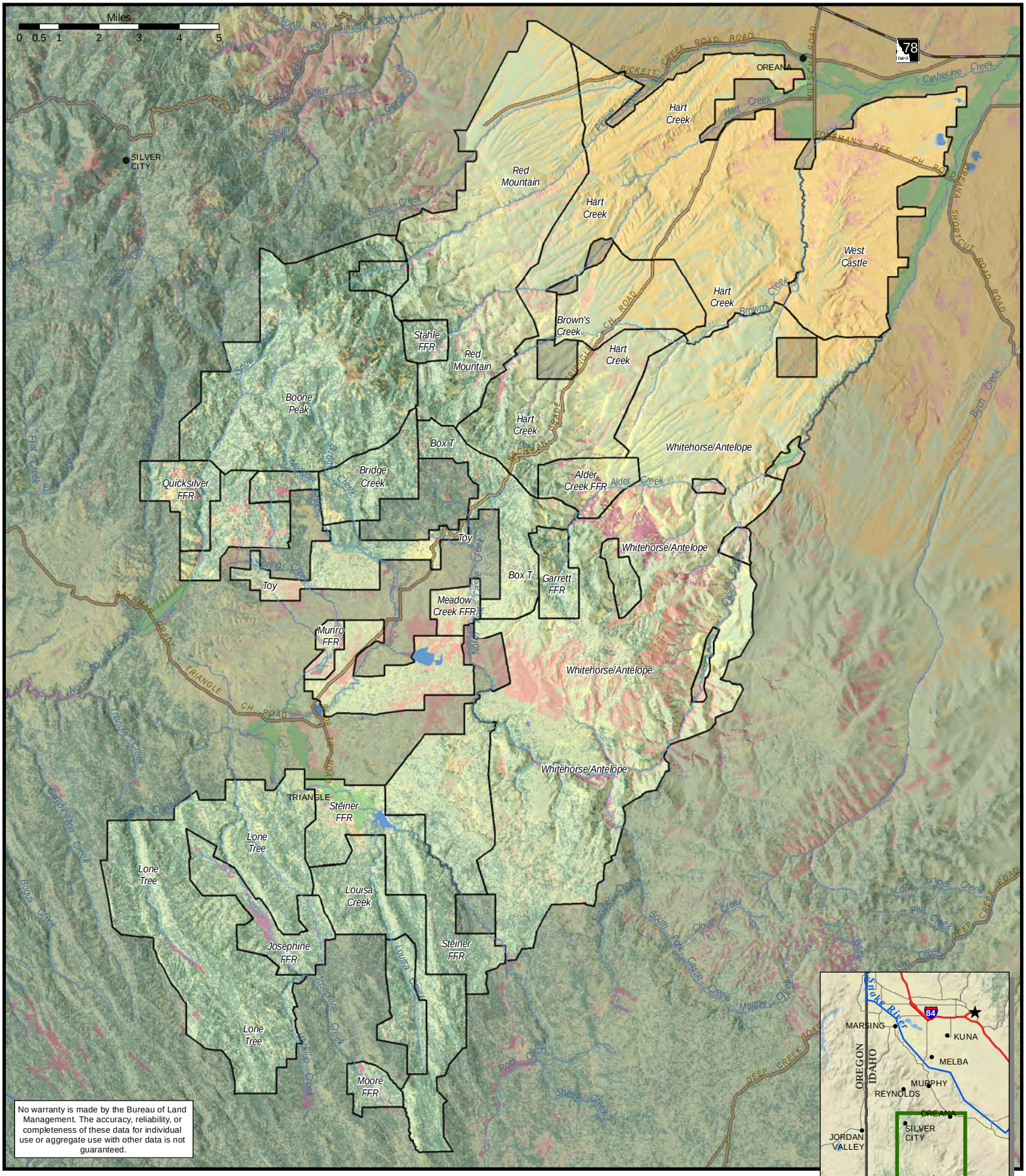
Allotment Boundary
Highway
Improved Road
Unimproved Road
Perennial Stream
Lake/Reservoir
Town/City
1000' Contour

Ecoregion Classification

Dissected High Lava Plateau
Mountain Home Uplands
Owyhee Uplands and Canyons
Partly Forested Mountains
Semiarid Uplands
Unwooded Alkaline Foothills

