

**BLM - SURPRISE FIELD OFFICE
 Massacre Lakes Allotment (01007)
 and Herd Management Area (CA-268)**

4/7/2010

DOCUMENTATION FORM FOR DETERMINATIONS:
 ACHIEVEMENT OF RANGELAND (LAND) HEALTH STANDARDS,
 CONTRIBUTING FACTORS AND APPROPRIATE ACTION PRIORITIES

THIS FORM DOCUMENTS, FOR THE INDICATED AREA: (1) DETERMINATIONS AND SUPPORTING RATIONALE REGARDING IF FUNDAMENTAL RANGELAND HEALTH CONDITIONS CITED IN 43 CFR 4180.1 EXIST IN THESE AREAS; (2) DETERMINATIONS, IN CASES WHERE ONE OR MORE CONDITIONS OF FUNDAMENTAL RANGELAND HEALTH DO NOT EXIST, REGARDING THE STANDARD(S) THAT IS (ARE) NOT ACHIEVED; (3) DETERMINATIONS, IN THOSE CASES WHERE ONE OR MORE STANDARDS ARE NOT ACHIEVED, REGARDING THE CONTRIBUTING FACTOR(S) THAT IS (ARE) PREVENTING STANDARD(S) ACHIEVEMENT OR IS (ARE) PREVENTING SIGNIFICANT PROGRESS TOWARDS ITS (THEIR) ACHIEVEMENT; AND, (4) THE INFORMATION THAT WAS EXAMINED THAT SUPPORT THESE DETERMINATIONS.

Indicate the date(s) or period the information review occurred: **2006 to March 2010**

PART I - IDENTIFICATION OF RELEVANT AREA

A. Indicate area where these determinations and rationale apply:

1. **Site** (Specific Geographic Area) within Management Unit (allotment or pasture):
 Allotment name/no.: _____
 Place name: **Massacre Lakes Herd Management Area, 39,890 acres of public land.**
 Legal location (if needed to ID site): _____
 Approximate size in acres: _____
 (or linear length if lotic riparian)
2. **Management Unit** (allotment or pasture - list name / no. / acres):
Massacre Lakes Allotment (#01007); 41,890 acres public; 2,410 acres private; 2,590 acres of ephemeral lakes, five fenced pasture, three pastures include crested wheatgrass seedings.
3. **Landscape** (identify by groups of management units or by watershed if cross-cutting MU's and list):

4. **Other Stratification** (identify - e.g., all riparian areas in XYZ Pasture):

PART II - IDENTIFICATION OF INFORMATION REVIEWED

The following information was reviewed in February, 2010 to determine standards attainment in compliance with 43 CFR 4180.2: **Actual use reports, utilization, rangeland health assessments, riparian functional assessments, photo trend monitoring, wild horse population information, and other field data from 1995-2008. Photo trend information is from 1968 to 2009.**

The following information (e.g. monitoring, literature, personal communication, etc.) was considered to determine standards attainment and, if applicable, contributing factor(s) to their non-achievement and failure to make significant progress towards their achievement.

Field Data Indicators at five Rangeland Health Assessment (RHA) sites on the Massacre Lakes Allotment/HMA, collected in 2007 and/or 2008:

Rangeland Health Attributes		Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight	Σ
Soils	Soils/Site Stability Indicators 1-9 & 11	0	0	5	8	37	50
Hydrologic	Hydrologic Function Indicators 1-5, 8-11 & 14	0	0	7	14	29	50
Biotic	Biotic Integrity Indicators 8-9 & 11-17	0	3	8	13	21	45

Discussion of Specific Indicators (as needed):

Massacre Lakes 2007- 2008 RHA Summary:

<u>on SMU)</u>	<u>Pasture Name</u>	<u>(SMU*#)</u>	<u>Ecological Site Number</u>	<u>Ecological Site Name</u>	<u>Percent of Allotment (based</u>
9.3	Sand Spring	1045	NV23-06	Loamy 8-10" PZ	
16.3	Juniper	1168	NV23-31	Claypan 10-14" PZ	
	Lake Field	1328	NV23-20	Loamy 10-12" PZ	5.5
	Sand Spring	1206	NV23-51	Sandy 8-12" PZ	12.6
	Juniper	1186	NV23-17	Claypan 14-16" PZ	21.4
	*Soil Map Unit				

RHA #1 – Sand Spring Pasture, SMU# 1045, NV23-06 Loamy 8-10" PZ

The Sand Spring Pasture is the southernmost fenced pasture within the Massacre Lakes Allotment and is outside the Massacre Lakes Herd Management Area (HMA). RHA #1 represents 4,367 acres within the allotment. Livestock are managed for deferred use in this pasture each year during the month of August and September. Grazing use in this pasture has occurred in nine of the last twelve years. This pasture has been documented as receiving heavy use (greater than 60%) three out of the last four grazing seasons.

One moderate departure was observed for the indicator Functional/structural groups due to the lack of deep rooted perennial grasses. At Potential Natural Community (PNC), Thurber's needlegrass should be the dominant grass for the ecological site (30-45% by weight); however, Thurber's was not found at the site during the rangeland health assessment. Squirreltail was present mainly under sagebrush canopy.

Two moderate to extreme departures were observed for the indicators: Annual production and Reproductive capability of perennial plants. The departure for Annual production was due to the lack of Thurber's needlegrass and other perennial grasses. Low precipitation in recent years (average precipitation was below normal in 2007 and 2008) resulted in low available soil moisture and poor vigor of perennial species inhibited reproductive capability.

