Bureau of Land Management

WIND RIVER/BIGHORN BASIN DISTRICT
Worland Field Office

North Hart Allotment
#00585

Standards for Healthy Rangelands
and
Guidelines for Livestock Grazing Management

for

Public Lands Administered by the Bureau of Land Management in the State of Wyoming

FY 2014/2015

BLM

Worland Field Office, Wind River/Bighorn Basin District, Wyoming

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1.0 INTRODUCTION

The Bureau of Land Management (BLM) grazing regulations at 43 CFR 4130.3-1(c) require that grazing permits issued by the BLM contain terms and conditions that ensure conformance with BLM regulations at 43 CFR 4180, which are the regulations under which the Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for Public Land Administered by the Bureau of Land Management in the State of Wyoming were developed. Recently, the Worland Field Office completed an assessment of the achievement of these standards on the North Hart Allotment No. 00585. The results of this assessment are presented in this report. This assessment will serve to inform the BLM's determination as to whether these standards are being met, and, if they are not met, whether existing grazing management practices contribute to their lack of attainment.

1.1 Standards

The approved standards for rangeland health are as follows:

Standard #1: Within the potential of the ecological site (soil type, landform, climate, and geology), soils are stable and allow for water infiltration to provide for optimal plant growth and minimal surface runoff.

Standard #2: Riparian and wetland vegetation has structural, age and species diversity characteristic of the state of channel succession and is resilient and capable of recovering from natural and human disturbance in order to provide forage and cover, capture sediment, dissipate energy, and provide ground water recharge.

Standard #3: Upland vegetation on each ecological site consists of plant communities appropriate to the site which are resilient, diverse, and able to recover from natural and human disturbance.

Standard #4: Rangelands are capable of sustaining viable populations and a diversity of native plant and animal species appropriate to the habitat. Habitats that support or could support threatened species, endangered species, species of special concern, or sensitive species will be maintained or enhanced.

Standard #5: Water quality meets State standards

Standard #6: Air quality meets State standards

2.0 Affected Environment – Allotment Description, Resource Values, and Uses

2.1 Location and Land Ownership

The North Hart Allotment **(Map 1)** is located approximately seven miles west of Embar, Wyoming. The elevation of the allotment is approximately 6300 feet above sea level. The allotment encompasses approximately 564 public land acres.

2.2 Climate/Air Quality

Annual precipitation for the North Hart Allotment ranges from 10-14 inches per year. The normal precipitation pattern peaks the latter part of May and a secondary peak may occur in September. Much of the moisture that falls in the latter part of the summer is lost by evaporation and much of the moisture that falls during the winter is lost by sublimation. Average snowfall exceeds 20 inches annually. Wide fluctuations may occur in yearly precipitation and result in more dry years than those with more than normal precipitation.

Temperatures show a wide range between summer and winter and between daily maximums and minimums, due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. Cold air outbreaks from Canada in winter move rapidly from northwest to southeast and account for extreme minimum temperatures. Chinook winds may occur in winter and bring rapid rises in temperature. Extreme storms may occur during the winter, but most severely affect ranch operations during late winter and spring.

Winds are generally not strong as compared to the rest of the state. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 75 mph.

Growth of native cool-season plants begins about April 15 and continues to about July 15. Cool weather and moisture in September may produce some green up of cool season plants that will continue to late October.

The following information is from the "Thermopolis 2" climate station:

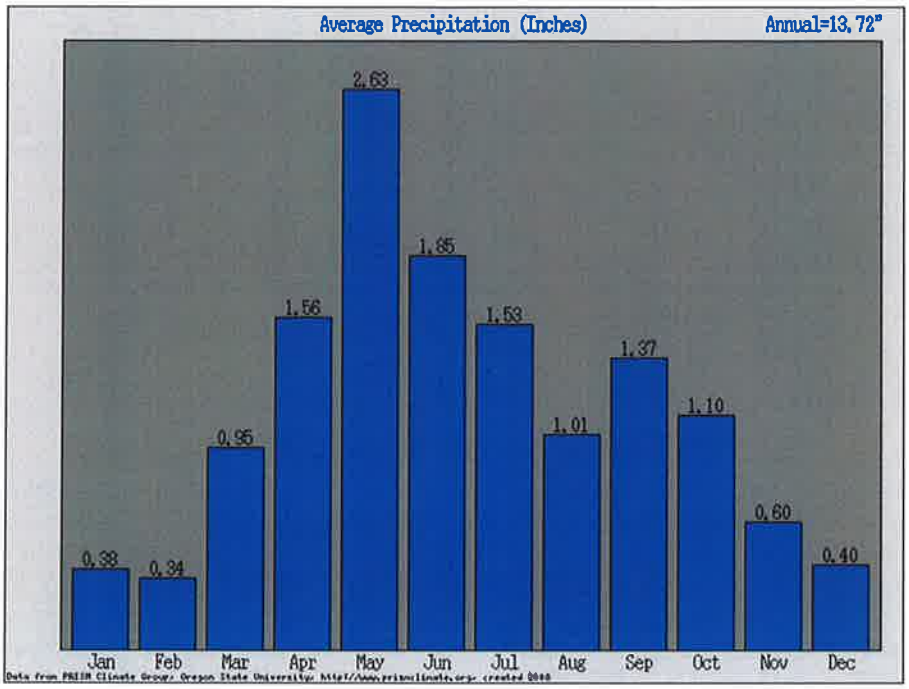
	Minimum	**Maximum**	**5 yrs. out of 10 between**
Frost-free period (days):	74	149	May 23 – September 16
Freeze-free period (days):	112	180	May 8 – October 1
Mean Annual Precipitation (inches):	7.6	21.9	

Mean annual precipitation: 12.35 inches
Mean annual air temperature: 46.2°F (30.1°F Avg. Min. to 62.3°F Avg. Max.)

For detailed information visit the Natural Resources Conservation Service (NRCS) National Water and Climate Center at http://www.wcc.nrcs.usda.gov/ website. Other climate station(s) representative of this precipitation zone include "Grass Creek 1E", "Thermopolis", "Thermopolis 25NW", "Buffalo Bill Dam" and "Black Mountain", (Information taken from the United States Department of Agriculture (USDA) NRCS Technical Guide Section IIE Rev. 05/23/08).

Precipitation

Precipitation in the area has averaged 10.76 inches over the last 37 years (1978 – 2014) according to the O. B. Reservoir Rain Gauge. There was an additional source using the PRISM climate model for T.43N. R.100W. Section 1 that is estimated to be the center of the allotment (PRISM, 2008). The overall average is 13.72 inches with the monthly precipitation amount displayed in the graph below.



2.3 Soils

The North Hart Allotment is situated within the 10-14 inch Big Horn Basin Precipitation zone. Based on the soil survey data for Hot Springs County, the dominant ecological sites found in the allotment are listed below and shown on **Map 2** in the appendix.

Shallow Loamy 10 – 14 inch precipitation zone	R032XY362WY
Loamy 10-14 inch precipitation zone	R032XY322WY

The soils on the Shallow Loamy range site soils are shallow (less than 20 inches to bedrock) well-drained soils formed in alluvium over residuum or in residuum. These soils have moderately slow to moderate permeability and may occur on all slopes. The bedrock may be any kind which is virtually impenetrable to plant roots, except igneous. The surface soil will have one or more of the following textures; very fine sandy loam, loam, silt loam, sandy clay loam, silty clay loam, and clay loam. The soil characteristics having the most influence on the plant community are the shallow depth, and potential for elevated quantities of soluble salts.