1:200,000

WDLF-2: Habitat/General Cover Types, Toy Mountain Allotments



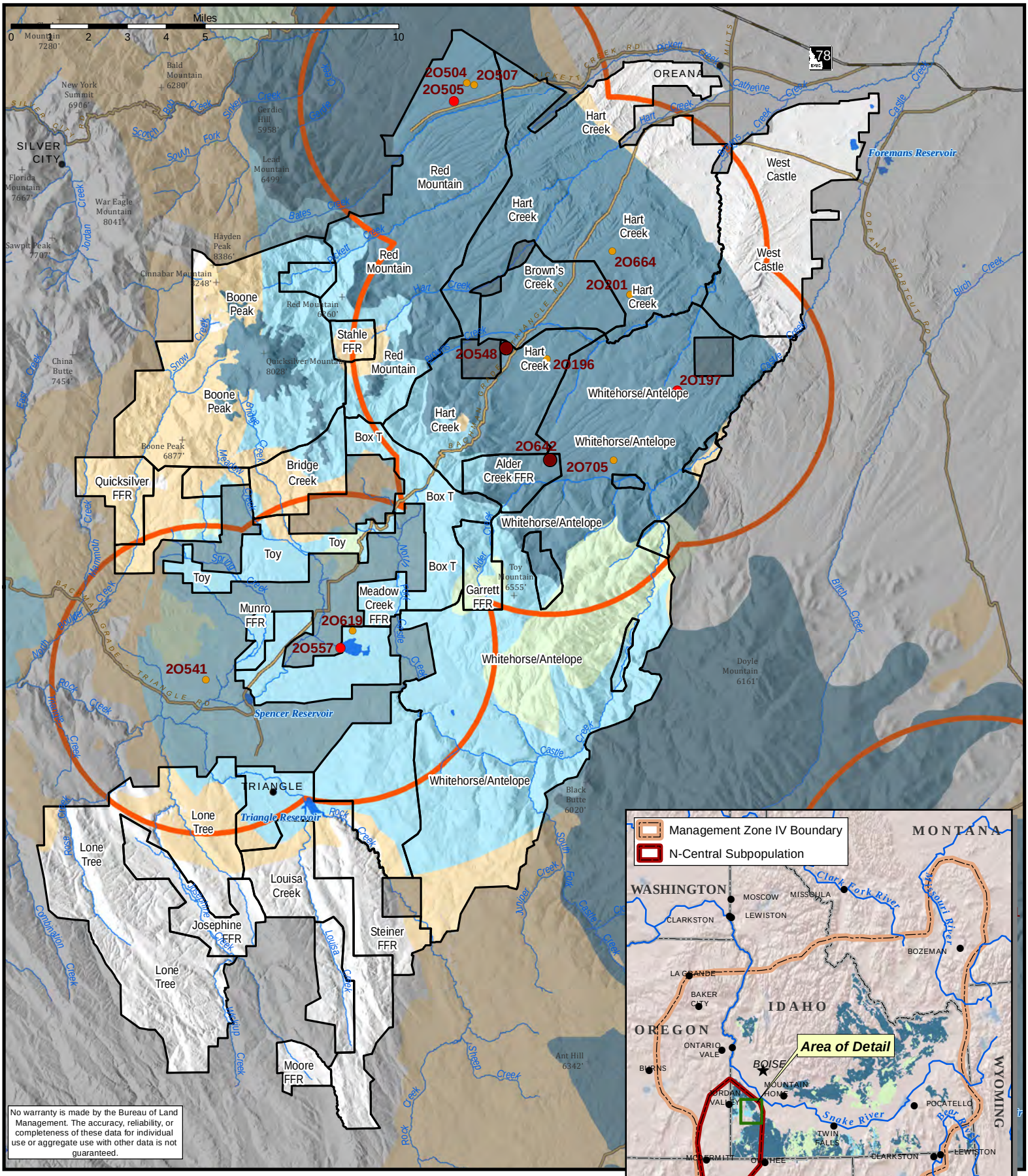
Allotment Boundary
Highway
Improved Road
Perennial Stream
Lake/Reservoir

Vegetation Cover Classification

- Agriculture
- Forest
- Shrub Steppe
- Grassland
- Non-native/Disturbed
- Salt Desert Shrub
- Urban
- Riparian

1:200,000

WDLF-3, Sage-grouse Overview, Toy Mountain Allotments



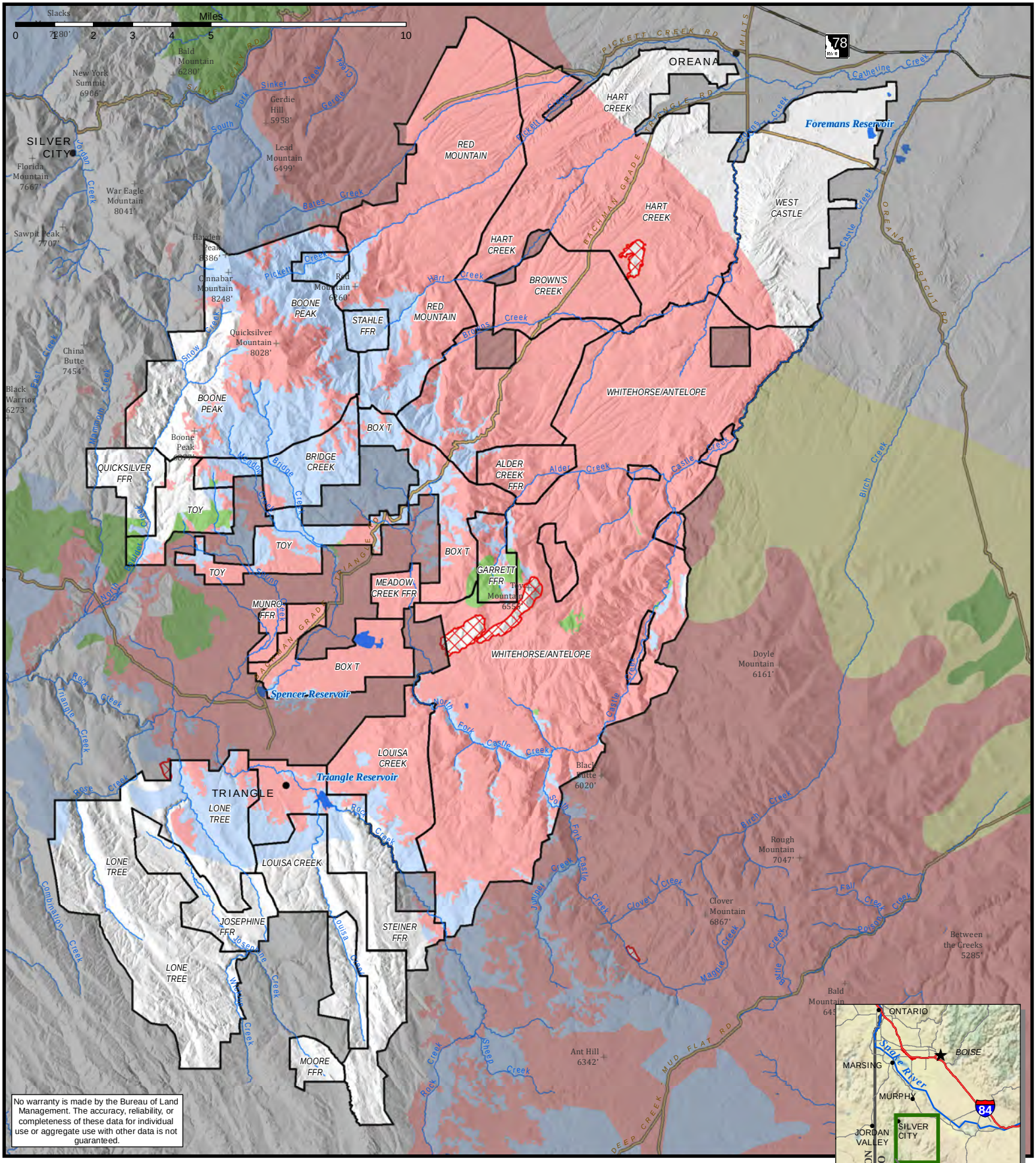
Allotment Boundary
Perennial Stream
Lake/Reservoir
Highway
Improved Road