RHA #2 – Juniper Pasture, SMU# 1168, NV23-31 Claypan 10-14" PZ

The Juniper Pasture is the highest elevation summer use area for the allotment. This pasture is managed for livestock grazing every other year and has been used by livestock six out of the last twelve years. Typically this pasture is scheduled for livestock use from June to September. This pasture is within the Massacre Lakes HMA and wild horses use this pasture all year long. Wild horses were last gathered from the Massacre Lakes HMA in 1988. The last inventory occurred in 2008 and 108 wild horses were counted by helicopter. The current wild horse population estimate is between 136 and 202 head using this pasture on a yearlong basis. In the last three years moderate and heavy use has been recorded in this pasture. In 2009 the wild horse estimated actual use was greater than the livestock actual use within this pasture. RHA #2 represents 7,653 acres within the allotment/HMA.

Three moderate departures were observed for the indicators: Pedestals and/or terracettes, Plant community composition and distribution relative to infiltration, and Functional/ structural groups. Pedestalling at this site is likely caused by water erosion due to the lack of cover (basal and foliar), which also contributed to moderate departure for plant community composition relative to infiltration. The moderate departure for Functional / structural groups is based on the lack of deep rooted perennial grasses. At PNC the site should be dominated by low sagebrush, bluebunch wheatgrass, and Thurber's needlegrass; however, Sandberg's bluegrass is now the dominant grass.

One moderate to extreme departure was observed for Annual production. Annual production is much less than described in the Ecological Site Description due to the lack of deep rooted perennial bunchgrasses and dry conditions.

RHA #3 – Lake Field, SMU# 1328, NV23-20 Loamy 10-12" PZ

Part of the Lake Field Pasture was seeded in 1969 with Crested wheatgrass. This pasture is managed to be grazed by livestock every other year, but due to below average precipitation seven of the last twelve years this pasture has been used by livestock eight out of the last twelve years. Typically this pasture is

scheduled for livestock use from June to September. This pasture is within the Massacre Lakes HMA, but only a few wild horses have been documented using this pasture between October and February in five of the last twelve years. This pasture has been documented receiving heavy use three out of the last four grazing seasons. RHA #3 represents 2,580 acres within the allotment.

Two moderate departures were observed for the indicators: Bare ground and Soil surface resistance to erosion. This site is a crested wheatgrass seeding with native grasses present as well; big sagebrush is the dominant shrub. The departures are the result of increased bare ground from the lack of herbaceous cover from repeated heavy grazing.

RHA #4 – Sand Spring Pasture, SMU# 1206, NV23-51 Sandy 8-12” PZ

The Sand Spring Pasture is the southernmost fenced pasture within the Massacre Lakes Allotment and is outside the Massacre Lakes Herd Management Area (HMA). Livestock are managed for deferred use in this pasture each year in the months of August and September. Grazing use in this pasture has occurred in nine of the last twelve years. This pasture has been documented as receiving heavy use three out of the last four grazing seasons. RHA #4 represents 5,910 acres within the allotment.

Three moderate departures were observed for the indicators: Plant community composition and distribution relative to infiltration, Functional/structural group, and Annual production. At PNC the dominant vegetation on the site should be needle-and- thread, Indian ricegrass and big sagebrush; currently the site is dominated by big sagebrush and rabbitbrush with very few forbs and perennial grasses. The moderate departures are due to the lack of herbaceous vegetation (forbs and grasses) on the site. Lack of precipitation during the assessment year also contributed to the departure for annual production.

RHA #5 – Juniper Pasture, SMU# 1186, NV23-17 Claypan 14-16”PZ

The Juniper Pasture is the highest elevation summer use area for the allotment. This pasture is managed to be grazed by livestock every other year and has been used by livestock six out of the last twelve years. Typically this pasture is scheduled for livestock use from June to September. This pasture is within the Massacre Lakes HMA and wild horses use this pasture all year long. In 2009, the current wild horse population was estimated at between 136 and 202 head within the Juniper Pasture. In the last three years moderate and heavy use has been recorded in this pasture. In 2009 the wild horse estimated use was greater than the livestock actual use within this pasture. RHA #5 represents 10,043 acres within the allotment/HMA.

Seven moderate departures were observed for indicators: Water flow patterns, Pedestals and/or terraces, Soil surface loss or degradation, Plant community composition and distribution relative to infiltration, Functional/structural groups, Litter amount, and Annual production. At PNC the site would be dominated by low sagebrush, Idaho fescue and bluebunch wheatgrass. Currently, the dominant perennial grass is bluegrass (Poa sp). The departures for Water flow patterns, Pedestals and/or terraces, Soil surface loss or degradation, Plant community composition and distribution relative to infiltration are due to lack of herbaceous cover (basal and crown). Soils lacking adequate cover are more susceptible to erosion and degradation. The moderate departures for Functional/structural groups and Annual production are due to the lack of deep rooted perennial bunchgrasses Idaho fescue and bluebunch wheatgrass.

West Seeding Pasture

The majority of the West Seeding Pasture consists of the same SMU #1206 & #1045 that was discussed in the Sand Spring Pasture’s two RHAs. This pasture was seeded with Crested wheatgrass in 1967 and 1969. This pasture has been used by livestock in six of the last twelve years. Typically this pasture is used between April - June and August - September. This pasture is within the Massacre Lakes HMA, but wild horses have not been documented using this pasture. In 2009, this pasture received heavy grazing use by livestock.

East Seeding Pasture

The majority of the East Seeding Pasture consists of the same SMU #1206 & #1045 that was discussed in the Sand Spring Pasture’s two RHAs. This pasture was seeded with Crested wheatgrass in 1967. This pasture has been used by livestock in six of the last twelve years. Typically this pasture is used between May - June and August - September. This pasture is within the Massacre Lakes HMA, but wild horses have not been documented using this pasture. In 2006 heavy and severe grazing use by livestock was recorded in this pasture.

A. Information relevant to UPLAND SOILS, STANDARD 1:

Susanville Resource Advisory Council Standards and Guidelines:

Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and landform, and exhibit functional biological, chemical, and physical characteristics.

Meaning that: Precipitation is able to enter the soil surface and move through the soil profile at a rate appropriate to soil type, climate, and landform; the soil is adequately protected against human caused wind or water erosion; and the soil fertility is maintained at, or improved to, the appropriate level.