The soils on the Loamy ecological site are very deep to moderately deep (greater than 20 inches to bedrock); moderately well to well-drained and moderately slow to moderate permeable. The soil characteristic having the most influence on the plant community is the available moisture and the potential to develop soluble salts near the surface.

Assessment one was located in Map Unit 815, Bridger-Abes-Complex on a Shallow Loamy ecological site. The surface texture was a sandy loam with a shallow depth. The subsurface texture was a sandy clay loam. The A horizon was three inches in depth and the B horizon was greater than three inches. There was no surface effervescence at either horizon. The pH was 6.5 at each horizon.

Assessment two was located in Map Unit 243, Kim Alkali-Kim Loams on a Loamy ecological site. The surface and subsurface texture was a silty clay loam with a moderate depth. The A horizon was three

inches in depth. There was a slight effervescence at the A horizon and a strong surface effervescence at the B horizon. The pH at each horizon was seven.

Using the weighted average of the soil map units, the dominant soil hydrologic group found in the allotment is from type C soils with low to moderate amounts of infiltration.

2.4 Hydrology/Riparian

2.4.1 Surface Water/Watershed

The North Hart Allotment falls entirely within the Owl Creek USGS (level #5) watershed. The allotment contains the middle reaches of the foothills of the Lower North Fork of Owl Creek sub-watershed (level #6) in Owl Creek. The allotment consists of only 1.6% of the total area of the sub-watershed **(Map 3 in appendix and table below).**

Sub-Watershed Name (HU12)	HUC 12	Acres	(mi)	Allot Acres	Allot mi²	% of Acres of Sub-watershed in the allotment
Lower North Fork Owl Creek	1008000702	34435	53.8	550	0.9	1.6

There are three unnamed ephemeral drainages that are connected to the North Fork of Owl Creek in the allotment. These drainages originate from sandstone outcrops and trend in an eastern direction in the allotment. There are two small historic reservoirs that have been constructed on these drainages that capture runoff and provide an undependable source of water for the allotment.

2.4.2 Groundwater

The area is within a complex geological transition with various aquifers and confining layers present. Due to the small size of the allotment there are no springs or water wells that have been developed **(Map 4)**.

2.4.3 Water Quality (Surface)

The nearest downstream connected drainage is the Lower North Fork of Owl Creek. The flow regime of the drainages in the allotment is an ephemeral flow using the definition of flow being present in the channel less than 30 days per year on average, with the water table permanently below the surface (Hedman, 1983). The North Fork of Owl Creek is classified by the Wyoming DEQ as a 2C type stream (DEQ, 2001). This use classification supports the beneficial uses as outlined in the table below.

WY DEQ Use Designations										
Surface Water Classes	Drinking Water	Game Fish	Non-Game Fish	Fish Consumption	Other Aquatic Life	Recreation	Wildlife	Agriculture	Industry	Scenic Value
2AB	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2C	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3B	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes

2.4.4 Riparian
Due to the ephemeral flow regime of the channels in the allotment along with the absence of naturally occurring springs there are no riparian areas found in the allotment.

2.5 Upland Vegetation
The vegetation in the allotment consists of cool-season perennial grasses. Other significant vegetation includes winterfat, big sagebrush, and a variety of forbs. Vegetation in the allotment is variable and dependent upon the range site.

Assessment 1 was conducted on a Shallow Loamy 10-14 inch ecological site (N43° 43.399' – W108° 48.403'). The native plant species identified during the assessment included bluebunch wheatgrass, western wheatgrass, sandberg bluegrass, prairie junegrass, and an occassional needleand thread plant. Other plants observed were phlox, plains pricklypear cactus, scarlet globemellow, American vetch, Wyoming big sagebrush, fringed sagewort, and an occasional rabbitbrush. Lichens and biological crusts were also observed in the transect.

Assessment 2 was conducted on a Loamy 10-14 inch ecological site (N43° 43.553' – W108° 47.690') The native plant species observed during the assessment were bluebunch wheatgrass, western wheatgrass, sandberg bluegrass, prairie junegrass, and Indian ricegrass. Phlox, Wyoming big sagebrush, and lichens were observed throughout the area.

2.6 Invasive Species
There have been no weed inventories conducted on the allotment. During the assessment cheatgrass was observed in the eastern and southern fringes of the allotment and along old roads and well locations.

2.7 Livestock Grazing Management
The grazing authorization for the North Hart Allotment has historically been non-growing season use with cattle for 78 public AUMs. In 1989 the permit was authorized for cattle and horses. In 1998 the private land was fenced off from the public. The permit authorized the following until the grazing permit was cancelled;

10 horses	03/01 to 03/15 100%	5 Active AUMs
10 horses	11/15 to 02/28 100%	35 Active AUMs
10 cattle	03/01 to 03/15 100%	5 Active AUMs
10 cattle	11/15 to 02/28 100%	35 Active AUMs

78 Active AUMs 0 Suspended AUMS 78 Permitted AUMs

There has been no authorized livestock grazing in the allotment for over ten years.

2.8 Wildlife
The North Hart Allotment provides habitat for several big game species, as well as many other non-game and special status wildlife species throughout the year. Topographically the northern portion of the allotment is more open and rolling, and the southern portion more broken with several ridges paralleling Owl Creek to the south. The predominant vegetation is a mix of blue bunch wheatgrass, green needle, needle and thread, and Wyoming sagebrush, with large sagebrush communities being uncommon and scattered. The southern 4/5ths of this allotment is mapped as crucial winter range for mule deer. Antelope are also common in the northern half of the allotment, particularly in the winter with larger winter concentrations. There are numerous other species like coyote, cottontail rabbit, white-tail jackrabbit, badger, bobcat, and a variety of passerines, raptors, small mammals and predator species that inhabit this allotment throughout the year.

2.9 Threatened, Endangered, Candidate, or Sensitive Species

The northern portion of the allotment does contain a minor component of sagebrush communities, predominantly at upper elevations on mesas and ridge tops along the northwestern boundary of the allotment. These sagebrush communities comprise approximately 10 – 20% of the allotment, and are providing a moderate level of sage-grouse wintering habitat, and likely providing nesting and early brood rearing habitats as well. The closest active lek is approximately .7 miles west of this allotment, where there is also a sage-grouse winter concentration area identified that encompasses this lek area and east to the North Hart Allotment boundary, and the entire allotment falls within sage-grouse Core area. However, in an analysis of sage-grouse studies conducted in seven areas in Wyoming since the mid-1990s, Holloran and Anderson (2005) found that 45% of nests were located within 2miles (3km) of the lek where the hen was bred, and 64% of the nests were within 3 mile (5 km) of the lek. These same sagebrush communities likely do provide some breeding; nesting and foraging habitat for other sagebrush obligate bird species like the sage thrasher, Sage and Brewer's sparrow also. Although none of these species have been documented through formal inventory efforts, these species are common residents of the sagebrush communities in the area and likely occur in this allotment. There are no known threatened or endangered wildlife species within this allotment, but the sage-grouse, sage thrasher, sage and Brewer's sparrow are all Wyoming BLM sensitive species.

3.0 Summary of Monitoring Data / Assessments

3.1 Monitoring Data

During the summer of 2014, two vegetation assessment sites were selected in the allotment as part of the Rangeland Health Assessment process. Ecological site, soil type, vegetative community, topography, location of water sources, and livestock grazing history are some of the factors that were considered in the selection of these sites.

Line intercept cover transects were completed at each assessment site. A summary of the cover data collected is shown in the table below.