Idaho Occupied Sage-grouse Leks
Maximum Count (2008-2012)
- 2 - 9
- 10 - 29
- 30 - 49
- More than 50

Idaho Sage-grouse Habitat Classes
- *PPH - Sagebrush*
- *PPH - Perennial grassland*
- *PPH - Conifer encroachment*
- *PGH - All subtypes*
- 75% Breeding Bird Density

1:205,000

WDLF-4, Key Habitat Overview, Toy Mountain Allotments



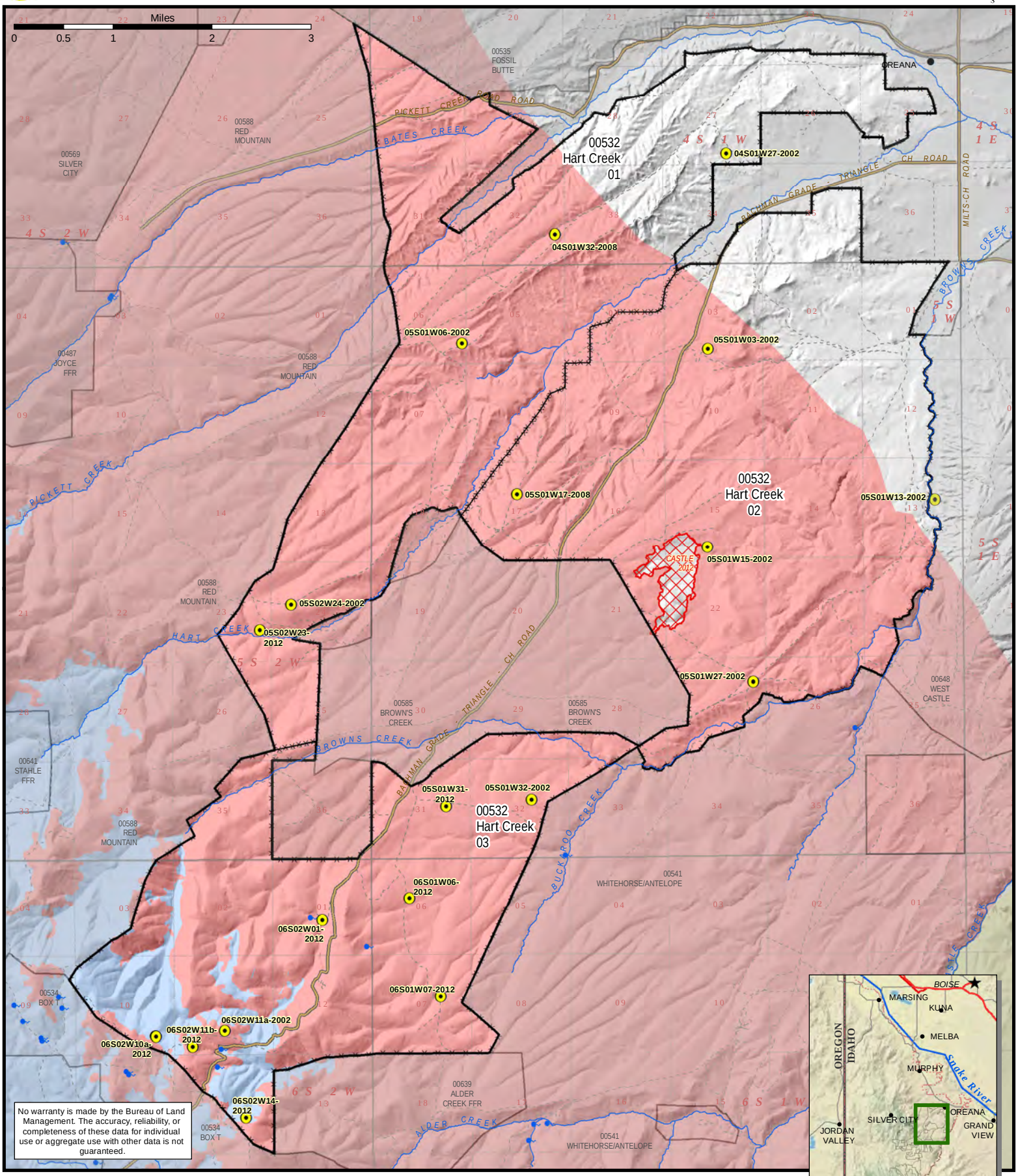
Allotment Boundary
Perennial Stream
Lake/Reservoir
Highway
Improved Road