Indicator(s) Observed Information Reference (i.e. identify the information source used by type and date)

Comments / Remarks:

Answers to the following were based on the field data collected on the Massacre Lakes Allotment/HMA in 2007 and 2008, along with management records and observations from 1995 to 2009. Soils and ecological site information was also obtained from the 1999 Soil Survey of Washoe County, North Part and the 2006 Soil Survey of Surprise Valley – Home Camp California and Nevada.

Criteria

1. IS ground cover (vegetation, litter, and other types of ground cover, such as rock fragments) sufficient to protect sites from accelerated erosion? **Yes, although all sites lack foliar and basal cover from deep rooted perennial grasses, line-point intercept data indicates adequate overall canopy cover from shrubs, forbs, and other perennial grasses such as Poas.**
2. IS evidence of wind and water erosion, such as rills and gullies, pedestalling, scour, or sheet erosion, and deposition of dunes either absent or, if present, does not exceed what is natural for the site? **Yes, both Claypan sites (2 & 5) are exhibiting surface erosion and pedestalling that is not natural for the site. However, erosion is not evident at sites 1, 3, and 4. Since the majority of the East and West Seeding pastures resembles the same Soil Mapping Units at RHA Sites 1 and 4 it is thought that erosion would not be evident within these pastures.**
3. IS vegetation vigorous and diverse in species composition and age class, and does it reflect the Potential Natural Community or Desired Plant Community for the site? **No. Conditions at site 1 were poor with perennial species displaying low vigor. Although vegetation was vigorous at sites 2 through 5, all sites lacked key deep rooted perennial grass species. This condition (i.e. the lack of deep rooted perennial grasses) is a result of past and present livestock use on these key species. The lack of cover precludes a determination that all sites are at PNC. Desired Plant Community Objectives have not been established for the allotment/HMA.**

B. Information relevant to the [STREAM HEALTH, STANDARD 2:](#)

Susanville Resource Advisory Council Standards and Guidelines:

Stream channel form and function are characteristic for the soil type, climate, and landform.

Meaning that: Channel gradient, pool frequency, width to depth ratio, roughness, sinuosity, and sediment transport are able to function naturally and are characteristic of the soil type, climate, and landform.

Comments / Remarks: **This standard is not applicable to the Massacre Lakes Allotment/HMA. The surface water is associated with shallow ephemeral lakebeds, several ephemeral drainage systems and springs/seeps that are classified as lentic systems.**

Criteria

1. ARE gravel bars and other coarse textured stream deposits successfully colonized and stabilized with woody riparian species? **N/A**
2. IS streambank vegetation vigorous and diverse, mostly perennial, and holding/protecting banks during high streamflow events? **N/A**
3. DOES the stream water surface have a high degree of shading, resulting in cooler water in summer and reduced icing in winter? **N/A**
4. ARE portions of the primary floodplain frequently flooded (inundated every 1 to 5 years)? **N/A**

C. Information relevant to the [WATER QUALITY, STANDARD 3:](#)

Susanville Resource Advisory Council Standards and Guidelines:

Water will have characteristics suitable for existing or potential beneficial uses. Surface and groundwater complies with objectives of the Clean Water Act and other applicable water quality requirements, including meeting the California and Nevada State standards, excepting approved variances.

Comments / Remarks: **Surface and groundwater is associated with ephemeral drainages, seeps, pit reservoirs and wells and neither surface water nor groundwater has been listed for exceeding State water quality standards. All springs/seeps, pit reservoirs and groundwater are currently meeting the needs of beneficial uses for watering livestock, wild horses, and wildlife.**

Indications

1. ARE the chemical constituents, water temperature, nutrient loads, fecal coliform, turbidity, suspended sediment, and dissolved oxygen levels within the applicable requirements? **N/A**

2. ARE the standards for riparian, wetlands, and water bodies achieved? **N/A**

3. DO aquatic organisms and plants (e.g., macroinvertebrates, fish, algae, and plants) indicate support for beneficial uses? **N/A**

4. ARE there acceptable results from implementation and effectiveness monitoring or changes in management to address deficiencies identified by such monitoring? **N/A**

D. Information relevant to the **RIPARIAN AND WETLAND SITES, STANDARD 4**

Susanville Resource Advisory Council Standards and Guidelines:

Riparian and Wetland areas are in properly functioning condition and are meeting regional and local management objectives.

Meaning that: The riparian and wetland vegetation is controlling erosion, stabilizing stream banks, shading water areas to reduce water temperature, filtering sediment, aiding in floodplain development, dissipating energy, delaying floodwater and increasing recharge of ground water that is characteristic for these sites. Vegetation surrounding seeps and springs is controlling erosion and reflects the potential natural vegetation for the site.

Comments / Remarks: Answers to the following were based on field data collected from 2006 and 2008, along with management records, water source inventory (WSI) data, and observations on the Massacre Lakes Allotment/HMA. All riparian sites are within the Juniper Pasture.

Biebe Spring is a 4-5 acre undeveloped, lentic riparian site within an approximately 1,000 acre enclosure. Despite droughty conditions in past two years, the October 2007 assessment noted water running from the spring which exits from a low rock rim surrounded by juniper. Upland grasses below the spring and in the enclosure were estimated at greater than 12 inches, no signs of cattle or wild horses were noted near the spring or in the enclosure. Wildlife species using the area around the spring include sage-grouse, mule deer, and pronghorn antelope. Biebe Spring was rated as properly functioning condition (PFC) in 2007. In 2007, 17 of 20 indicators were rated positively and 3 were not applicable.

Tuffy Spring was developed with a livestock trough and fence in the late 1960's. Within the 6 acre enclosure there is approximately 2-3 acres of lentic riparian habitat, and a trough placed outside the enclosure. However, records indicate in 2006 and 2007 that the trough had rusted and was leaking heavily. Topography is generally flat with no large rocks or boulders visible among the tall grasses in the enclosure. In 1993 this site was rated as functional at risk (FAR) with an upward trend. In 2007 it was rated again and found to be at PFC. Sixteen of 20 indicators were rated positively, 1 was not apparent, and 3 were not applicable to the site.