Assessment Site	Ecological Site	Basal Vegetative Cover	Litter	Bare Ground	Brte presence ((hits/transect pts)*100)
Transect 1	Shallow Loamy	21%	16%	27%	0%
Transect 2	Loamy	16%	32%	33%	0%

Cheatgrass presence is derived from total "hits" on cheatgrass, canopy or basal, throughout the transect. It is a representation of the amount times the plant was encountered along a transect in relation to the amount of points observed on the transect.

In addition, the rangeland Health Assessments were conducted at these assessment sites by an interdisciplinary team on using the 17 Indicators of Rangeland Health as described in BLM Technical Reference 1734-6.

In Assessment 1, field observations were compared to the Reference Sheet for the Shallow Loamy 10 – 14 inch precipitation zone (R032XY362WY) to determine departures from normal. At Assessment 2, field observations were compared to the Reference Sheet for the Loamy 10 – 14 inch precipitation zone (R032XY322WY) to determine departures from normal. Individual ratings to the Rangeland Health Indicators are displayed for each assessment site in the table below.

Soil /Hydrologic/Biotic Integrity Ratings

Indicator	Assessment 1	Assessment 2
1. Rills	N-S	N-S
2. Water-flow patterns	N-S	N-S
3. Pedestals and/or terracettes	S-M	N-S
4. Bare ground	N-S	S-M
5. Gullies	N-S	S-M
6. Wind-scoured, blowouts, and/or deposition areas	S-M	N-S
7. Litter movement	N-S	N-S
8. Soil surface resistance to erosion	N-S	N-S
9. Soil surface loss or degradation	N-S	S-M
10. Plant community composition and distribution relative to infiltration	S-M	S-M
11. Compaction layer	N-S	N-S
12. Functional / structural groups	S-M	S-M
13. Plant mortality / decadence	N-S	N-S
14. Litter amount	N-S	N-S
15. Annual production	N-S	N-S
16. Invasive plants	N-S	S-M
17. Reproductive capability of perennial plants	N-S	N-S
Indicator Summary	**Assessment 1**	**Assessment 2**
Soil / Site Stability (*Indicators 1-9, 11*)	N-S	N-S
Hydrologic Function (*Indicators 1-5, 8-11, 14*)	N-S	N-S
Biotic Integrity (*Indicators 8-9, 11-17*)	S-M	S-M
N-S None to Slight S-M Slight to Moderate M Moderate M-E Moderate to Extreme E-T Extreme to Total		

3.2 Soils and Site Stability

Data collected for the Rangeland Health Assessments were used to evaluate soil and site stability on the allotment. Standard 1 for Healthy Rangelands is evaluated based on the attribute ratings for *Soil and Site Stability* and *Hydrologic Function* using rangeland health indicators 1 through 11 and 14.

The rangeland health assessments conducted in the allotment were compared to the Reference Sheet for the Shallow Loamy (R032XY362WY) and Loamy (R032XY322WY) 10-14 inch precipitation zone ecological sites dated 5/23/2008 to determine departures from normal.

Assessment 1
Rill formation and water flow patterns were not observed. Pedestals and/or terracettes were slight to moderate. Transect data determined bare ground to be 27 percent (15 – 45 percent expected) and litter cover to be 16 percent (10 – 25 percent expected). Gullies were none to slight and what was observed was expected on the shale outcrops. Wind scoured areas were slight to moderate due to the topography and the dominant southwest winds. No litter movement was observed. The soil stability index (SSI), an indicator of the soil surface resistance to erosion, was 3.0 with a greater than or equal to 3 expected. Coverage of biological soil crusts was 32%. When the Soil Surface Integrity (SSI) is combined with vegetation, litter, and soil crust cover, the soil is reasonably stable and possesses a limited resistance to rain drop impact and to the erosive force of overland flow. No soil compaction was observed.

Assessment 2
Rill formation and water flow patterns were not observed. Pedestals and/or terracettes were none to slight. Transect data determined bare ground to be 33 percent (10-30% expected) and litter cover to be 32 percent (5-30% expected). Gullies were none to slight to moderate. They could be observed at the head waters of the drainage coming off steep slopes. Wind scoured areas and litter movement were none to slight. The soil stability index (SSI) was 4.0 with a greater than or equal to 3 expected. Coverage of the biological crusts was 28%. When the Soil Surface Integrity is combined with vegetation, litter, and soil crust cover, the soil is reasonably stable and possesses a limited resistance to rain drop impact and to the erosive force of overland flow. No soil compaction was observed.

Based on the observations made at the monitoring sites, the attribute ratings for *Soil and Site Stability* and *Hydrologic Function* were rated as "None to Slight".

3.3 Hydrology

3.3.1 Surface Water
Rangeland Health17 Indicators

The hydrologic and soil rangeland health indicators as outlined and discussed in section 3.1 were assessed to determine current conditions in the allotment related to runoff and soil water retention. The overall ratings from the two assessment sites are found in the table in section 3.1 above. Both sites in the allotment had an overall rating of none to slight for the hydrologic indicators. Generally in areas where a moderate or greater departure was referenced for soil or hydrologic function, these areas are not currently meeting standards. Therefore the current ground conditions are supporting the soils definition for meeting standard 1.

Human Influence
The historic construction of the reservoirs in the allotment has changed the flow pattern of the drainages. When functioning, the reservoirs trap and store sediment that otherwise would be delivered downstream. When the reservoirs become in disrepair the release the previously stored sediment and often create head cuts or changes in the channel geometry that can cause excessive erosion. The reservoirs in this allotment were of small size and have a minimal impact to the surface water runoff of the North Fork of Owl Creek. Other anthropogenic disturbances that alter runoff conditions such as roads are minimal in this allotment.

3.3.2 Groundwater
There are no water wells or springs in the allotment. Any potential groundwater recharge would occur in where the Frontier Aquifer is present and form infiltration along drainages. Currently there is no demand for additional groundwater in the allotment.

3.3.3. Water Quality (Surface)
There is no BLM or other DEQ water quality data for this allotment. The drainages are upland ephemeral drainages of Owl Creek. There are two reservoirs that capture sediment and runoff following snow melt and rainfall events that would reduce sediment load downstream.

The following was taken from the Wyoming 2012 semi-annual 305b report p.27. The most recent 2014 report is currently a draft. The majority of the assessment by the DEQ applies to lower segments of Owl Creek, however it appears the North Fork of Owl Creek is currently supporting the class 2C beneficial uses as described in section 2.4.3.

"In Owl Creek, sodium and sulfates, together with silt and clay, naturally affect water quality (Ogle, 1992). In 1995, AML reclaimed a historic sulfur mine which had been affecting water quality in the Owl Creek watershed. Owl Creek was listed in 2002 as threatened for not supporting its contact recreation use based on fecal bacteria data from WDEQ and USGS. Hot Springs Conservation District (HSCD) has sponsored the formation of the Owl Creek Watershed Planning Committee and has been monitoring E. coli levels in the creek. The committee finalized a watershed plan in 2006 and is implementing several BMPs as part of the plan (WACD, 2007)." TMDLs are anticipated in July 2012 for the bacterial listings on Owl Creek.

3.3.4 Riparian
There are no riparian areas on public land in the allotment.

3.4 Upland Vegetation
Data from the line intercept cover transect, the 17 Indicators of Rangeland Health, and other field observations were used to evaluate the vegetative community on the allotment. Standard 3 for Healthy Rangelands is evaluated based on the attribute ratings for Biotic Integrity using rangeland health indicators 8 through 9, and 11 through 17.