2012 Sage Grouse Habitat

(K1) Key Habitat
(R1) Perennial Grasslands
(R2) Annual Grasslands Dominate
(R3) Conifer Encroachment
Area of Recent Burn

1:205,000

WDLF-5A: Hart Creek (00532), Key Sage-grouse Habitat and Assessment Sites



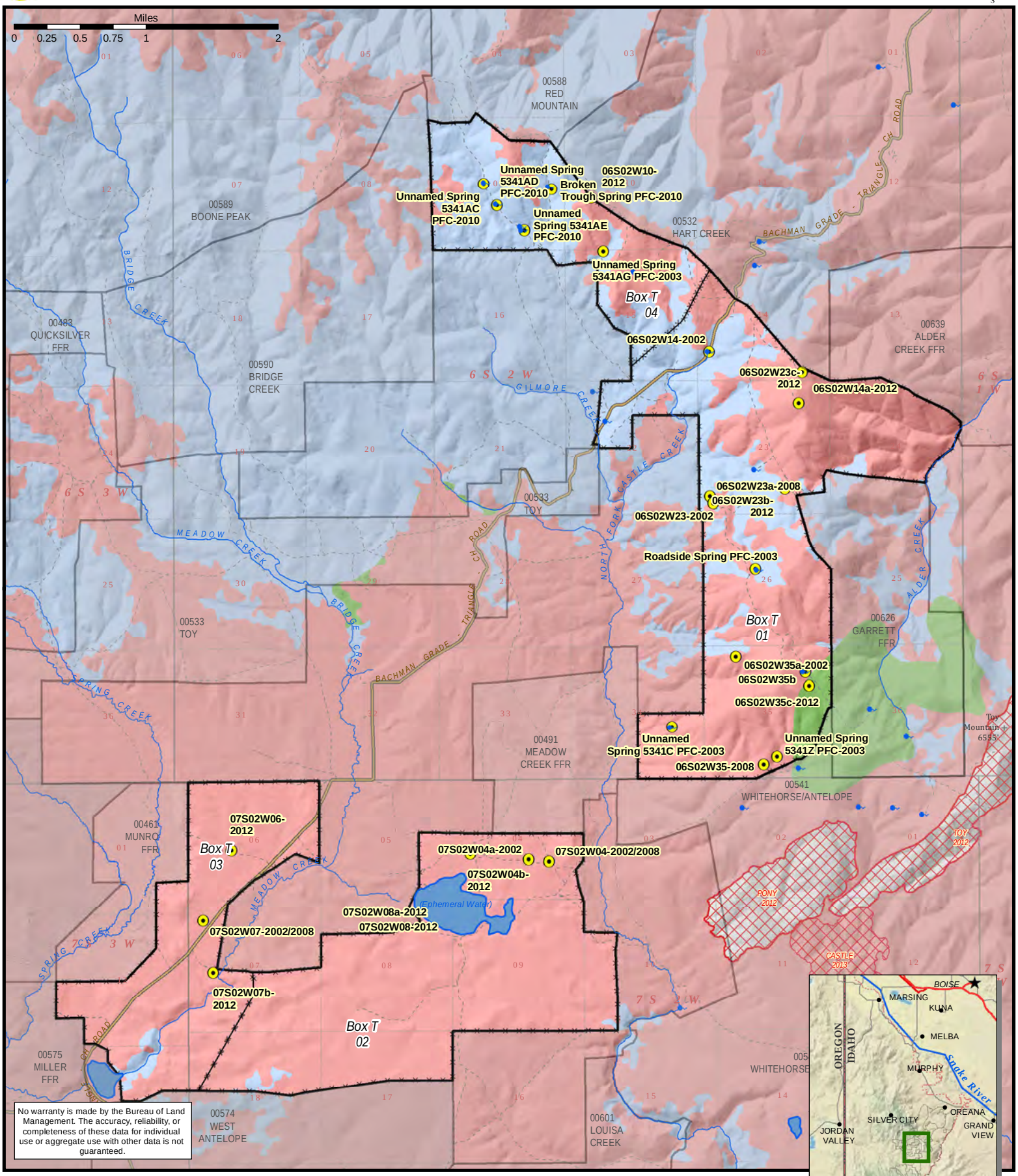
Allotment of Interest Boundary
Pasture Boundary
Other Allotment Boundary
Improved Road
4WD Road