Indian Spring is a complex of several small seeps and springs totaling approximately 3-4 acres in size. Vegetation consists of herbaceous riparian species; sage-grouse use was noted at this site. The most dependable seep/spring source has been developed and the entire complex was fenced and a trough has been placed outside an approximately 55 acre enclosure. The lentic habitat within the enclosure was rated as FAR with an upward trend in 1993 and at PFC in 2007. In 2007, 17 of 20 lentic indicators were rated positively and 3 were not applicable.

Post Spring is a developed 2 acre lentic riparian site within a 29 acre enclosure. In 2007, the enclosure fence was down, and as a result received heavy grazing use by wild horses. The Juniper Pasture was rested from cattle use in 2006/2007. Post Spring was rated as FAR with a downward trend in 2007. Seven of 20 indicators were rated positively, 7 were rated negatively, 3 were not apparent and 3 were not applicable. Most negative indicators were related to wild horse impacts to vegetation. The fence was repaired in 2008; the spring will be re-assessed in the near future.

Post Canyon Spring is a developed, unfenced spring and pit reservoir about 2 acres in size (WSI data). The

dam associated with the small reservoir breached sometime prior to 1993 and at that time it was rated as non-functional. This site could not be located in 2009; however two other sites about 1,000 feet away (according to GPS and GIS maps) in the same rimrock canyon were found and rated (see Post Canyon seeps 1 and 2 below). These sites are only a few hundred feet apart.

Sage Hen Spring is an approximately 4 acre undeveloped, lentic riparian site. The site is located on flat rocky topography. Photos of this site in October of 2008 show shallow, standing surface water, with larger rocks or "cobbles" scattered in the water and around the edges of the water. Very short vegetation (less than 2 inches), hoof depressions, hummocks, and churned soil are evident. This site was first rated in 1993 as FAR. In 2009 Sage Hen Spring was rated as non-functional. Eight indicators were rated positively, seven indicators were rated negatively, one was not apparent, and four were found not to be applicable. Indications (talking with permittee, photos, and site visits) are that current site conditions are due mainly to heavy use by wild horses. The permittee has stated that he does not herd his livestock up to Sage Hen Spring because of the area being so rocky. In 2008 BLM personnel visited the Sage Hen Spring and did not see any sign of livestock using the spring. There were no notes in 1993 indicating the cause of conditions at that time.

Six additional unfenced riparian sites were assessed in 2009. Four sites are located ½ to 1 mile from Sage Hen Spring, and include an un-named seep #1, un-named seep # 2 (not rated), un-named seep # 4, and un-named meadow site # 3. Two other sites; Post Canyon seep # 1 and Post Canyon seep # 2 are about 1,000 feet from Post Canyon Spring and are approximately three miles south of the above mentioned un-named sites.

Un-named seep # 1 is surrounded by large rocks up to boulder size and occurs on generally flat topography. The seep is surrounded by flat rock. Shallow standing water, dirt, and short grasses and forbs were observed during the June 2009 assessment. Wild horses and pronghorn antelope were noted within 1 mile of the seep during the assessment. Some perennial grasses and forbs occur on the site but no trees. This site was rated as FAR, and impacts were generally from wild horses. Nine indicators were rated positively, four indicators were rated negatively, two were not-apparent, and five were not applicable.

Un-named seep # 2 is located about 300 yards uphill from seep # 1 and has similar attributes as seep # 1. This site was not rated for PFC but appeared in similar condition to seep # 1.

Un-named meadow site # 3 is a generally drier site consisting of upland and riparian vegetation. No standing water was observed and only a small amount of saturated soil found at the surface of the meadow during the June 2009 assessment. Pronghorn antelope use was noted. Vegetation observed at this site included *Juba* sp., *Carex* sp., *Poa* sp., and forbs. Sixteen indicators were rated positively, one indicator was rated negative, one was not apparent, and two were not applicable. The establishment of juniper and upland grasses in the meadow as well as negative impacts from yearlong wild horse use contributed to the FAR rating at this site. No evidence of cattle use was observed during the assessment.

Un-named seep # 4 is surrounded by large rocks up to boulder size and occurs on generally flat topography. The seep occurs in a small depression along a low rim. Shallow, standing water was present during the June 2009 assessment. Vegetation at the seep included *Poa* sp., squirrel-tail, wheatgrass, *Juba* sp., and wild onion. This site was rated as PFC. Fifteen indicators were rated positive, and five were not applicable. Wild horses, cattle and antelope were using the riparian site but tramping impacts were not noted.

Both seeps in Post Canyon were rated as PFC. Both seeps are surrounded by large boulders and abundant vegetation including *Juba* sp. and *Carex* sp., perennial grasses, forbs, and mature juniper. During the July 2009 assessment, both had small pools (1-2 feet deep). Signs of recent wildlife use included bird nests, tree cavities, chipmunks, and pronghorn antelope and deer use. At seep # 1, eighteen indicators were rated positively, and two were not applicable. At seep # 2, nineteen indicators were rated positive and one was not applicable. At Seep # 1 there evidence of cattle and wild horse grazing use; while seep # 2 had only wild horse grazing use.

The following table summarizes riparian information and PFC status for riparian habitat in the Massacre Lakes Allotment/HMA.