The vegetative community, ground cover, and soil surface attributes for Assessment 1 were noted, measured and compared to the ecological site description (ESD) and corresponding reference sheet for a Shallow Loamy 10-14 inch precipitation zone (R032XY362WY) ecological site- 5/23/2008. Assessment 2 was measured and compared to the ESD and corresponding reference sheet for a Loamy 10-14 inch precipitation zone (R032XY322WY).

The Historic Climax Plant Community (HCPC) for this ecological site is a Bluebunch wheatgrass/Needleandthread plant community. This community would be dominated by cool season grasses (75%) followed by a nearly even balance of forbs (10%) and woody plants (15%). With moderate continuous season long grazing or extended droughts a transition from HCPC to a Perennial Grass/Mixed Shrub Plant Community may occur. This state is dominated by cool season grasses but short warm season grasses and various forbs are present and shrubs would be a conspicuous part of the site. This state has a hydrologic, soil, and biotic community that is stable and intact. From this state, with frequent and severe grazing and lack of fire, it can be converted to a Mixed Shrub/Bare Ground Plant Community and eventually a Blue grama sod plant community. More saline sites will convert to a Salt Tolerant Shrub/Bare Ground Plant Community. A Salt Tolerant Shrub/Rhizomatous plant community can occur where prescribed grazing is implemented in the Salt Tolerant Shrub/Bare Ground Plant Community.

States beyond the Perennial grass/Mixed Shrub Plant community are likely to have a biotic, soil, and hydrologic function that is at risk or not functioning. Herbaceous production will decline, the undesirable species increase as the desirable species decrease, and the ability to move towards HCPC is diminished without mechanical treatments, reseeding efforts, soil remediation efforts, and intense grazing management.

The data collected at Assessment One indicates that this site has characteristics of a **Perennial Grass/Mixed Shrub Plant Community.** The attribute rating justification for the Biotic Integrity at this assessment was "Slight to Moderate." The functional/structural groups were slightly reduced. The cool season mid-stature grasses and rhizomatous wheatgrasses were slightly reduced. Bluebunch wheatgrass and western wheatgrass were present in the transect area. Needleandthreadgrass, while present in the assessment area, accounted for less of the composition than expected. Sandberg bluegrass, prairie junegrass, mutton bluegrass and a variety of forbs composed the remaining plant composition. Wyoming big sagebrush was slightly more than expected. There was good plant diversity with all the expected grass species present.

Biological crusts and lichens were common in the area making up 32 percent of the basal cover in the transect. Plant mortality/decadence was considered none to slight. The percent litter was 16% which what was expected (10-25%) for the site. The vegetation did produce an annual herbaceous understory that displayed a vigor representative of the amount of spring precipitation (April, May, and June) received 65% of average for the area (BLM O.B. Reservoir Rain Gauge). The total precipitation was 11.40 inches or 106% of average. This resulted in a slightly higher annual production. No invasive species were observed at the assessment site. The reproductive capability was what was expected for the site. Bare ground was 27 percent with 15 – 45 percent expected.

The data collected at Assessment 2 indicates that this site has characteristics of a **Perennial Grass/Big Sagebrush Plant Community.** The attribute rating justification for the Biotic Integrity at this assessment was "Slight to Moderate." The cool season mid-stature grasses and rhizomatous wheatgrass dominated the site. Bluebunch wheatgrass, Indian ricegrass and western wheatgrass were all present in the transect area. The cool season short stature grasses of sandberg bluegrass and prairie junegrass were present in the transect area. Wyoming big sagebrush was present and within what was expected for the site. There was good plant diversity with all the expected grass species present.

Biological crusts and lichens were common in the area making up almost 28 percent of the basal cover in the transect. Plant mortality/decadence was considered none to slight. The percent litter was slightly higher at 32 percent with 5-30 percent expected. The vegetation did produce an annual herbaceous understory that displayed a vigor representative of the amount of spring precipitation (April, May, and June) received 65% of average for the area. The total precipitation was 106% of average, (BLM O.B. Reservoir Rain Gauge). This resulted in an annual production slightly greater than expected for the site. Cheatgrass was not present in either transect but was restricted to primarily disturbed areas in the southeastern corner of the allotment and around the two old reservoirs. The reproductive capability was what was expected for the site. Bare ground was slightly higher than expected (10-30%) at 33 percent.

3.5 Wildlife Habitat

Below is the Sage-grouse Habitat Assessment transect data and transect photos, located within representative sage-grouse habitat in this allotment, **(Map 5)**. This transect was run during the growing season of 2014, to determine and record the sagebrush canopy cover, shrub height, shrub age diversity and composition, and all other vegetation cover class composition and height.

Sage-grouse Habitat Assessment Transects for North Hart Allotment, 6/20/2014

Line Intercept Canopy Cover		
	North Hart Allotment Transect (Core Area)	
Shrub Species		
Live Big Sagebrush	14	
Dead Big Sagebrush	4	
Other SPP: (Fringe sage)		
Other SPP: (Shadscale)		
Other SPP: (R Rabbit B)		
Shrub Height (inches)		
Live Big Sagebrush	15.9	
Other SPP: (Fringe sage)		
Other SPP: (Shadscale)		
Other SPP: (R Rabbit B)		
Belt Transect		
Species		
Big Sagebrush		
%Young		
%Mature	87	
%Decadent	12	
%Dead		
Daubenmire Cover Class & Vegetation Height Data		
Summary of Vegetation Height (inches)		
New Herbaceous Mean Height	6.6	
Residual Herbaceous Mean Height	2.4	
Summary Cover Class %		
New Perennial Grass	19	
New Annual Herbaceous	2.5	
Perennial Forb	0	
Residual Herbaceous	0	
Other	78	
Browse Utilization		
Species		
ATTR	Moderate	

North Hart allotment sage-grouse habitat assessment transect 1

4.0 Conclusions

This section draws conclusions and makes determinations regarding:

A. Progress towards or attainment of the standards for rangeland health, and
B. Whether livestock management is in conformance with the guidelines, and
C. Whether existing grazing management or levels of grazing use are significant factors in failing to achieve the standards or conform to the guidelines.

4.1 Standard 1

Within the potential of the ecological site (soil type, landform, climate, and geology), soils are stable and allow for water infiltration to provide for optimal plant growth and minimal surface runoff. ***MET***

Rationale:

The overall rating for the soils was a none to slight departure from reference conditions. There were no signs of excessive soil loss, erosion, or degradation, in the interspaces or underneath plant canopies. The soils are currently supporting their respective ecological sites given the land form and geology of the

allotment. Runoff does not appear to be excessive and proper infiltration for plant growth as defined above is occurring. Although the areas mapped as rock outcrop contain shallow or very shallow soils, these acres were included in Standard 1.

Land Health Reporting Categories	Acres
Public Land Achieving Standard 1	376.6
Public Land Not Achieving Standard 1	0
Public Land where Land Health Standard 1 Does Not Apply or unevaluated (rock outcrop)	186.9
Total Public Land Acres	563.5

4.2 Standard 2

Riparian and wetland vegetation has structural, age and species diversity characteristic of the state of channel succession and is resilient and capable of recovering from natural and human disturbance in order to provide forage and cover, capture sediment, dissipate energy, and provide ground water recharge. ***NOT APPLICABLE***

Rationale:

There are no riparian areas that are found within the allotment, primarily due to the ephemeral flow of the drainages and the absence of springs or other permanent water within the allotment.