2012 Sage Grouse Habitat
(K) Key Habitat
(R1) Perennial Grasslands
(R2) Annual Grasslands Dominate
(R3) Conifer Encroachment
Area of Recent Burn

Habitat Assessment Site
Perennial Stream
Spring
Lake/Reservoir

1:80,000

WDLF-5B: Box T (00534), Key Sage-grouse Habitat and Assessment Sites



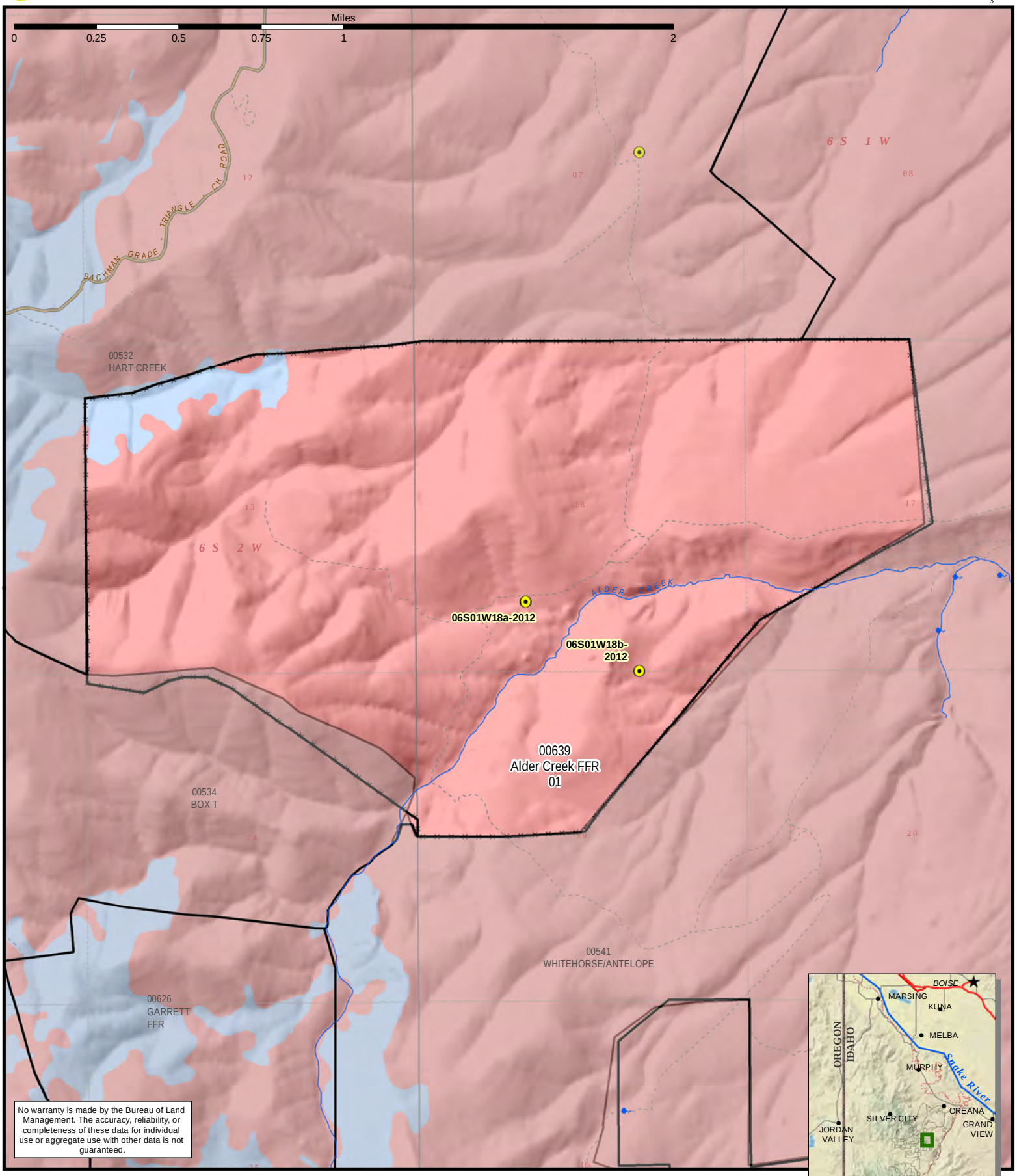
Allotment of Interest Boundary
Pasture Boundary
Other Allotment Boundary
Improved Road
4WD Road

2012 Sage Grouse Habitat
(K) Key Habitat
(R1) Perennial Grasslands
(R2) Annual Grasslands Dominate
(R3) Conifer Encroachment
Area of Recent Burn

Habitat Assessment Site
Perennial Stream
Spring
Lake/Reservoir

1:60,000

WDLF-5C: Alder Creek FFR (00639), Key Sage-grouse Habitat and Assessment Sites



Allotment of Interest Boundary
Pasture Boundary
Other Allotment Boundary
Improved Road
4WD Road