Riparian Name	Rating	Riparian size (acres)	Exclosure size (acres)	Positive Indicators	Negative Indicators	Indicators Not Apparent	Indicator Not Applicable	Cattle/Horses noted
Biebe	PFC	4-5	1,000	17	0	0	3	None
Tuffy	PFC	2-3	6	16	0	1	3	None
Indian	PFC	3-4	55	17	0	0	3	None
*Post Spring	FAR-downward trend	2	29	7	7	3	3	Horse
Post Canyon Spring	Non-functional 1993	2	None	-	-	-	-	Not recently rated
Post Canyon seep #1	PFC	.0625	None	18	0	0	2	Horse
Post Canyon seep #2	PFC	.0625	None	19	0	0	1	Horse and cattle
Sage Hen	Non-functional	4	None	8	7	1	4	Horse
Un-named Seep # 1	FAR – trend not apparent	.0625	None	9	4	2	1	Horse
Un-named Seep # 2	Not rated but similar to seep #1	.0625	None	-	-	-	-	Not rated
Un-named meadow, site # 3	FAR – trend not apparent	0.5	None	16	1	1	2	Horse
Un-named Seep # 4	PFC	.0625	None	15	0	0	5	Horse

* The Post Spring exclosure was reconstructed in the summer of 2008; the year after the assessment took place. No sign of use was found within the exclosure in 2008, and riparian conditions are expected to improve.

Criteria

1. IS riparian vegetation sufficiently vigorous, mostly perennial, and sufficiently diverse in species composition, age class and life form to stabilize stream banks and shorelines?

Yes, the majority of riparian habitats (based on acreage) within the Allotment/HMA are either at PFC or FAR. Biebe, Tuffy, and Indian Springs were all found to have vegetation attributes adequate to maintain riparian habitats and were found to be functional. Due to the poor design of the exclosure fence corners, habitat within the Post Spring exclosure was rated as FAR with a downward trend in late 2007. In 2008, the fence corners were repaired and habitat is recovering. Unfenced riparian sites near Sage Hen Spring (un-named seeps 1, 2, and 4 and meadow site # 3), and the seeps in Post Spring Canyon all have riparian vegetation with sufficient vigor and diversity.

2. IS riparian vegetation and large woody debris well anchored and capable of withstanding high streamflow events?

Not applicable, there are no lotic (flowing) sites on the Allotment/HMA.

3. IS accelerated erosion (as a result of human related activities) evident?

Yes, at present accelerated erosion from wind and water is occurring at Sage Hen Spring due to the loss of vegetation around its edges as well as heavy wild horse use churning soils and altering flow patterns. A small amount of erosion was noted around un-named seep # 1. The rocky topography around this site and its location in a depression is preventing greater soil loss. Erosion has occurred at Post Spring as well, but habitat is expected to recover within the repaired exclosure fence.

4. ARE age class and structure of woody riparian and wetland vegetation appropriate for the site?

and pygmy rabbits, 28.3% at site 5 to 14% at site 4. Grasses are important forage and cover for many wildlife species. Forbs are important protein sources for big game, birds, and small mammals and are important nectar sources for insects. The line intercept data showed forbs ranging from 5% to 19.3% and grasses ranging from 1.3% to 25.3%. Site 1 had 23.3% Wyoming big sagebrush, 2% grasses, and 19.3% forbs, site 2 had 21.7% low sagebrush, 25.3% grasses, and 6.3% forbs, site 3 had 11.3% Wyoming big sagebrush, 6.3% grasses, and 8.7% forbs, site 4 had 14% Basin big sagebrush, 1.3 % grasses, and 5% forbs, and site 5 had 28.3% low sagebrush, 22.3 % grasses, and 11.3% forbs.

In 2007, functional structural groups were rated as moderate departures at sites 1, 2, 4, and 5; and none to slight at site 3. Sites 1, 2, 4, and 5 represent about 60% of the Allotment. Moderate departures were due to the lack of native deep rooted perennial bunchgrasses on these sites. In some cases *Poa* sp. provides adequate ground cover, however this species does not provide the forage and wildlife cover amounts found with deep rooted perennial grasses such as the Idaho fescue, Thurber's needlegrass, or bluebunch wheatgrass that should be on these sites. Diversity is also less than expected because of fewer grass species.

Except for the crested wheatgrass seedlings, no large disturbances have occurred that would affect natural patch sizes of vegetation, however, sagebrush and other shrubs have reoccupied these treatment areas.

Riparian areas are disproportionately more important for wildlife habitat, especially in areas lacking water or having less inherent structural diversity and are critical for sage-grouse summer brood rearing. Most (six sites) riparian areas are functional. Another three sites are FAR. Half of assessed, unfenced riparian areas (see above) are receiving a combination of livestock and/or wild horse use leading either to non-functional or FAR conditions. Riparian sites in the Juniper Pasture of the Allotment/HMA are receiving yearlong use by wild horses.

2. ARE a variety of age classes present for most species?

No. Upland areas do not have a variety of age classes. Reproductive capability of three of five sites was rated as slight to moderate departures, one was rated as moderate to extreme and one was rated as none to slight. Sagebrush seedlings were not present on any transect. Heavy grazing pressure and below average precipitation seven out of the last twelve years has contributed to perennial bunch grasses lacking the younger age classes. Within riparian plant communities, three of ten sites did not have diverse age classes or were not apparent, and seven others had diverse age classes.

3. IS vigor adequate to maintain desirable levels of plant and animal species to ensure reproduction and recruitment of plants and animals when favorable events occur?

Yes. The reproductive capability indicator was rated as none to slight departure at site 5 and slight to moderate at sites 2, 3, and 4; herbaceous plant vigor at these sites was good. At site 1, plant vigor was low and reproductive capability was rated as a moderate to extreme departure also due in part to recent dry conditions. Most riparian areas were rated to have good plant vigor.

4. DOES the distribution of plant species and their habitats allow for reproduction and recovery from localized catastrophic events?

Yes. There have been no large scale natural disturbances within the Allotment/HMA. The only vegetation disturbances within the Allotment/HMA are the seedlings, Painted Point Seeding and the Massacre Brush Spray & Seed. These areas have had considerable increases in Wyoming sagebrush, and rabbitbrush since treatments were implemented in the 1960s, indicating plant species would recover from future catastrophic events.

While very low in numbers, deep rooted perennial grasses and other natives are present to colonize after catastrophic events.