4.3 Standard 3

Upland vegetation on ecological site consists of plant communities appropriate to the site which are resilient, diverse, and able to recover from natural and human disturbance. ***MET***

Rationale:

Based on the assessment of the data collected as well as observations throughout the allotment, the following table summarizes the number of acres that were determined to meet Standard 3, and the number of acres that no determination was made. This table is also visually represented by **Map 6** in the Appendix. As described in the monitoring section the Loamy 10-14 inch ecological site assessment in the allotment was determined to include the Sandy 10-14 inch ecological site.

North Hart Allotment #00585

Ecological Site	Ecological State	Standard_3	Acres
Shallow Loamy 10-14"	Perennial Grass/Mixed Shrub Plant Community	MET	128.0
Loamy 10-14"	Perennial Grass/Big Sagebrush Plant Community	MET	248.6
Rock Outcrop 10-14"	Rock Outcrop	n/a	186.9
	TOTAL ACRES		**563.5**

As it pertains to the acres that did meet the standard, these sites are in a dynamic equilibrium with the Historic Climax Plant Community. This means that at this time these sites have appropriate pathways available to them to respond to proper grazing strategies, favorable environmental conditions, and

environmental disturbances. The sites have a vegetative community that is stable, intact, resistant to change, and provides for soil and watershed stability.

4.4 Standard 4

Rangelands are capable of sustaining viable populations and a diversity of native plant and animal species appropriate to the habitat. Habitats that support or could support threatened species, endangered species, species of special concern, or sensitive species will be maintained or enhanced. ***MET***

Rationale:

Three monitoring locations were chosen in the allotment for monitoring and evaluation purposes. One transect primarily for sage-grouse habitat assessment, and the other two to measure soil and vegetative parameters for evaluating the 17 Indicators of Rangeland Health. The sage-grouse habitat assessment monitoring transect location was in the northwest portion of the allotment where wintering sage-grouse have occasionally been observed. This transect was intentionally located in representative sage-grouse habitat in the allotment with gentle topography and larger continuous sagebrush communities (see Sage-Grouse Habitat Assessment Transect Photo and Wildlife Resources Map for transect location). The other monitoring locations where the 17 Indicators of Rangeland Health were assessed were more representative of the allotment in general. Sagebrush canopy cover measured at sage-grouse habitat assessment transect was 14%. Some level of sage-grouse wintering, nesting and early brood rearing could be occurring, primarily because these habitats were found to be suitable here, and this area of the allotment is within proximity, .7 miles east of a known occupied lek (Rattlesnake Creek lek). Sagebrush canopy cover within sagebrush stands used for nesting generally ranges from 15 to 25%, and winter habitat is generally defined as sagebrush stands with 10-30% canopy cover (Connelly et al. 2000a).

As was mentioned above in the rationale for Standard 3, the two Rangeland Health monitoring sites; Shallow Loamy 10-14" and Loamy 10-14", were found to be in a Perennial Grass/Mixed Shrub Plant Community and Perennial Grass/Big Sagebrush Plant Community, respectfully. These communities still retain appropriate pathways available to them to respond to favorable environmental conditions, and environmental disturbances. These communities are stable, intact, resistant to change, and provides for soil and watershed stability. The Biotic Attribute of Rangeland Health for these sites was rated at None-Slight or Slight-Moderate, and these sites maintain enough diversity and dominance by desirable perennial grasses to return to their HCPC. They provide for a diversity of plant species including an overstory of sagebrush and understory of bunchgrasses and forbs, and in turn provide for the diversity of wildlife habitat needs like cover, forage and nesting habitats. Most importantly these vegetation communities provide a diversity of native plant species that in turn provide for a diversity of animal species, of which all are appropriate to the habitat, and therefore do meet Standard 4.

4.5 Standard 5

Water quality meets State standards. ***UNKNOWN***

Rationale:

The drainages in consideration of this standard are three ephemeral drainages to the North Fork of Owl Creek. According to the (DEQ, 2001) this drainage is classified as 2c.

Class 2C streams are those surface waters known to support game warm water fish populations or spawning and nursery areas at least seasonally. Such waters are additionally protected for nongame fish, fish consumption, aquatic life other than fish, primary contact recreation, wildlife, industry, agriculture, and scenic value (DEQ, 2001).

There is no information currently available to indicate that this Standard is or is not being met. It can be concluded however that the soils and runoff conditions are appropriate for the allotment and lower amounts of sediment would be delivered from runoff in the allotment. Other management impacts that would have a potential to impair water quality such as excessive roads, mining, wildfire are not present in this allotment. Therefore, as per BLM state office policy, compliance with Wyoming State Water Quality Standards is unknown.

4.6 Standard 6

Air quality meets State standards. ***UNKNOWN***

Rationale:

No information is currently available to indicate that this Standard is or is not being met. An air quality monitoring station was recently established in the Bighorn Basin, but no monitoring data is available at this time. Until specific data becomes available, the determination for this Standard is UNKNOWN, per direction from the BLM Wyoming State Office.

4.7 Guidelines for Livestock Grazing Management

Guidelines provide for, and guide the development and implementation of, reasonable, responsible, and cost-effective management practices at the grazing allotment and watershed level. These management practices will either maintain existing desirable conditions or move rangelands toward statewide standards within reasonable timeframes. Appropriate guidelines will ensure that the resultant management practices reflect the potential for the watershed, consider other uses and natural influences, and balance resource goals with social, cultural/historic, and economic opportunities to sustain viable local communities. ***NOT APPLICABLE***

Rationale:

There has been no authorized livestock grazing on the North Hart Allotment for approximately 10 years.

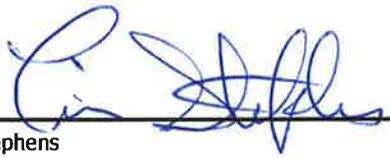
5.0 Resource Specialist Signatures

X

Karen A. Hepp
Rangeland Management Specialist

X

John Elliott
Supervisory Rangeland Management Specialist

X 

Tim Stephens
Wildlife Biologist

X

Jared Dalebout
Hydrologist

X

Michael J. Phillips
Assistant Field Manager - Resources

6.0 DETERMINATION

Based on the information provided in this assessment, ***I have determined that standards one, three, and four are being met Standard two is not applicable, and standards five and six are unknown.***

X _____ X MAY 2 1 2015

Rebecca A. Good
Worland Field Manager

DATE

7.0 FACTORS RELATED TO NONCONFORMANCE WITH STANDARDS

8.0 REFERENCES

United States Department of Agriculture (USDA) NRCS Technical Guide Section IIE Rev. 11/01/05).

Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun. 2000*a*. Guidelines for management of sage grouse populations and habitats. Wildlife Society Bulletin 28:967-985.

Holloran, M.J, and S.H. Anderson. 2005. Spatial distribution of Greater Sage-Grouse nests in relatively contiguous sagebrush habitats. Condor 107:742-752.

WYDEQ, 2001. **Wyoming Surface Water Classification List June 2001**. Wyoming Department Environmental Quality. p A.15.