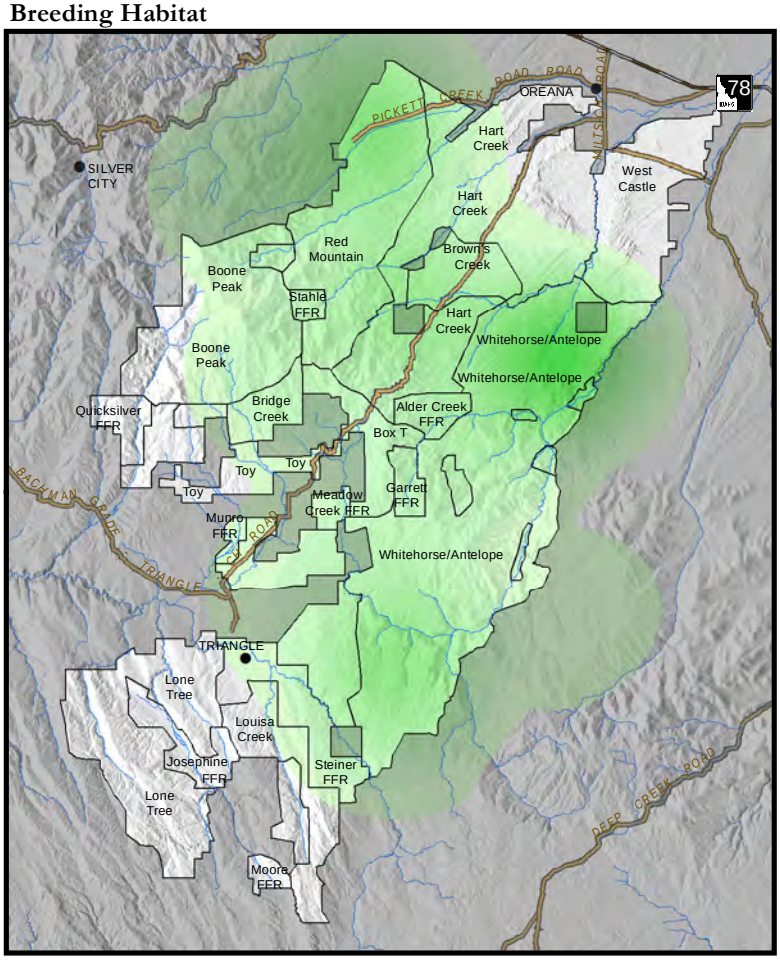
2012 Sage Grouse Habitat
(K) Key Habitat
(R1) Perennial Grasslands
(R2) Annual Grasslands Dominate
(R3) Conifer Encroachment
Area of Recent Burn