5. ARE natural disturbances, such as fire, evident, but not catastrophic?

Yes. Since 1967, eleven small fires have burned within the Allotment/HMA totaling about 9 acres.

6. ARE non-native plant and animal species present at acceptable levels?

Yes. Cheatgrass was found at all assessed sites but rated as none to slight or slight to moderate departures. Crested wheatgrass is present in three seeded pastures, all of which are in poor condition.

7. ARE habitat areas sufficient to support diverse, viable, and desired populations, AND are they adequately connected with other similar habitat areas?

No. Several upland areas assessed have a lack of forage and hiding cover due to the lack of important grass species and several unfenced riparian areas are continuing to receive negative impacts from wild horses and livestock grazing.

NDOW brood and harvest data from the 1950's to the late 1980's indicates summer brood rearing use and fall use of the Allotment/HMA by sage-grouse and recent observations supports the conclusion that sage-grouse still use some of these same areas, especially riparian areas for summer and fall brood rearing. Between 2003 and 2009, the Post Canyon Springs lek (located about 1.5 miles from the Post Canyon Spring seeps) was surveyed and averaged 32 birds. Based on past observations, elk use is thought to be sporadic in the Allotment/HMA. Bighorn use is known to regularly occur from spring to summer along the steeper northwest slopes. Based on field observations, summer and fall pronghorn use occurs within the Allotment/HMA with the upper slopes being important kidding areas for pronghorn.

While the Massacre Lakes Allotment/HMA occurs entirely within hunt unit 011 of Nevada, recent data for the unit was reported with several adjacent units by NDOW. Mule deer data (see link below) for units 011-015 indicate that mule deer numbers are trending down to slightly increasing for the various mule deer populations in northwestern Nevada. The adjacent unit 033, the Sheldon Refuge, is experiencing continued downward trends, partly due to low recruitment levels. Pronghorn populations in hunt units 011 and 015 are expected to continue to experience increasing trends while those populations within hunt units 012, 013, and 014 are expected to remain static. According to NDOW, big game animals are experiencing declines is due to drought conditions (7 of the last 10 years) affects on vegetation, and competition with wild horses. Despite the affects of drought, hunt unit 012 just south of this Allotment/HMA, shows a slight upward trend in bighorn sheep numbers.

Other than past seedings, there are no large scale disturbances which have removed large patches of vegetation and water is distributed throughout the Allotment/HMA. Sagebrush and rabbitbrush has reoccupied the seeded areas. Active pygmy rabbit burrows occur on the perimeter of seedings. Aerial photography and soils information indicates that potential habitat for pygmy rabbit exists adjacent to active burrows outside the seedings.

Habitat areas are well connected to other similar habitats on adjacent areas, and to the Sheldon National Antelope Range. A variety of desirable wildlife species are found on the Allotment/HMA however information from line transects and other field visits indicate that grazing impacts on the Allotment/HMA is reducing vegetative cover and forage. Sites 1, 3, and 4 have reduced grass cover. This is may be having negative effects on sage-grouse and migratory bird nesting by reducing residual grass cover available the following year.

<http://www.ndow.org/about/pubs/index.shtm#general>

8. IS adequate organic matter (litter and standing dead plant material) present for site protection and decomposition to replenish soil nutrients and maintain soil health?

No. Line-intercept data indicates three of the five sites do not have adequate litter amounts to maintain nutrient cycling and soil health (see table below). Results from soil stability tests indicated that three of the five sites were unstable. Litter movement was noted at none to slight at four out of the five sites and slight to moderate at one of the sites.

The following table compares the percent litter within plant interspaces between the line-intercept data and the Ecological Site Reference Worksheet:

RHA Site Number	Percent Litter in Plant Interspaces Line-intercept data	Ecological Site Reference Worksheet's Interspace Litter Percentages
Site 1 Loamy 8-10" PZ	12.3	+/- 20
Site 2 Claypan 10-14" PZ	12.0	+/- 25
Site 3 Loamy 10-12" PZ	22.7	+/- 25
Site 4 Sandy 8-12" PZ	24.7	+/- 25
Site 5 Claypan 14-16" PZ	11.3	+/- 25

PART III - SUMMARY OF STANDARDS ACHIEVEMENT DETERMINATION AND RATIONALE

A. DETERMINATION ON STANDARDS ACHIEVEMENT

As of the date of the completion of this form, an examination of the information listed in Part II and recent field visits, if applicable, indicate the following with regard to standards achievement for the area identified in Part I:

<u>Standard</u>	<u>Determination on Standard Achievement</u> (check appropriate box for each standard)
Upland Soils	<input type="checkbox"/> Met / <input type="checkbox"/> Not met but progressing towards / <input checked="" type="checkbox"/> Not met and not progressing towards / <input type="checkbox"/> N/A
Stream Health	<input type="checkbox"/> Met / <input type="checkbox"/> Not met but progressing towards / <input type="checkbox"/> Not met and not progressing towards / <input checked="" type="checkbox"/> N/A
Water Quality	<input type="checkbox"/> Met / <input type="checkbox"/> Not met but progressing towards / <input type="checkbox"/> Not met and not progressing towards / <input checked="" type="checkbox"/> N/A
Riparian/Wetland	<input type="checkbox"/> Met / <input checked="" type="checkbox"/> Not met but progressing towards / <input type="checkbox"/> Not met and not progressing towards / <input type="checkbox"/> N/A
Biodiversity	<input type="checkbox"/> Met / <input type="checkbox"/> Not met but progressing towards / <input checked="" type="checkbox"/> Not met and not progressing towards / <input type="checkbox"/> N/A

B. RATIONALE SUPPORTING STANDARDS ACHIEVEMENT DETERMINATION

The Standard for Upland Soil – The standard for upland soils was not met and not progressing towards. The standard achievement determination was based in part on soil information from the 1999 Soil Survey of Washoe County, North Part and the 2006 Soil Survey of Surprise Valley – Home Camp California and Nevada. The determination is also based on review completed in the Upland Health Assessments, 5X5 photo trend data, actual use data and photos taken during the assessment process, management records, monitoring data, and observations on the Allotment/HMA since 1995.