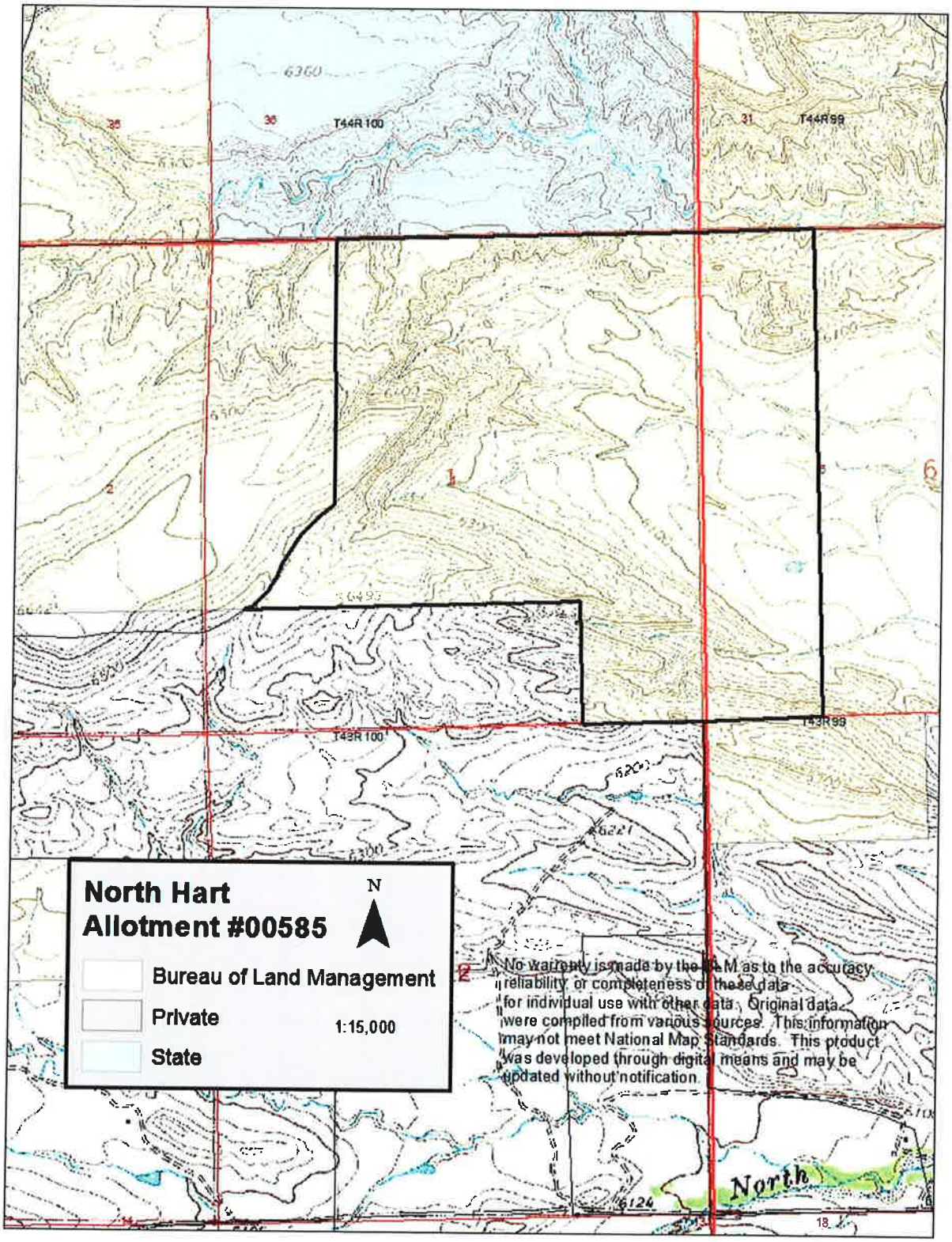
WYDEQ,2012. **Wyoming Water Quality Assessment and Impaired Waters List 2012 Integrated 305(B) and 303 (d) Report** Wyoming Department of Environmental Quality. p 28.
Wyoming DEQ 2012 305b Report

U.S. Department of Agriculture, Natural Resources Conservation Service. 2008. Ecological Site Description System. Site ID: R032XY322WY, R032XY362WY, Available on the web at: http://esis.sc.egov.usda.gov/Welcome/pgReportLocation.aspx?type=ESD

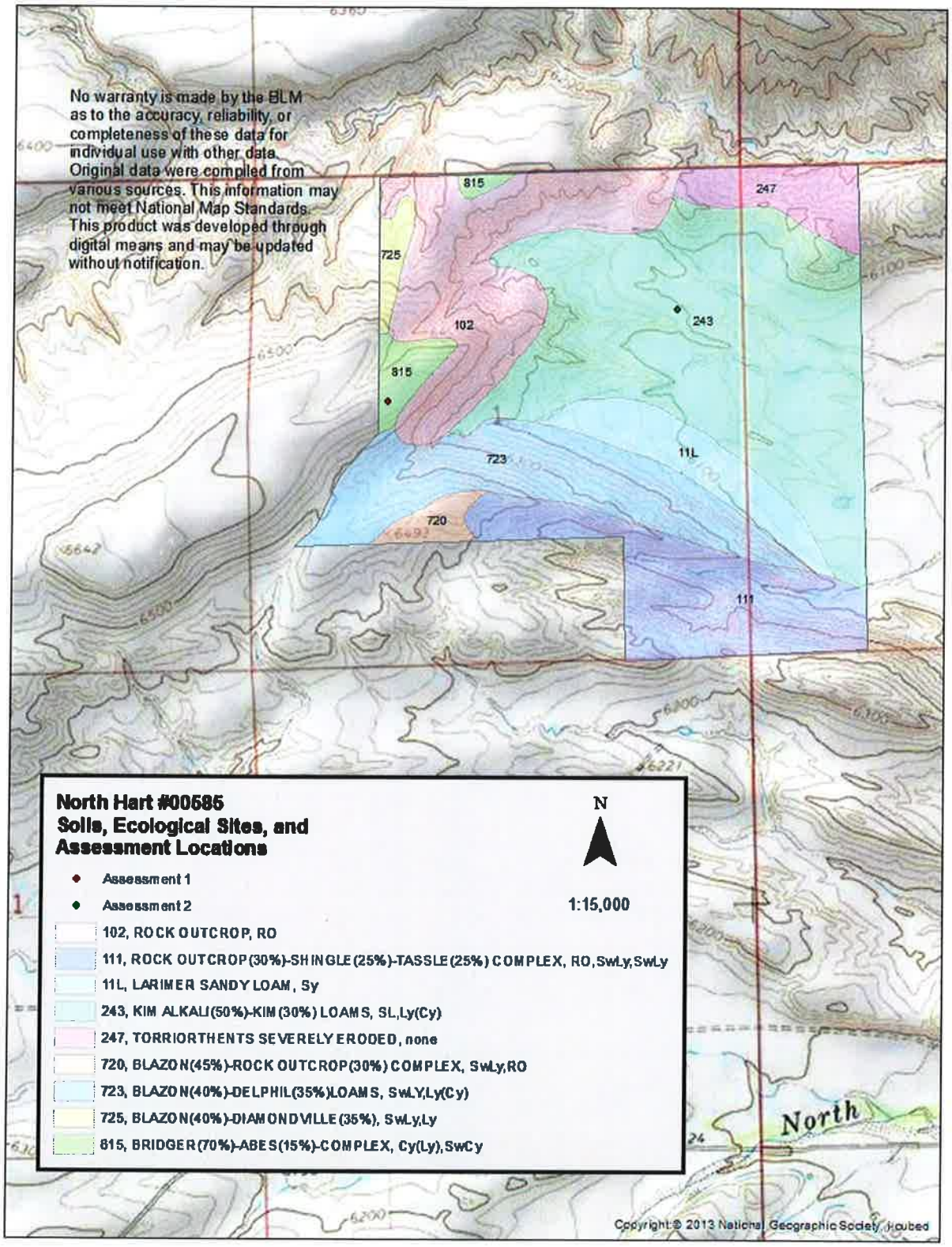
Pellant, M., P. Shaver, D.A. Pyke, and J.E. Herrick. 2005. Interpreting indicators of rangeland health, version 4. Technical Reference 1734-6. U.S. Department of the Interior, Bureau of Land Management, National Science and Technology Center, Denver, CO. BLM/WO/ST-00/001+1734/REV05.