Habitat Assessment Site
Perennial Stream
Spring
Lake/Reservoir

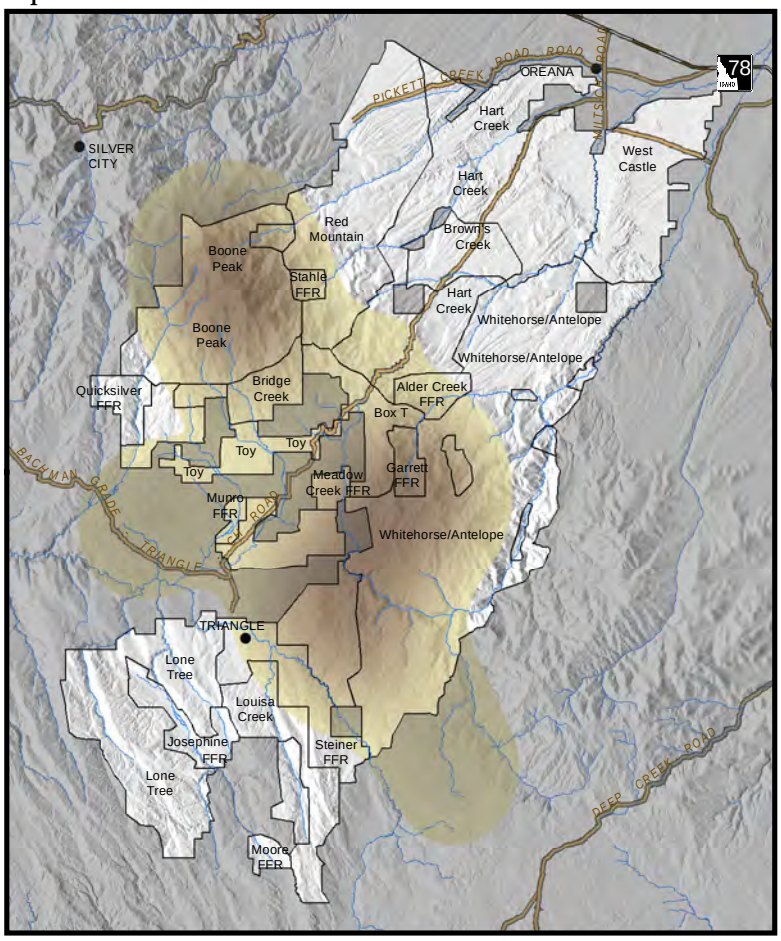
1:24,000

WDLF-6: Seasonal Sage-grouse Habitat, Toy Mountain Allotments

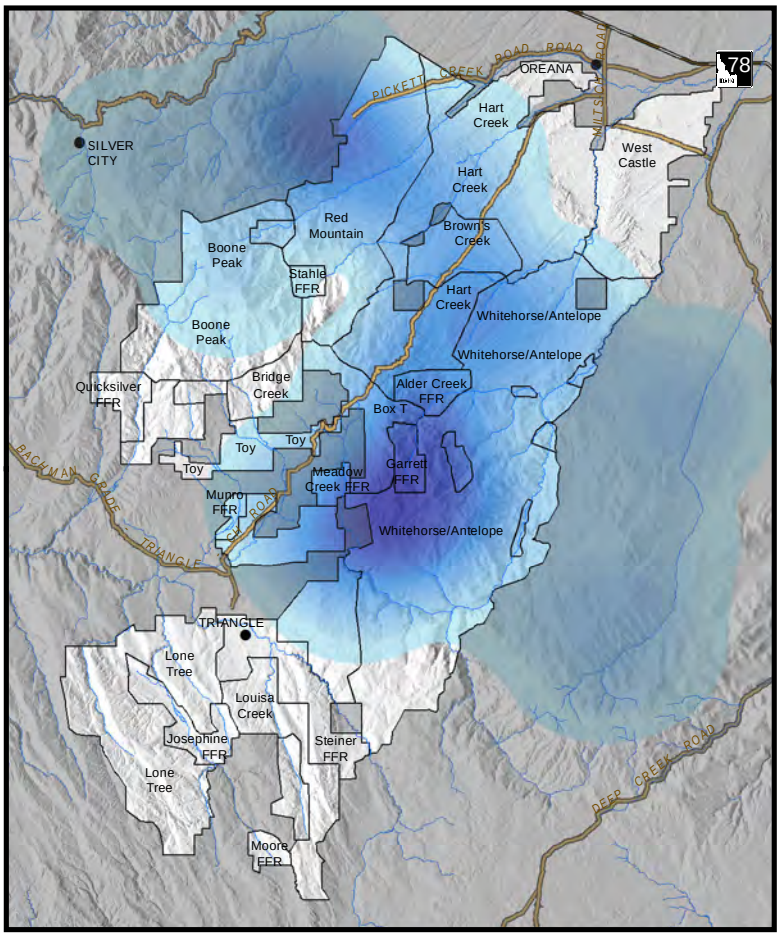
Breeding Habitat



Upland Summer Habitat



Winter Habitat



Miles

0 1 2 3 4 5 10 15 20 25

- Allotment Boundary
- Highway
- Improved Road
- Perennial Stream

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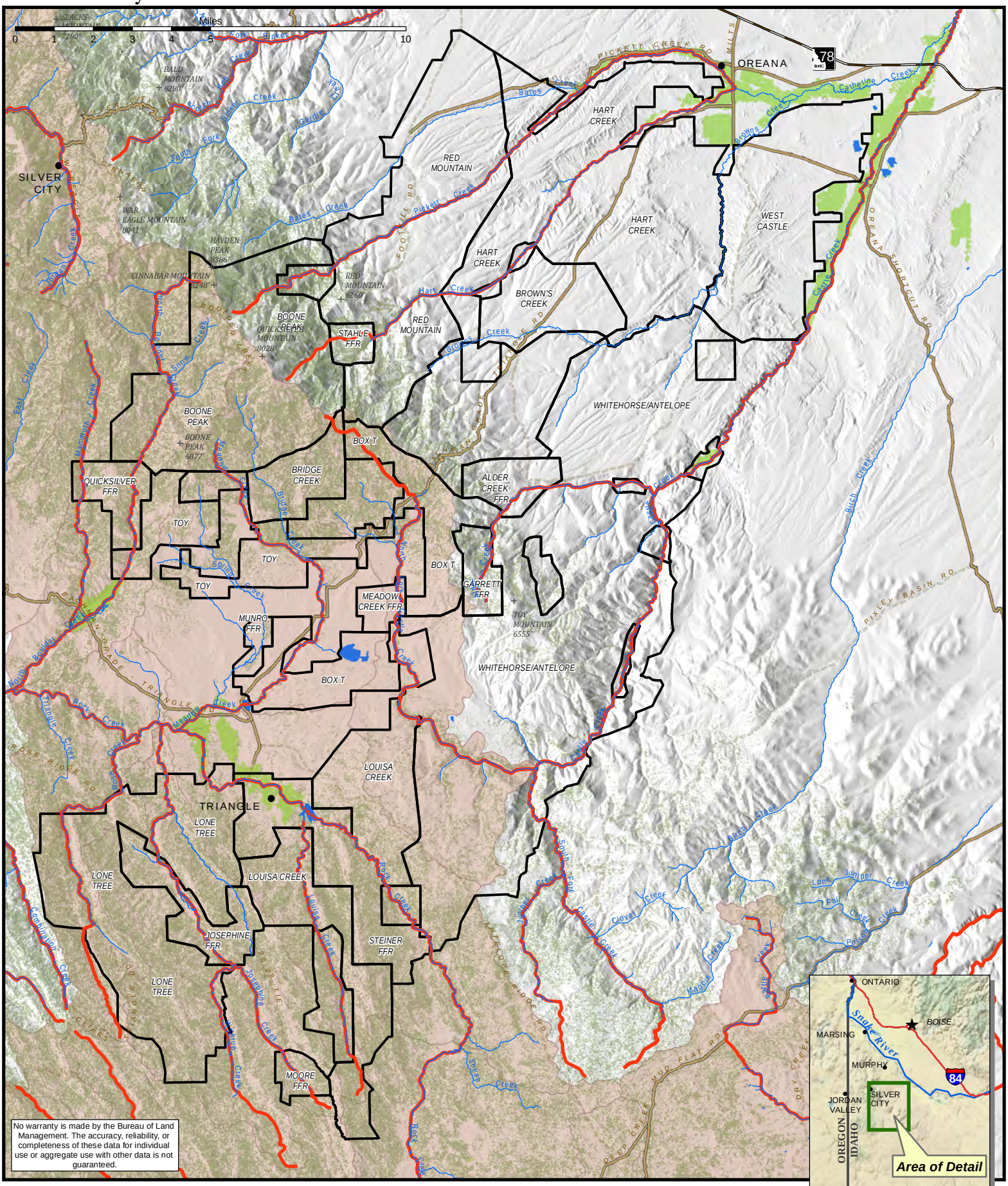
1:400,000