Soil stability test results were low (unstable) for three of the five evaluation sites. Two sites (1 & 4) were unable to be tested due to the sandy soil composition (not unexpected at site 4 (Sandy 8-12)) which should have a low stability rating from 1-3. Although the soil at site 1 is considered loamy with a soil stability rating of 3-6, the sandy component contributed to the inability to collect a solid fragment to test and a low rating.

Both Claypan sites in the Juniper Pasture showed signs of surface erosion and pedestalling. The moderate departure ratings at these sites for the indicators *pedestals and/or terracettes* and *plant community composition and distribution relative to infiltration* also contributed to a non-functioning rating for Hydrologic Function.

The Massacre Lakes Allotment/HMA 5X5 Photo Trend Plot was used to assist with trend determinations. The 5X5 Photo Trend Plot 422104B is adjacent to RHA Site #1 in the Sand Spring Pasture. The RHA Site #1 was rated at none to slight for the soil erosion indicators, which is also apparent when comparing the 5X5 Photo Trend Plot pictures from 1983 and 2009, no apparent trend of soil erosion or deposition could be seen. Adjacent to RHA Site #2 is 5X5 Photo Trend Plot 432013 in the Juniper Pasture. The RHA Site #2 showed a moderate departure for surface erosion and pedestalling which is also apparent when comparing 5X5 Photo Trend Plot pictures from 1983 and 2009; soils are being eroded from the site. The 5X5 Photo Trend Plot 422011 is adjacent to RHA Site #4 in the Sand Spring Pasture. The RHA Site #4 was rated at none to slight for the soil erosion indicators which are also apparent when comparing the 5X5 Photo Trend Plot pictures from 1983 and 2009, no apparent trend of soil erosion or deposition could be seen. The 5X5 Photo Trend Plot 432106 is in the Juniper Pasture. After comparing trend pictures from 1979 and 2009, this plot shows that there is evidence of soil being deposited on this plot location. The 5X5 Photo Trend Plot 422003 is in the West Seeding Pasture. After comparing trend pictures from 1977 and 2009 this plot does not show that there is any noticeable soil being eroded or deposited on this plot location.

The Standard for Stream Health – N/A

The Standard for Water Quality – N/A

The Standard for Riparian Wetland Areas – The standard for riparian areas is not met but progressing towards. The majority of riparian habitats within the Allotment/HMA are at PFC. Riparian areas in enclosures are providing water and cover for wildlife. Enclosures have effectively removed cattle and wild horse impacts from four sites with the Post Spring site having been modified and riparian habitat showing improvement. Three sites are rated as FAR and one is non-functional. Two other sites were not rated. Field observations indicate that wild horses are currently contributing the most negative impacts to riparian sites within the Allotment/HMA, especially those in the vicinity of Sage Hen Springs. Based on staff observations, wild horses appear to be the sole contributor to the degraded conditions and non-functional status at Sage Hen Springs.

The Standard for Biodiversity – The standard for biodiversity is not met and is not progressing towards.

There is a lack of grasses in shrub interspaces and grass species diversity is low. Sites 1, 2, 4, and 5 rated functional/structural groups as moderate departures, generally due to lack of deep rooted perennial grasses but also in some cases forbs. Grasses are currently being heavily grazed leaving less hiding cover for wildlife, even within sagebrush plants. While plant vigor is good, annual production is lower than expected which affects foraging capability. Annual production was rated as moderate to extreme departures for site 1 and 2 and moderate departures at sites 4 and 5. Adjacent to RHA Sites 1, 2, and 4 there are 5X5 Photo Trend Plots that have a Trend Index Summary (TIS) comprised of the sum of composition of key species, percent cover of live vegetation, number of key species seedlings, and percent litter of the total plot. The 5X5 Photo Trend Plot 422104B is adjacent to RHA Site #1 and the TIS has increased from 1987 to 2009 due to a slight increase in composition and litter. The 5X5 Photo Trend Plot 432013 is adjacent to RHA Site #2 and the TIS has increased from 1987 to 2009 due to a slight increase in the number of key species seedlings. The 5X5 Photo Trend Plot 422011 is adjacent to RHA Site #4 and the TIS has decreased from 1987 to 2009 due to a reduction in percent composition of key species, percent cover of live vegetation, number of key species seedlings, and percent litter of the total plot. The 5X5 Photo Trend Plot # 432106 is in the Juniper Pasture and the TIS has decreased from 1979 to 2009 due to a reduction in percent cover of live vegetation and number of key species seedlings. The 5X5 Photo Trend Plot # 422003 is in the West Seeding Pasture and the TIS has decreased from 1977 to 2009 due to a reduction in percent composition of key species and number of key species seedlings. Evidence of chronic and current problems includes some erosion and pedestalling. While fenced riparian areas are functional, half of assessed unfenced sites in 2009 are either FAR or non-functional. In the northern most portions of the Allotment/HMA, negative impacts to Sage Hen Spring and smaller un-named springs in the vicinity are reducing the water holding capacity for riparian habitats. The poor condition of riparian areas in the northeast portion of the Juniper Pasture are generally due to year-round use by wild horses rather than seasonal use by livestock.