U.S. Department of the Interior, Bureau of Land Management, Wyoming State Office. 1997. Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the State of Wyoming.

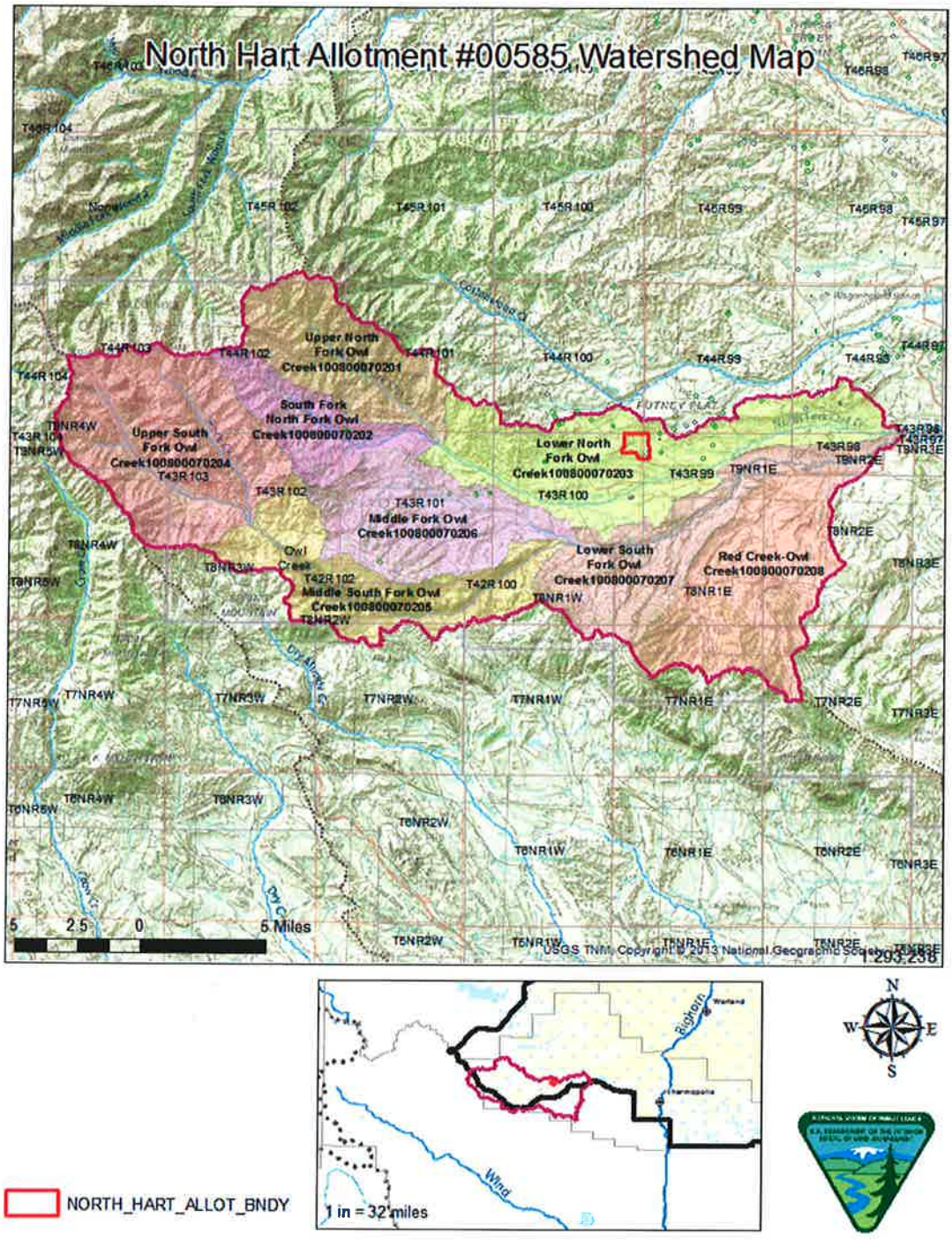
Appendix
Map 1: North Hart Allotment



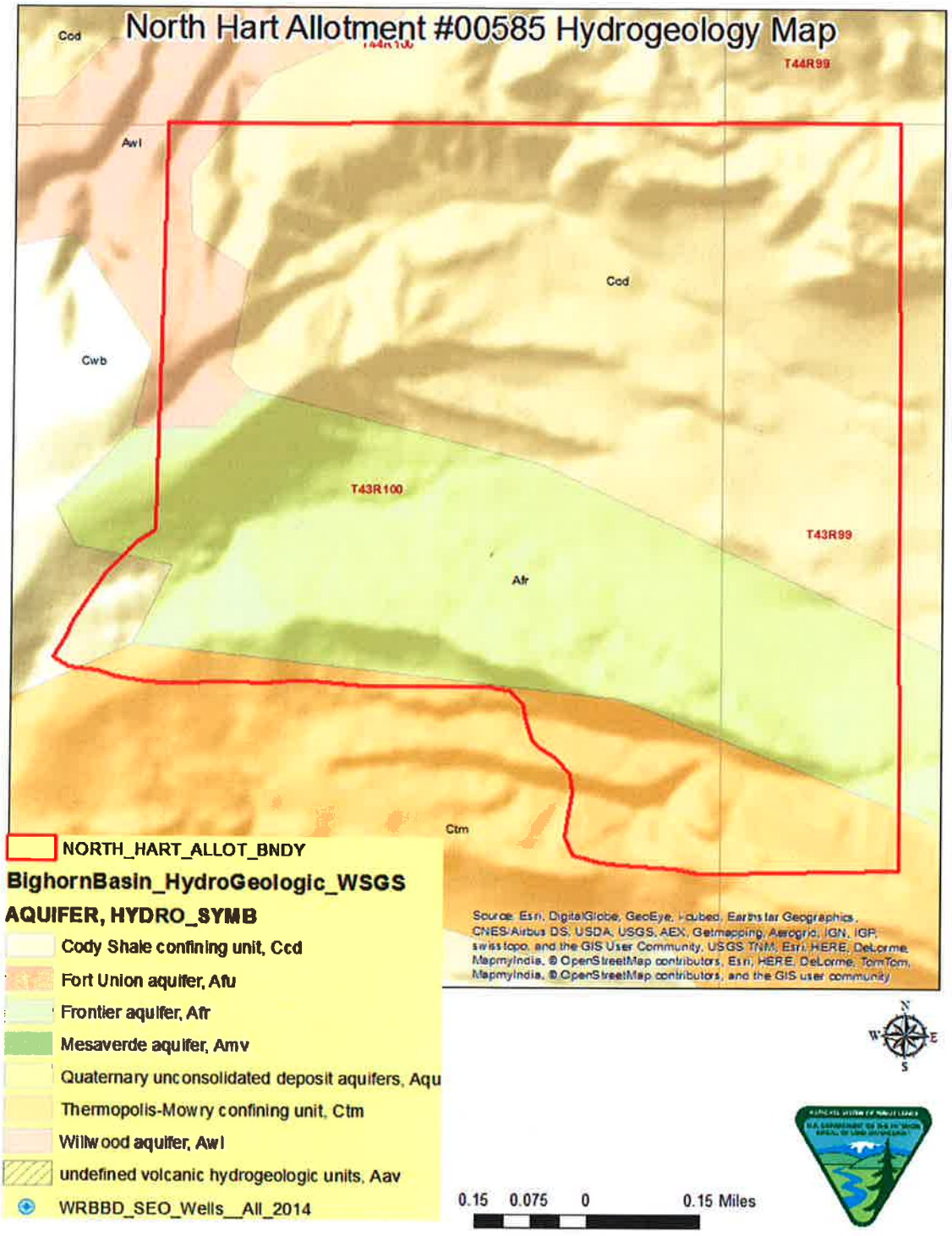
Map 2: Soils, Ecological Sites, and Assessment Sites



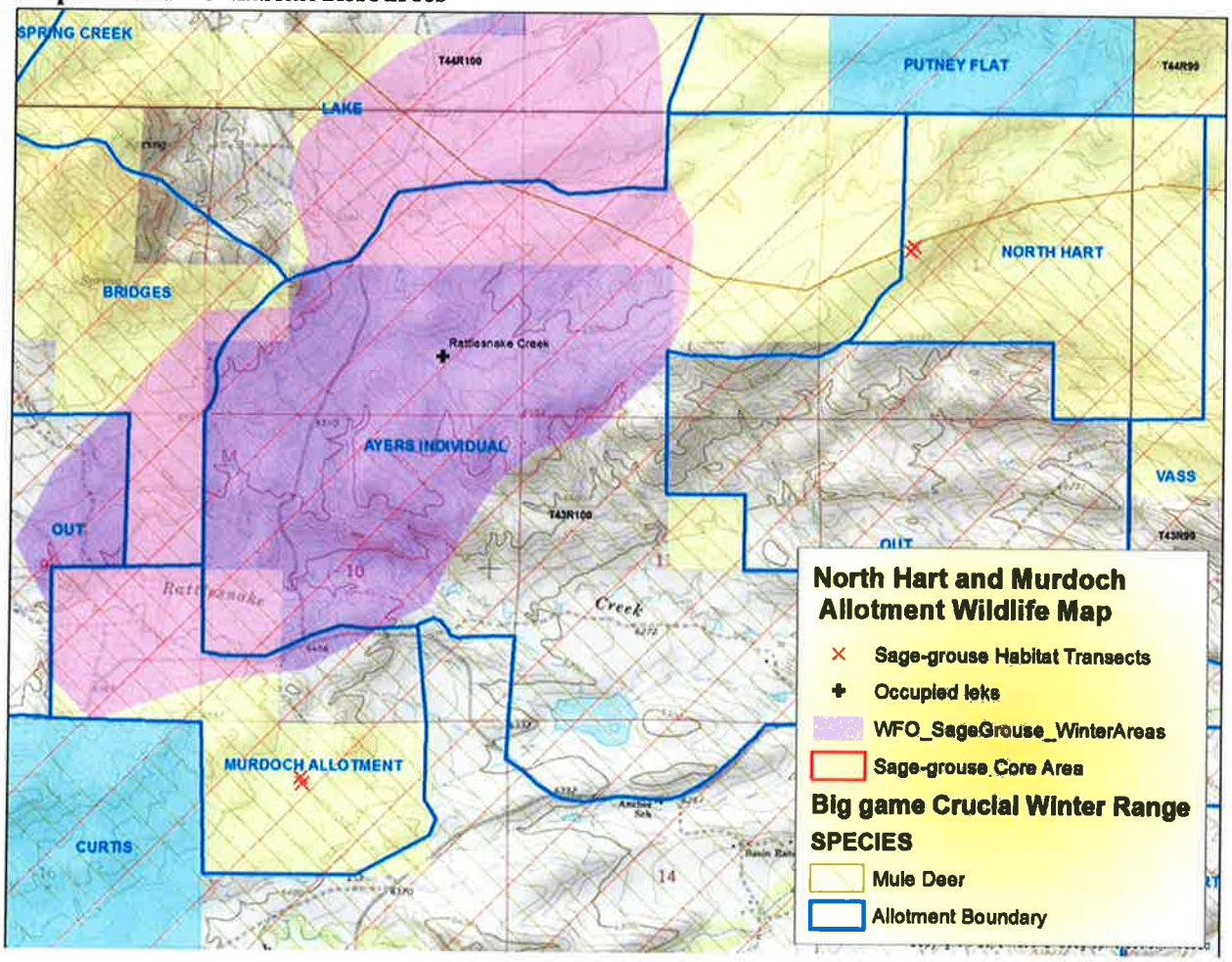
Map 3: Hydrology / Riparian / Watershed (Not to Scale)



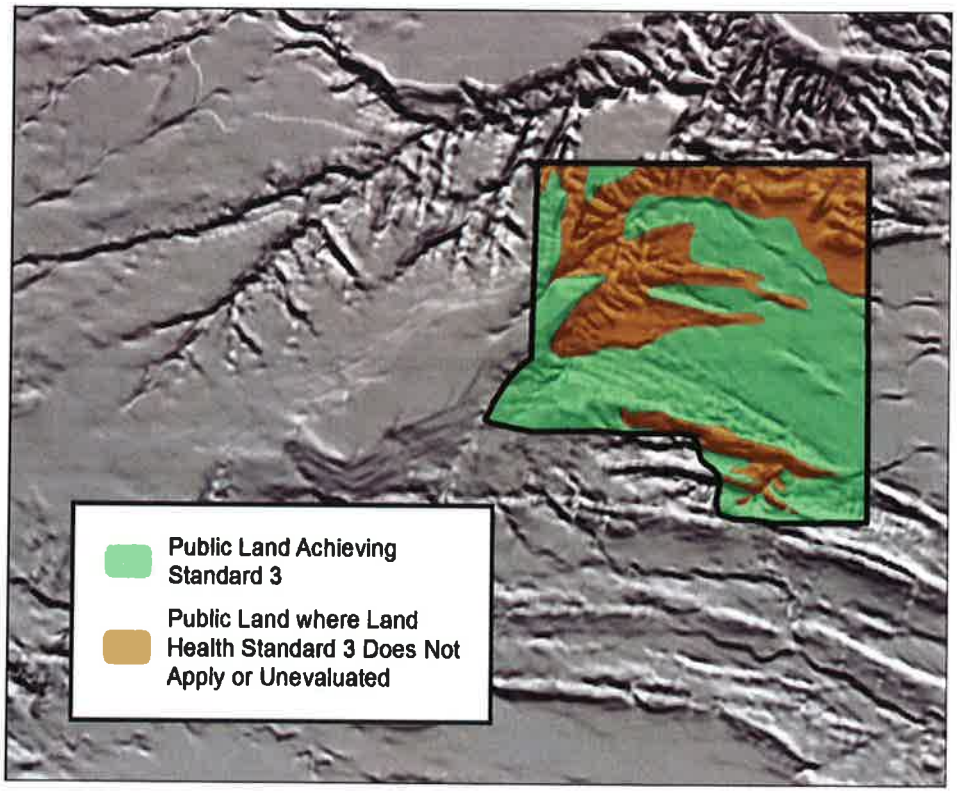
Map 4: Hydrology (Not to Scale)



Map 5: Wildlife Habitat Resources



Map 6: Upland Vegetation Standard Conformance (Standard 3)



Land Health Reporting Categories	Acres
Public Land Achieving Standard 3	376.6
Public Land Not Achieving Standard 3	0
Public Land where Land Health Standard 3 Does Not Apply or unevaluated (rock outcrop)	186.9
Total Public Land Acres	563.5