WDLF-7, Columbia Spotted Frog and Redband Trout Overview, Toy Mountain Allotments

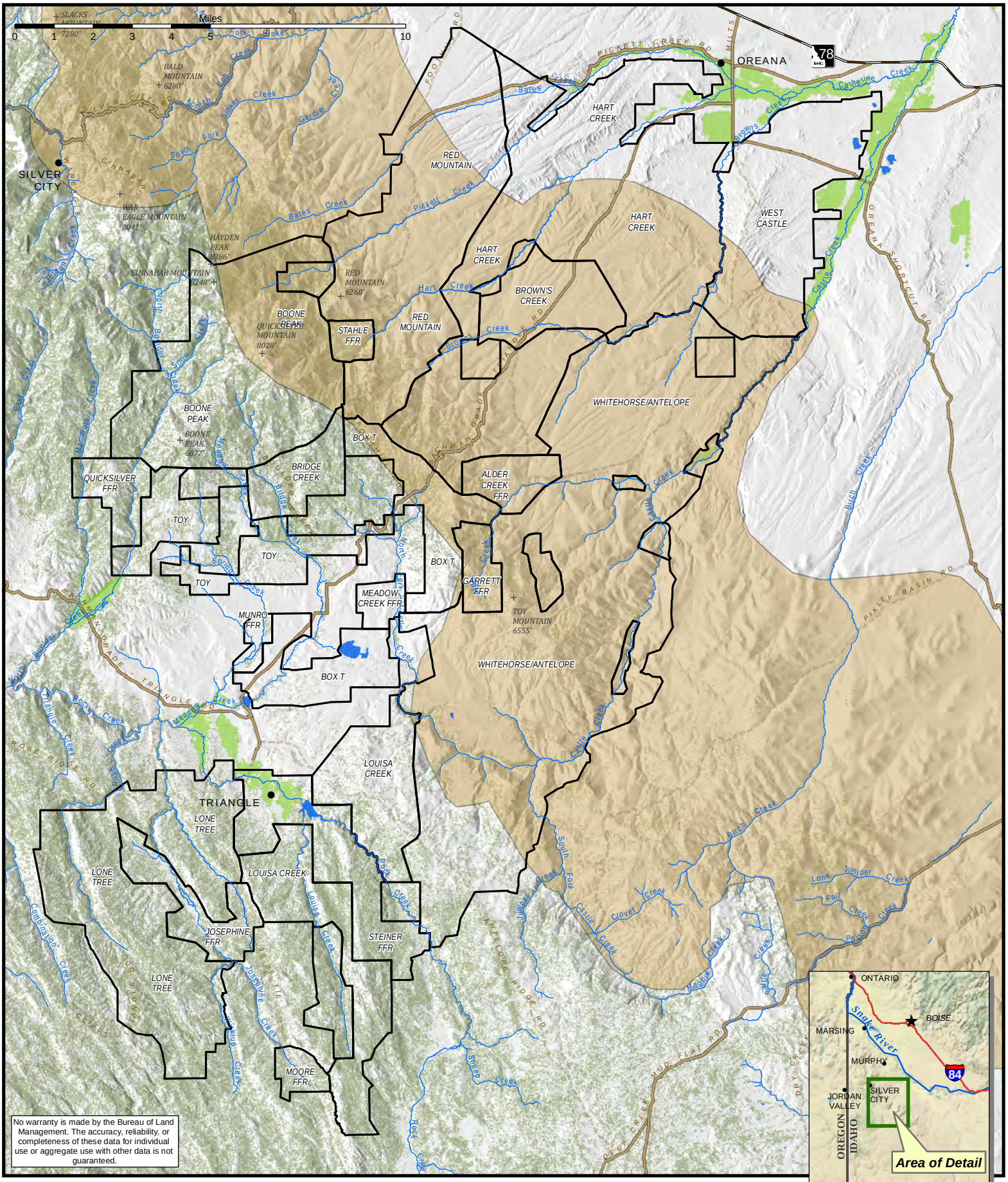


Allotment Boundary
Highway
Improved Road
Unimproved Road
Perennial Stream
Lake/Reservoir
Town/City
Columbia Spotted Frog Occupied Watershed
Columbia River Redband Trout Presence

Vegetation Cover
Agriculture
Wooded

1:200,000

Map 8, Bighorn Sheep Overview, Toy Mountain Allotments



Allotment Boundary
Highway
Improved Road
Unimproved Road
Perennial Stream
Lake/Reservoir
Town/City
IDFG Bighorn Population Management Area

Vegetation Cover

Agriculture
Wooded

1:200,000