PART IV - FOR THOSE STANDARDS NOT ACHIEVED, SUMMARY OF CONTRIBUTING FACTOR(S) DETERMINATION AND SUPPORTING RATIONALE

A. DETERMINATION OF CONTRIBUTING FACTORS

As of the date of the completion of this form, an examination of the information listed in Part II and recent field visits, if applicable, indicate that the following are contributing factors for failing to achieve the standards as indicated in Part III for the area identified in Part I:

Non-achieved Standard (s) (from Part III):

<u>FLPMA Principal or Major Uses</u>	<u>Information Reference (what data was reviewed - type and information date)</u>
<input checked="" type="checkbox"/> Domestic Livestock Grazing	<input checked="" type="checkbox"/> actual grazing use <u>Actual Use Reports 1988 - 2009</u> <input type="checkbox"/> grazing "licenses" <u>Utilization Mapping 1978-2009</u> <input checked="" type="checkbox"/> utilization records <u>RHA's and RFA's 1993-2009</u> <input checked="" type="checkbox"/> field notes / photographs <u>Photo Trend 5X5, 1968 - 2009</u> <input checked="" type="checkbox"/> other _____
<input type="checkbox"/> Fish and Wildlife Development and Utilization	<input type="checkbox"/> utilization _____
<input type="checkbox"/> Mineral Exploration and Development	<input type="checkbox"/> road building _____
<input type="checkbox"/> Rights-of-way	<input type="checkbox"/> _____
<input type="checkbox"/> Outdoor Recreation	<input type="checkbox"/> road building _____
<input type="checkbox"/> Timber Production	<input type="checkbox"/> _____

Other Events or Circumstances Considered Information Reference (what data was reviewed - type and information date)

<input checked="" type="checkbox"/> Wild horse and Burro use	<input checked="" type="checkbox"/> census / distribution data _____ <input checked="" type="checkbox"/> other <u>wild horse distribution and utilization data</u> _____
<input type="checkbox"/> exotic plant presence	_____
<input type="checkbox"/> insect impacts	_____
<input type="checkbox"/> abnormal fire frequency or lack of fire	_____
<input type="checkbox"/> abnormal climatic events	_____
<input type="checkbox"/> other _____	_____

CONTRIBUTING FACTOR(S) (LIST):

B. RATIONALE FOR CONTRIBUTING FACTOR DETERMINATION

Livestock grazing as well as year-round wild horse use have contributed to the non-achievement of standards, as noted in Part III, above. Utilization records and use pattern maps dating back to 1978 indicate repeated heavy use in portions of all pastures in the Allotment/HMA. This repeated heavy use has had a negative impact on rangeland health throughout the Allotment/HMA.

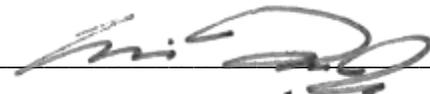
PART V - BLM STAFF WHO REVIEWED THE INFORMATION AND RECOMMENDED PRIORITY FOR DEVELOPMENT AND IMPLEMENTATION OF APPROPRIATE ACTION TO MAKE SIGNIFICANT PROGRESS TOWARDS ACHIEVING THE STANDARD(S)

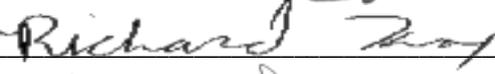
The following staff have participating in examining the information listed in Part II and in making the standard(s) achievement and contributing factor determination(s).

- Elias Flores, Wildlife Biologist**
- Richard Knox, Rangeland Management Specialist**
- Steve Mathews, Rangeland Management Specialist**
- Steve Surian, Sup. Natural Resource Specialist/Wild Horse Specialist**

SIGNATURES:

TITLES:









Wildlife Biologist

Rangeland Management Specialist

Rangeland Management Specialist

Sup. Natural Resource Specialist/Wild Horse Specialist

In the cases where the standards are not achieved and after considering all relevant information, we recommend that the priority for developing and implementing appropriate action to achieve standards in the area identified in Part I be (check one):

high medium low .

We base our recommendation on the following ratings of the following factors:

Biological / Physical

Severity of resource impacts resulting from non-achievement of the standard - high medium low

Size of affected area -

Ability to arrest further degradation - easily done unknown difficult

Other:

Administrative

Proportion of federal land in the Allotment/HMA - high medium low

Pending administrative actions (permit lease renewal / transfer, etc.) - pending not pending until FY ____

Other Wild horse gather and Grazing timeframe management _____

Social

Anticipated cooperation of the permittee / lessee - expected not expected unknown

Legal requirements compelling not compelling

Other

Economic Considerations

PART VI - DOCUMENTATION OF THE INVOLVEMENT OF PERMITTEES, STATE AGENCIES AND THE INTERESTED PUBLIC IN MAKING STANDARDS CONFORMANCE DETERMINATION AND CONTRIBUTING FACTORS DETERMINATION

Indicate the occurrence of public participation (e.g. permittee, interested public, other Federal or State /local agency), or opportunities for public participation that pertains to the review of standards achievement and contributing factors (who, when, and conversation or meeting summary): **The documentation form was completed by BLM staff.**

PART VII - AUTHORIZED OFFICER'S DETERMINATION AND PRIORITY FOR APPROPRIATE ACTION DEVELOPMENT AND IMPLEMENTATION

- () Existing grazing management practices or levels of grazing use in the Massacre Lakes Allotment promotes achievement of significant progress towards the Approved Northeastern California and Northwestern Nevada Standards and Guidelines for Livestock Grazing of July, 2000 and conforms with the Guidelines for Livestock Grazing Management.
- (X) Existing grazing management practices or levels of grazing use in the Massacre Lakes Allotment will require modification or a change prior to the next grazing season to promote achievement of the Approved Northeastern California and Northwestern Nevada Standards and Guidelines for Livestock Grazing of July, 2000 and conforms with the Guidelines for Livestock Grazing Management.

I have reviewed and concur with the determinations and supporting rationale regarding the achievement or lack thereof of rangeland health standards documented herein and, in the cases where standards are not achieved, the determination and rationale regarding the contributing factor(s) for failure to achieve the standards. I have determined that the priority for developing and implementing appropriate action to achieve significant progress to achieve standards for the area identified in Part I is (check one)

Priority: high medium low

Staff is directed to develop appropriate action for my consideration and implementation in accordance with this priority.



SURPRISE FIELD MANAGER

DATE

COMMENTS: