United States Department of the Interior

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3/19/03

In Reply Refer To:
4120
(NV-022.18)

MAR 19 2003

Dear Interested Public:

On March 3, 2003, I issued the Final Allotment Re-Evaluation for the Soldier/Paiute Meadows Allotments along with a Determination/Management Action Selection Report. At that time, I stated that the Environmental Assessment for these two allotment would be forth coming.

Please find enclosed the Environmental Assessment for the Paiute Meadows Allotment. Please review and provide comments back to me at the above address by April 9, 2003.

If you have any questions, please contact Matt Varner at (775) 623-1500.

Sincerely,

Les W. Boni
Assistant Field Manager
Renewable Resources

Enclosure – Environmental Assessment Paiute Meadows Allotment

KENNY C. GUINN
Governor

STATE OF NEVADA

CATHERINE BARCOMB
Administrator

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
COMMISSION FOR THE
PRESERVATION OF WILD HORSES
885 Eastlake Boulevard
Carson City, Nevada 89704
Phone (775) 849-3625 • Fax (775) 849-2391

April 2, 2003

Les W. Boni, Assistant Field Manager
Winnemucca Field Office – BLM
5100 East Winnemucca Blvd.
Winnemucca, NV 89445

Subject: Paiute Meadows Multiple Use Management EA

Dear Mr. Boni,

The Nevada Commission for the Preservation of Wild Horses is pleased with the extension of the deadline for comments to E2003-11. Our agency's comments specific to data assessment were made previously in the Allotment Evaluation. I will limit our comments to the associated environmental assessment to those issues compliant to NEPA.

The appropriate management level (AML) for the East Black Rock Wild Horse Herd was determined in the Solider Meadows Allotment Multiple Use Decision of 1994. This decision combined the East and West Black Rock Wild Horse Herds and was superimposed on the Paiute Meadows Allotment Multiple Use Decision 1993. The Commission appealed both of these decisions on the basis of BLM procedures to determine carrying capacities and allocate forage. As a result of these appeals, our agency entered into two Stipulated Agreements. We find that this Environmental Assessment does not determine a carrying capacity nor allocate forage in terms of those agreements.

Page 8, Issues

Wild horses are found to be contributing factors to non-attainment of Allotment Objectives. The Environmental Assessment provides no specific rangeland monitoring data to support this issue and the Final Allotment Evaluation provides no alternative to adjust wild horse numbers to levels that would meet allotment specific objectives.

The Stipulated Agreement requires the Field Office to determine a carrying capacity and allocate forage.

Page 9, Proposed Action

To manage for the 1993 AML for the East Black Rock Wild Horse Herd is not supported by data nor is it consistent with the Stipulated Agreement.

Page 37, Wild Horses

The 1993 FMUD determined a range of 204 to 290 as the AML. This suggests 20% less than AML and not the 40% noted by the BLM.

Two gathers resulted in the gather of at least 519 wild horses. These horses were processed to determine sex, age, condition and color of these herds. Horses were removed and released based on two adoption policies based on age. None of this information/data was presented or assessed in respect to cumulative impacts to the East and West Black Rock Wild Horse Herds.

Page 41, Wilderness

No discussion was presented discussing the management criteria for wild horses in wilderness areas.

Page 46, Alternative 1 Existing System

As a matter of the Stipulated Agreement on Soldier Meadows Allotment, our agencies agreed to monitor wild horse use of riparian systems prior to July 15th on pastures not used by livestock. This allotment specific objective resolved the conclusion that it is not possible to discern relative contribution of wild horse use of riparian areas.

Unfortunately, the Field Office chose not to resolve the issue in Soldier Meadows or Paiute Meadows Allotments.

Alternative 2 – Winter Use

This alternative suggests increased winter use on the lower elevations of the southern Pasture. This area was determined to be a major winter use area for big game and wild horses. The combined use may degrade upland vegetation and cause serious competition and the resultant death which has been observed in the past.

These comments should assist the Field Office in determining their compliance to the Stipulated Agreements affecting all documents associated with this wild horse herd.

Sincerely,

CATHERINE BARCOMB
Administrator

cc: Mike Turnipseed, Director
Department of Conservation and Natural Resources

Bob Abbey, Director
BLM-State of Nevada

Heather Elliott
Nevada State Clearinghouse

3/19/03

PAIUTE MEADOWS MULTIPLE USE MANAGEMENT ENVIRONMENTAL ASSESSMENT

E.A. NO. NV-020-03-12

MARCH 19, 2003

1 BACKGROUND

1.1 Introduction

The Draft Soldier/Paiute Meadows Allotment Re-evaluation (AE) was mailed to the interested publics and permittees on December 7, 2000. The final AE was sent to the interested publics and permittees on March 3, 2003 along with BLMs "Determination/Management Action Selection Report" (MASR), which was also signed on March 3, 2003. The purpose of the final AE and MASR were to evaluate data and determine if present livestock and wild horse management were meeting allotment specific objectives and the Standards for Rangeland Health (SRH). The final AE identified four livestock management technical recommendations for the Paiute Meadows Allotment (PMA). However, it did not recommend any changes in the management of wild horses or wildlife.

The PMA MASR concluded that some of the Allotment Objectives and the SRH were not being met or achieved, and existing livestock and wild horse management were contributing to the non-attainment. The objectives and/or standards that have not been met include: exceeding upland and riparian herbaceous vegetative utilization levels, and not improving the riparian condition.

The Final AE and MASR identified one livestock management action from the four technical recommendations identified in the Draft AE. Neither of these documents recommended changes in the management of wild horses or wildlife.

This Environmental Assessment (EA) evaluates impacts on the natural, cultural, and human environment resulting from livestock grazing management throughout the PMA. A separate EA was prepared for the Soldier Meadows Allotment.

1.2 Purpose/Need:

The purpose for this EA is to develop and analyze livestock grazing management alternatives that would result in achieving site specific Allotment Objectives and the SRH. On March 3, 2003, a MASR was issued by BLM, which established the need for change in livestock management for the PMA.

1.3 Decisions To Be Made:

This EA would be utilized by the Authorized Officer to determine livestock management for the allotment and would be used to identify and develop stipulations and mitigation measures. In addition, the EA would be used to determine if there are significant impacts generated from the proposed action or alternatives. Upon completion of this EA, the Authorized Officer will issue a Finding Of No Significant Impact (FONSI) or will determine that an environmental impact statement (EIS) should be prepared pursuant to Section 102(2) (C) of the National Environmental Policy Act (NEPA). Upon completion of the NEPA process, the Authorized

Officer intends to issue a Multiple Use Decision (MUD) for the PMA identifying livestock management practices and reaffirm the Appropriate Management Levels (AML) for wild horses. Unless the No Livestock Grazing Alternative is selected, the livestock management determined in the MUD would be implemented through a term grazing permit.

1.4 Issues:

As concluded in the MASR, livestock grazing practices and wild horse populations were contributing factors to the non-attainment of Allotment Objectives and the SRH within the PMA. The following are the areas of non-attainment:

- Upland and riparian vegetative utilization objectives have not been achieved in some areas of the allotment.
- Riparian/Wetland Systems in Proper Functioning Condition (PFC) was not achieved on portions of Battle, Bartlett, Butte, Deer, Paiute, and Rough Canyon Creeks.

Battle Creek within the PMA supports an existing population of the federally listed threatened Lahontan cutthroat trout (*Oncorhynchus clarki henshaw*).

Since the PMA evaluation and MUD were issued in July of 1995 there have been some significant changes in public land designations.

The Black Rock Desert-High Rock Canyon Emigrant Trails National Conservation Area Act of 2000 (Public Law 106-554), passed by the 106th Congress, designated approximately 795,200 acres of public land managed by the Bureau of Land Management (BLM) as the Black Rock Desert-High Rock Canyon Emigrant Trails National Conservation Area (NCA). This legislation also designated about 752,000 acres of public land managed by BLM as Wilderness in 10 Wilderness areas. Approximately 378,600 acres of the designated Wilderness are within the NCA. The PMA contains portions of three Wilderness Areas and a portion of the NCA.

Refer to the Special Designation Map in Appendix 30 that display the areas of the NCA and Wilderness within the PMA.

1.5 Land Use Plan:

The proposed action and alternatives are in conformance with the Paradise-Denio Management Framework Plan (8/82) and with other federal, state, and local laws, regulations, and plans to the maximum extent possible.

1.6 Location:

The PMA is approximately 40 air miles southwest of Denio, Nevada and encompasses the east side of the Black Rock Range. The allotment boundary extends from the higher elevations in the Black Rock Range to the east arm of the Black Rock Desert.

Vegetative types in the allotments range from greasewood and saltgrass sites on the flats at elevations of 4,000' to sagebrush, bitterbrush, mountainmahogany and aspen sites in the higher elevations at 8,600'.

Refer to the PMA location map in Appendix 11 that illustrates where the PMA is located with the state of Nevada.

2 Proposed Action and Alternatives

The proposed action for wild horses is to manage at the existing levels consistent with the 1995 PMA MUD.

In accordance with 43 CFR Subpart 4700, it has been determined through the evaluation of monitoring data that a thriving natural ecological balance will be maintained by managing and providing forage (AUMs) for the following numbers of wild horses within the Herd Management Areas (HMA).

HMA	No. HORSES @AML	No. AUMs @AML
BLACK ROCK RANGE EAST	93	1116

Excess wild horses within the PMA will be removed periodically to maintain the population within the AML range outlined above or until the AML is modified.

The proposed action for reasonable numbers of wildlife will remain at the level identified in the Land Use Plan, which are:

PAIUTE MEADOWS ALLOTMENT	
Species	**AUMs**
Mule Deer	1838
Pronghorn Antelope	307
Bighorn Sheep	180
	Total 2325

2.1 ALTERNATIVE 1 - EXISTING SYSTEM

Under this alternative, the PMA is divided into three use areas or pastures. Since these use areas are unfenced, herding is required to insure livestock are maintained in the proper use area or pasture within the allotment.

The following acronyms will be used throughout this document when referencing the names of livestock use areas:

North Paiute low elevation use area	NPLUA
North Paiute high elevation use area	NPHUA
South Paiute use area	SPUA
South Paiute low elevation use area	SPLUA
South Paiute high elevation use area	SPHUA
North Battle use area	NBUA
South Battle use area	SBUA

This grazing alternative allows livestock to turnout on March 15th into the NPLUA and then to move into the NPHUB on May 16th. Livestock are herded into the SPUA on July 18th and graze until October 6th when they are removed from public lands.

GRAZING SYSTEM

Use Area	No.	Kind	Period of Use	%PL	AUMs
N. Paiute low elev. <1500m	524	Cows	03/15 to 05/15	100	1068
N. Paiute high elec. >1500m	524	Cows	05/16 to 07/17	100	1086
S. Paiute	524	Cows	07/18 to 10/06	100	1395
					Total 3531

Use Areas for Alternative 1 are located in Appendix 12.

In 1990 the PMA livestock grazing permit permit was reduced from 7827 to 4350 AUMs. The 1993 FMUD further reduced the permit to 3550 AUMs and closed the SPUA until site specific upland vegetative objectives were achieved. Livestock grazing resumed in this area in 1996 after range conditions had improved and monitoring data determined that the vegetative objectives were attained.

Nonrenewable grazing permits have been authorized since 1997 within the SPUA. The levels of grazing use authorized by grazing year (03/01 to 02/28) are indicated in the Table below:

Table 1. Level of Authorized Grazing Use (1997-2001)

Year	Active AUMS	Nonrenewable AUMS	Season of Use	Authorized AUMS
2001	3550	916	11/01/01-02/28/02	4466
2000	3550	1182	11/01/00-02/28/01	4732
1999	3550	610	11/15/99-01/15/00	4160
1998	3550	72	01/15/98-02/28/99	3622
1997	3550	277	10/17/97-01/17/98	3827

The Black Rock Desert-High Rock Canyon Emigrant Trails National Conservation Area Act of 2000 was signed into law on December 21st, 2000. The level of livestock authorized use at the time of passage of the Act (12/21/2000) was 4732 AUMs within the PMA.

2.2 ALTERNATIVE 2 - WINTER USE

Under this alternative, the PMA would be divided into four use areas or pastures. Since these use areas are unfenced, herding is required to insure livestock are maintained in the proper use area or pasture within the allotment.

This grazing alternative would allow livestock turnout on March 15th into the NPLUA and move into the NPHUA on May 16th. Livestock are herded into the SPHUA on July 1st and graze until September 21st when they are removed from public lands. Livestock would graze the SPLUA during the winter from November 1st until January 15th.

This alternative would impose an annual reduction of livestock numbers, season of use or Active AUMs if the Allotment Objectives, Terms/Conditions, and Standards for Rangeland Health are not achieved and maintained.

GRAZING SYSTEM

Use Area	No.	Kind	Period of Use	%PL	AUMs
N. Paiute low elev. <1500m	524	Cows	03/15 to 05/15	100	1068
N. Paiute high elev. >1500m	524	Cows	05/16 to 06/30	100	792
S. Paiute high elev. <1500m	524	Cows	07/01 to 09/21	100	1430
S. Paiute low elev. <1500m	524	Cows	11/01 to 01/15	100	750
					Total 4040

Use Areas for Alternative 2 are located in Appendix 13.

2.3 ALTERNATIVE 3 - PROPOSED ACTION

Under the proposed alternative, the PMA would be divided into four use areas or pastures. Since these use areas are unfenced, herding is required to insure livestock are maintained in the proper use area or pasture within the allotment.

This grazing alternative would allow livestock turnout on March 15th into the NPLUA and move into the NBUA on May 16h. Livestock are herded into the SBUA on July 18th and graze until October 6th when they are removed from public lands. Livestock would graze the SPLUA during the winter from November 11th until January 15th.

This alternative would impose an annual reduction of livestock numbers, season of use or Active AUMs if the Allotment Objectives, Terms/Conditions, and Standards for Rangeland Health are not achieved and maintained.

GRAZING SYSTEM

Use Area	No.	Kind	Period of Use	%PL	AUMs
N. Paiute low elev. <1500m	522	Cows	03/15 to 05/15	100	1064
N. Battle	522	Cows	05/16 to 07/17	100	1081
S. Battle	522	Cows	07/18 to 10/06	100	1390
S. Paiute low elev. <1500m	522	Cows	11/15 to 01/15	100	612
					Total 4147

Use Areas for Alternative 3 are located in Appendix 14.

2.4 ALTERNATIVE 4 - NO LIVESTOCK GRAZING

Under this alternative, no livestock grazing would be authorized on public lands within the PMA.

2.5 Alternative Comparison Summary

PAIUTE MEADOWS ALLOTMENT	Alt 1	Alt 2	Alt 3	Alt 4
AUMs of Active Use	3531	4040	4147	0
Period of time livestock are on BLM lands (mos.)	7	9	9	0
Winter Season of Use (11/15-01/15)	No	Yes	Yes	No
Number of Grazed Use Areas	3	4	4	0
Years to complete a grazing cycle	1	1	1	0
Proposed reasonable numbers of wildlife would remain at the following levels established in the Land Use Plan: ➢ Antelope – 307 AUMs ➢ Bighorn Sheep – 180 AUMs ➢ Mule Deer – 1838 AUMs	Yes	Yes	Yes	Yes
Retain existing established Appropriate Management Levels for wild horses as follows: ➢ Black Rock/East - 93	Yes	Yes	Yes	Yes
Includes Terms and Conditions, Allotment Objectives, & Standards for Rangeland Health.	Yes	Yes	Yes	No

2.6 Alternative Considered BUT Eliminated from Detailed Analysis

This alternative is the same as Alternative 3, except the season of use would be increased by approximately two weeks in both the NBUA and SBUA and two months in the SPLUA. Also the Active AUMs would increase by approximately 1000 AUMs.

Under this alternative, the PMA would be divided into four use areas or pastures. Since these use areas are unfenced, herding is required to insure livestock are maintained in the proper use area or pasture within the allotment.

This grazing alternative would allow livestock turnout on March 15th into the NPLUA and move into the NBUA on May 16h. Livestock are herded into the SBUA on August 1st and graze until October 31st when they are removed from public lands. Livestock would graze the SPLUA during the winter from November 1st until January 28th.

GRAZING SYSTEM

Use Area	No.	Kind	Period of Use	%PL	AUMs
N. Paiute low elev. <1500m	524	Cows	03/15 to 05/15	100	1068
N. Battle	524	Cows	05/16 to 07/31	100	1327
S. Battle	524	Cows	08/01 to 10/31	100	1585
S. Paiute low elev. <1500m	524	Cows	11/01 to 02/28	100	1184
					Total 5164

This alternative was eliminated from detailed analysis due to the following reasons:

- Based on data in the Final AE, the MASR determined that some of the allotment specific objectives were not being achieved at current levels of authorized livestock use.
- The allotment is recovering after the removal of approximately 283 wild horses in the winter of 2000/2001.

3 AFFECTED ENVIRONMENT

3.1 Water Resources

The Paiute Meadows Allotment (PMA) is situated on the east slopes of the southern end of the Black Rock Mountain Range. Precipitation within the allotment is spatially variable and orographically influenced with annual estimates ranging from 5 inches on the valley bottoms to 20-24 inches at the upper elevations. The climate pattern is typical of the Great Basin physiographic province with hot, dry summers and cold, moist winters. The hydrography of the area closely resembles the Great Basin model of north/south trending mountain ranges with primary drainage perpendicular to the ranges, flowing down-gradient towards the axis of the valley.

Water resources on the public lands of the allotment are numerous, and include perennial, intermittent, and ephemeral stream reaches, as well as springs, seeps, and wet meadows. The perennial stream reaches are located within the primary drainage features. The majority of these reaches are found within the Bartlett Creek, Battle Creek, and Paiute Creek watersheds. They normally exhibit a runoff flow event in the months of March through May or June at which time they quickly retreat to a baseflow condition extending from July through September or October, and then they tend to rebound slightly as transpiration in the riparian zone slows and evaporation is at a minimum. Due to the remote position of the PMA, and the lack of sensitive resources downstream, there are no stream gauges located within the PMA. Consequently, there is a lack of stream flow data.

There are numerous springs and seeps located in the upper elevations of the PMA. These sources have not been surveyed for water quality nor have they undergone a physical habitat assessment.

The quality of Paiute Meadows' perennial stream reaches has been measured since 1995. The analysis has included continuous temperature monitoring, chemical constituent sampling, and physical habitat assessment. The temperature monitoring and physical habitat condition assessment are addressed in the following Fisheries/Aquatic Resources section. The sections below describe the water quality for those constituents that were analyzed.

3.1.1 Water Quality Data

The water quality of the perennial stream reaches was sampled during 2002. The sampling was conducted to gather data to determine whether or not the SRH were being achieved. As such, the analysis was limited to those constituents that are most readily influenced by livestock grazing. The monitoring events included three discreet samples to correspond with the three flow periods described previously.

The benchmarks (located in row 2 of Table 2) are for reference purposes. They have been derived from the Environmental Protection Agency's document EPA 822-B-00-016 *Ambient Water Quality Criteria Recommendations,* and the State of Nevada's Class A standards (NAC 445A.124 Appendix 8). The EPA recommendations have only been incorporated where Nevada's Class A standards are silent. Although none of the water resources within the allotment have been classified by the Nevada Division of Environmental Protection (NDEP), Bureau of Water Quality Planning (BWQP) the public land portions of the referenced watersheds closely resemble the description of Class A waters. The shaded values represent measurements that exceed either the Class A standard or the EPA recommendations, as specified by the footnotes.

Table 2. Water Quality Data

		TKN	NO_3	TP	TDS	Sc	PH		Flow	Temperature		Coliform		Turbidity
	Benchmarks	228[1]	.038[1]	.30[2]	500[2]	Micro-mhos	6.5-8.5[2]					200/400[2]		4.3[1]
	Units	mg/L	mg/L	mg/L	mg/L		Field	Lab	CFS[3]	Air °F	Water °F	Fecal	E. coli	NTU
Bartlett Creek	5/29/02	.60	.40	.20	97	110	8.1	7.33	4-4.5	84	64	>600	364	13
	8/28/02	.16	.30	.25	154	176	8.1	7.68	1.25-1.75	77	62	30	31	0.0
	10/30/02	.15	<1.0	<. 20	90	111	8.1	7.56	1.6-1.8	31	33	50	42	8.4
Battle Creek	5/29/02	.44	<. 1	<. 2	120	146	8.3	7.53	6.0-7.0	74	58	10	<10	8.7
	8/28/02	.21	.30	.19	93	113	8.1	7.67	1.25-1.75	60	52	170	87	1.3
	10/30/02	.28	<1.0	<. 20	120	166	8.3	7.78	1.5-1.75	33	34	20	10	3.6
Paiute Creek	5/29/02	.51	.20	<. 20	140	178	8.0	6.95	1.50-1.75	69	57	Overgrown	31	NA
	8/28/02	.16	<. 1	.19	115	157	8.4	8.08	1.5-2.0	72	56	230	222	1.0
	10/30/02	.16	<1.0	<. 20	140	185	8.3	7.67	1.1-1.3	28	44	40	53	0.0

[1] EPA 2000
[2] NAC 445A.124 Nevada Class A standards-These are included in Appendix 8.
[3] all flows are visual estimates.

3.2 Fisheries/Aquatic Resources

Fisheries and Aquatic Resources on the PMA are comprised of both lotic (streams) and lentic (meadows/seeps) environments, which support a diverse array of habitats for both plant and wildlife communities. One creek within the PMA contains occupied habitat for one federally listed threatened species of fish, Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*, LCT). The affected environment section for Fisheries/Aquatic Resources is broken into several sections.

1) Sensitive Aquatic Species (Federally listed Threatened, Endangered, or Candidate aquatic species, including aquatic BLM Sensitive Species)
This section identifies the *aquatic* federally listed Threatened species, a description of the areas inhabited by the species, its current status (if known), and the status of the species' respective habitats (if known). This subsection also discusses the *aquatic* species that are listed as BLM Sensitive, including a description of the areas inhabited by these species, their current status (if known), and the status of the species' respective habitats (if known).

2) Temperature Data
This section depicts the temperature regime of selected streams and the effects of temperature on LCT and other cold-water aquatic species.

3) Stream Survey Data
This section identifies the streams that were surveyed during the evaluation period and a brief description of the protocol used. The stream survey data are discussed in the context of riparian functionality class and channel type characteristics (Rosgen 1996).

4) Riparian Functionality
This section represents the riparian functionality assessment data that was collected on the PMA during the allotment evaluation period. The riparian assessment data are illustrated in a graph that shows the functionality class and/or trend. This section also includes a summary of the 1999 report submitted by Whitehorse Associates of Logan, Utah, which rated the stream and riparian conditions of target watersheds.

3.2.1 Sensitive Aquatic Species (Federally listed Threatened, Endangered, or Candidate Aquatic Species, including Aquatic BLM Sensitive Species and Species of Special Concern)

Springsnails (Hydrobiidae)
Numerous spring systems exist within the PMA area, which ranges from cold (near or below mean air temperature) to thermal (5-10° C above mean air temperature (see Sada et al. 2001). One species of springsnail, the western Lahontan springsnail (*Prygulopsis longiglans*) is known to occur within the PMA. Springsnails are small (1-8mm high) mollusks that require high quality water (Sada et al. 2001). Members of the *Prygulopsis* genus prefer cool, flowing water and gravel substrate (Sada et al. 2001).

Primary threats to springsnails, according to Sada et al. (2001), are habitat alteration via water diversions, excessive livestock grazing, nonnative macroinvertebrate establishment, and water depletion.

The riparian areas associated with the spring systems found on the PMA are generally dominated by herbaceous species, including sedges (*Carex* spp.) and rushes (*Juncus* spp.). Sparse willow (*Salix* spp.) is also a common riparian species found on a few spring systems. The outflow streams of the cold or thermal springs are dominated by watercress (*Rorippa nasturtium-aquaticum*) with the sporadic occurrence of duckweed (*Spirodela* spp.), and aquatic butter-cup (*Ranunculus* spp.). These outflow reaches also host a variety of macroinvertebrates, including ephemeropterans (mayflies), plecopterans (stoneflies), and trichopterans (caddisflies).

Although some springs within the PMA have been inventoried to determine the presence of Hydrobiidae snails, none have been inventoried to determine if unique endemic macroinvertebrates are present. Furthermore, none of the springs within the PMA have had their riparian condition evaluated using techniques outlined in Technical Reference 1737-17, "A Guide to Managing, Restoring, and Conserving Springs in the Western United States"(Sada et al. 2001).

Lahontan Cutthroat Trout (*Oncorhynchus clarki henshawi*, LCT)
Three streams exist within the PMA that are considered occupied or potential habitat for Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*, LCT), a federally listed Threatened species since 1975 (Federal Register Vol. 40, p. 29864). The North Fork of Battle Creek exists within the PMA and is currently occupied by LCT. LCT were transplanted into the North Fork of Battle Creek in 1999. The population was augmented with additional LCT in 2000. Paiute and Bartlett Creeks are considered potential habitat for LCT (USFWS 1995), but currently neither stream contains LCT. All of these streams are located within the Northwestern Lahontan Distinct Population Segment[2] (NWLDPS).

3.2.2 Temperature Data

Temperature plays an important role in the quality of aquatic habitats. Temperature is affected by ground water, surface exposure to solar radiation, and the volume of water being heated (Schlosser 1990). Temperature can also be influenced by stream channel shape and orientation, air temperature, and local/regional climatic conditions. Brown and Krygier (1970) determined that canopy cover is the principle factor in elevated stream temperatures. Platts and Nelson (1989a) indicated that thermal inputs and salmonid biomass are directly correlated. Therefore, streams that are shielded from increased solar inputs often have increased trout biomass, especially in high desert streams (Tait et al. 1994). Further, the removal of riparian vegetation not only allows large fluxes in seasonal stream temperature,

[2] The Endangered Species Act of 1973, as amended, included within its definition of a protectable species any subspecies of fish, wildlife, or plant, and any **distinct population segment** of any species of vertebrate fish or wildlife which interbreeds when mature. Thus, three DPS units of LCT were identified when the species was listed as federally listed Endangered in 1970 and maintained when the species was reclassified in 1975, as federally listed Threatened.

but also may allow for increased stream evaporation rates. Temperature can be a major determinant in how a water source is used by humans, aquatic species, and terrestrial wildlife (Brown and Krygier 1970). In the Lahontan Basin region, summer stream temperatures have possibly increased over the past 150-200 years, due to anthropogenic impacts on aquatic systems (Minshall et al. 1989).

Trout growth is maximized at various temperatures depending upon individual species (Moyle and Cech 2000). The temperature preference for brook trout (*Salvelinus fontinalis),* brown trout (*Salmo trutta)*, rainbow trout (*Oncorhynchus mykiss*) is 41-66.2° F, 53.6-68° F, and 53.6-66.2° F, respectively (Jenkins and Berkhead 1993). LCT have been shown to decrease growth rates at 75.2° F and have complete mortality when temperatures exceed 82.4° F (Dickerson and Vinyard 1999). These data represent the effects of temperature on LCT in optimum conditions, e.g. high food availability, no competition, low ammonia, high dissolved oxygen, and no other water quality problems. Optimum fluvial cutthroat trout habitat has been further characterized by temperatures that do not exceed an average maximum of 71.6° F and a stable summer regime of 55.4° F (48.2-62.6° F) (USFWS 1995). More recent research by Dunham et al. (1999), which was based on actual fish distribution data, indicate that LCT downstream distribution more closely parallels the 64.4 ° F isocline. This downstream distribution limit was pushed further upstream based on the occurrence of non-native salmonids. Dunham (1999) conservatively recommends that "[t]o minimize risk of mortality and sublethal stress for LCT, water temperatures should not exceed a *daily* maximum of 71.6° F". The author also recommends that "[t]o minimize risk of exposure to excessive daily maximum temperatures and cumulative weekly exposure to high and fluctuating temperatures an interim Maximum Weekly Maximum Temperature [MWMT] of 68° F…for LCT."

The table below depicts the temperature regimes of selected LCT streams and also the date of collection within the PMA (Table 1). These data were collected during spring through late fall during the evaluation period using in-situ HOBO© Temperature Loggers or thermographs. According to the thermograph information, all the monitored LCT stream reaches within the PMA met the average maximum temperature recommendations outlined by the USFWS (USFWS 1995). All of these streams were defined as potential for LCT habitat in the "1995 LCT Recovery Plan" (USFWS 1995). The potential of these streams to support LCT, at least at the selected thermograph locations, will be examined further using research conducted by Jason Dunham and others.

Dunham et al. (1999) examined the local and geographic distribution of LCT within the eastern Lahontan Basin, which includes the Quinn and Humboldt River basins and also the Coyote Lake Basin found in Oregon. They noted a correlation between latitude/ longitude and LCT distributions within the study area. Using Dunham et al. findings, if LCT were present at the thermograph sites on Bartlett and Battle Creeks, LCT would exist as outliers of the data set, due to each site's elevation and latitudinal location. A more definitive method of determining if LCT could actually exist at thermograph locations is mean July air temperatures according to Dunham et al. (1999). Dunham et al. found that the stream distribution of LCT corresponded to the stream areas that exhibited a mean July air temperature of $\leq$64.4° F. Since air temperatures were only measured on the North Fork of

Battle Creek, it will be the only stream examined using this theory. Increased air temperature monitoring will be conducted in the future to more accurately access the potential downstream distribution limits of LCT within the allotment.

The North Fork of Battle Creek currently is inhabited by LCT and the population appears to be stable (pers comm. Alan Jeanne, NDOW). This stream exhibits a much higher mean July air temperature compared to that recommended by Dunham et al. (1999). These data may indicate that the downstream distribution limit of LCT is much farther upstream in the watershed. This diurnal temperature change exhibited on sampled LCT streams within the PMA during 1999 is relatively good compared to other streams on the district. For example, the headwaters of Mahogany Creek on the Soldier Meadows Allotment exhibited a diurnal temperature flux of 11.6° F in 1995 when riparian conditions were considered in excellent condition. A fire consumed a portion of the headwater reaches of Mahogany Creek in 2000, which led to a diurnal temperature flux of nearly 20.9° F during the same time period that was measured in 1995. These data show, at least for Mahogany Creek, that the natural diurnal temperature flux is just over 10° F, whereas after the dense riparian canopy was removed the flux rose to nearly 21° F. In summary, the North Fork of Battle Creek and Bartlett Creek temperature regimes are near potential, but would continue to incrementally improve as riparian conditions and vegetative stream canopy improves.

Table 3. Temperature regimes of selected LCT streams[3]

Site Name	Year	Mean July Air Temperature ° F	Approximate Site Elevation (Feet)	Approximate Watershed Area Above the Site (Acres)	Water Temperature ° F (7/1-9/1)		Air Temperature ° F (7/1-9/1)	
					Mean Daily Maximum	Mean Daily Diurnal	Mean Daily Maximum	Mean Daily Diurnal
Battle (main stem)	1995	--	4,320	14,279	70.60	18.17	--	--
North Fork Battle	1997	--	5,080	6,914	67.68	13.36	--	--
	1999	--			65.93	13.61	--	--
NF Battle Creek (*Air*)	1999	71.69	5,080	6,914	--	--	89.14	60.47
Upper Bartlett	1996	--	5,220	3,924	65.96	13.35	--	--
	1999	--			64.24	13.48	--	--

3.2.3 Stream Survey Data

The Paradise-Denio Grazing EIS (1982) indicated that approximately 51 miles of perennial streams[4] exist on the PMA. Approximately 45% of these streams, specifically the North Fork of Battle Creek and Bartlett Creek, currently support salmonids with the majority of the remaining stream miles being fishless. The streams, which are habitat or potential habitat for salmonids, are surveyed using a reach-based stream survey. These surveys are conducted by the BLM and/or the NDOW, based on a 4-5 year rotation cycle. The NDOW uses the General Aquatic Wildlife Survey (GAWS) and the BLM uses the protocol listed in the BLM 6671 Manual. Both survey techniques are very similar, yet slight differences exist between habitat classification and computation of the indices[5].

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[3] Paiute Creek's thermograph expired in June, due to a mechanical malfunction

[6] perennial streams in the PMA commonly contain intermittent reaches, which is not reflected in the mileage estimates.

[7] The GAWS indices are designed to indicate the quality of habitats for salmonids and cold-water aquatics. The methodologies are similar to the Representative Reach Extrapolation technique, in which randomly selected reaches are assumed to be "representative" of a larger area. The survey involves intensive transect-based sampling of microhabitats within each reach. The results of this survey are then extrapolated to the entire drainage. As a result, this survey has a high degree of extrapolation error, which is largely reduced via increased sample size. Benefits of GAWS include reduced measurement error and detailed information on microhabitat within each study reach. Streams exhibit a high degree of spatial and temporal heterogeneity; therefore instream habitat assessments are conducted during the summer season when flows are lowest to reduce year to year survey error. By conducting surveys using a high number of stations and resurveying those same stations over time, trends in aquatic habitat, riparian condition, and morphological condition of the stream channel can be derived.

During the evaluation period, stream surveys were conducted by NDOW. The GAWS stream survey methodology is designed to quantify and qualify the condition of various habitat components, which are important to salmonids and other cold water aquatic species. The collected parameters of the surveys are used to derive several indices of aquatic habitat condition. These indices (pool measure (PM), pool structure (PS), stream bottom (SB), bank cover (BC), bank soil stability (BSS) and bank vegetative stability (BVS)) are used to derive a cumulative index called the Habitat Condition Index (HCI). These indices and their relevance to cold-water aquatic habitat condition are summarized in Appendix 9.

Newman (2001) studied the relationships between stream habitat and riparian measurements and found that certain Rosgen channel types are commonly associated with changes in specific habitat parameters commensurate with riparian functionality improvement(Rosgen 1996). Newman noted that B channel types generally show improvement in the riparian functionality assessment rating and Bank Cover (BC). Newman also found that C channel types show improvement in Habitat Condition Index (HCI), Bank Cover (BC), and Bank Soil Stability (BSS). Newman noted that A channel type habitat conditions are best reflected in the riparian functionality assessment ratings.

The next section contains stream survey data tables collected during the recent evaluation period for Bartlett, Battle, and Paiute Creeks within the Paiute Meadows Allotment. Below each table is a brief explanation of the channel characteristics and riparian condition, which may provide insight into the stream survey results.

Stream	Year	Agency	%PM	%PS	%SB	%BC	%BSS	%BVS	%HCI	%UD
Bartlett Creek	1994	NDOW	59.4	49.7	65.0	72.0	68.4	67.5	64.5	36.4
	1998	NDOW	60.4	33.4	78.9	88.6	78.6	78.7	69.8	29.2

The public portion of Bartlett Creek was surveyed by the NDOW in 1994 and 1998. The surveyed reaches were comprised of B3 and A4 Rosgen Channel types (see Rosgen 1996). The dominant channel type surveyed was A4 channel, which exhibits an extreme sensitivity to disturbance and a very poor recovery potential. Channel types, such as B3, exhibit a very low to moderate sensitivity to disturbance and an excellent recovery potential. BC is a statistically significant method of determining improvements in aquatic habitat condition in B channel types (Newman 2001). Riparian functionality assessment data (1998) indicate that nearly 50% of Bartlett Creek is Functional At-Risk (FAR) with a static trend. The remaining portion of Bartlett Creek was found to be at Properly Functioning Condition (PFC). The FAR reach was documented in the mainstem of Bartlett, with a northern tributary being assessed as PFC. The GAWS data were collected only within the FAR reach, therefore the improvement in BC and the reduced amount of UD may indicate a incremental improvement in overall habitat conditions within Bartlett Creek. The wild horse gather that occurred in the winter of 2000 on the Black Rock East Herd Management Area reduced the amount of ungulate damage within this system, until such time as populations return to pre-gather levels.

Stream	Year	Agency	%PM	%PS	%SB	%BC	%BSS	%BVS	%HCI	%UD
North Fork of Battle Creek	1992	NDOW	47.2	5.6	42.0	70.0	50.9	57.8	45.2	44.6
	1997	NDOW	62.3	53.6	47.8	82.0	68.0	75.3	64.8	0.0

The surveyed portion of the North Fork of Battle Creek was composed of three A3, two B4, and four B3 Rosgen channel types. Channel types, such as B3, exhibit a very low to moderate sensitivity to disturbance and an excellent recovery potential. Channel types such as B4 are very similar to B3, but exhibit an increased sensitivity to disturbance. Three A3 channel types were also surveyed, which exhibit a very high sensitivity to disturbance and a very poor recovery potential. The North Fork of Battle Creek was assessed for riparian functionality in 1998 and found to be FAR with an upward trend.
Since the majority of the surveyed portion of the North Fork of Battle Creek was classified as forms of B channel types, BC is a significant indicator of habitat condition. Since 1992, BC has improved which coincides with the improving riparian functionality conditions. The public portions of the South Fork of Battle Creek[6] was also assessed in 1998, but found to be FAR with a downward trend. The last stream survey on the South Fork occurred in 1989, but indicated that the majority of the surveyed stream reaches were A3 channel types. As stated above, these channel types exhibit a very high sensitivity to disturbance and a very poor recovery potential. Although a large portion of the South Fork is privately owned unfenced land, the management of livestock on these parcels influence the public reaches located in the headwaters and also near the confluence with the North Fork. Improvement in the riparian functionality of this drainage should be a key consideration when evaluating livestock grazing within the northern use area, especially given the potential for LCT to expand into this major tributary creating a metapopulation.

Stream	Year	Agency	%PM	%PS	%SB	%BC	%BSS	%BVS	%HCI	%UD
Paiute Creek	1994	NDOW	36.9	82.1	34.1	72.5	68.7	70.0	63.6	0.5
	1999	NDOW	71.0	12.1	37.1	84.5	79.8	85.7	61.6	20.0

The surveyed portion of Paiute Creek is comprised of four C4, four C4/C5, and two B4/B5 channel types. Channel types like C4 and C5 exhibit similar characteristics. They both are considered to have a very high sensitivity to disturbance and a fair to good recovery potential. These channel type also exhibit a high to very high sediment supply and highly erosive streambank potential. Channel types, such as B4 and B5, exhibit a moderate sensitivity to disturbance and an excellent recovery potential. Nearly 80% of Paiute Creek was assessed as PFC in 1998, with less than 20% being FAR with an upward trend. Newman (2001) found that C channels reflect improvements in HCI, BC, and BSS. Both BC and BSS improved in condition, yet HCI slightly decreased. This decrease may be due to the decrease in PS. The erosive nature of the streambank and higher inputs of sediment yielded from the

[6] The South Fork of Battle Creek is no longer surveyed by the NDOW, due to the extensive amount of privately owned land adjacent to the stream.

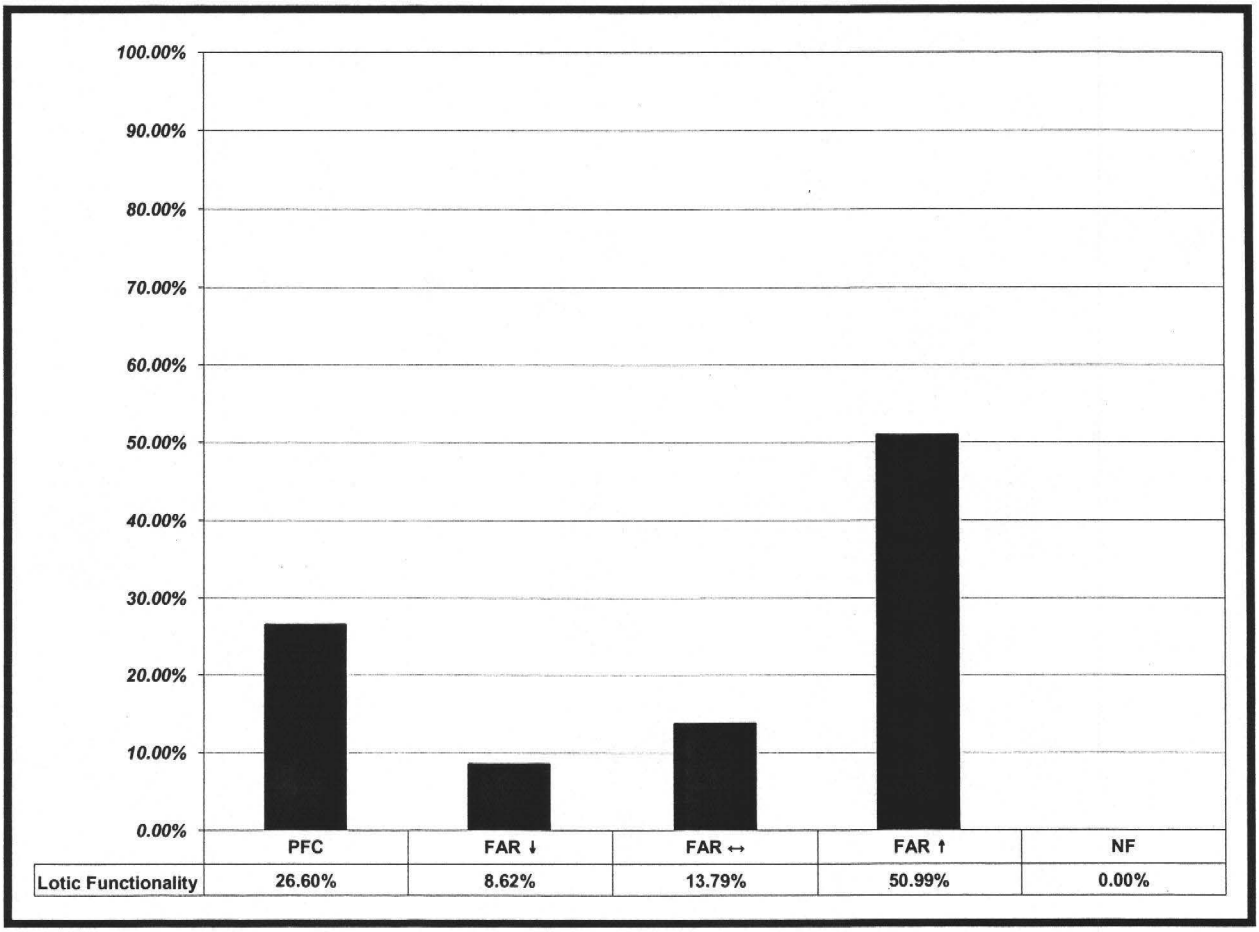
channel types present on Paiute Creek are major determinates in PS condition. Although the PM increased, PS decreased which indicates that the number of pools increased but the depth and quality decreased. This could be due to natural channel processes, increased sediment inputs, or the lack of flushing flows during the spring runoff. Improvements in riparian functionality and increased protection to the sensitive streambanks would likely result in incremental PS condition improvement on Paiute Creek if seasonal flows are normal for the region.

Riparian Functionality

Riparian habitats directly influence the adjacent aquatic ecosystems by providing shade, organic matter, cover, bank stability, and sediment filtration. Riparian vegetation and salmonid habitat quality and survival are strongly correlated in a stream system. Nearly all impacts to aquatic resources from livestock are a result of riparian and/or stream channel degradation. Vegetation allows runoff to slow and absorb into the soil and also acts to capture sediment, thus lessening the potential for sediment to enter the stream (Waters 1995). Riparian vegetation also contributes to the amount of large woody debris (LWD) and organic material that are input into aquatic systems. LWD creates increased total cover, pool volume, mean depth, and percentage of fine substrate (Gowan and Fausch 1996). Further, Merritt and Cummings (1996) distinguished that woody debris "provides a significant portion of stable habitat for insects". Macroinvertebrates are the major energy source for salmonids and other aquatic predators (Waters 1995). Another stream input from woody species is coarse particulate organic material (CPOM), which becomes sources of habitat and nutrients for the aquatic ecosystem at the point of entry and downstream as it is broken down into fine particulate organic material (FPOM) (Platts and Raleigh 1984, Benke et al. 1985, Vannote et al. 1990, Gregory et al. 1991, Powell et al. 1991). Riparian vegetation stabilizes the stream channel, buffering it from extreme flow events and temperature fluctuations. It also buffers the aquatic system from nutrification, which can cause increased primary productivity in aquatic plants. This increase in primary productivity and the subsequent increase in aquatic plant mass can cause anoxic conditions via plant respiration and organic breakdown, which can lead to fish kills. Excessive algae blooms can also lead to decreased stream visibility, thereby inhibiting the ability of fish to capture prey. The maintenance and improvement of riparian vegetation structure and diversity is critical to aquatic ecosystem health and sustainability.

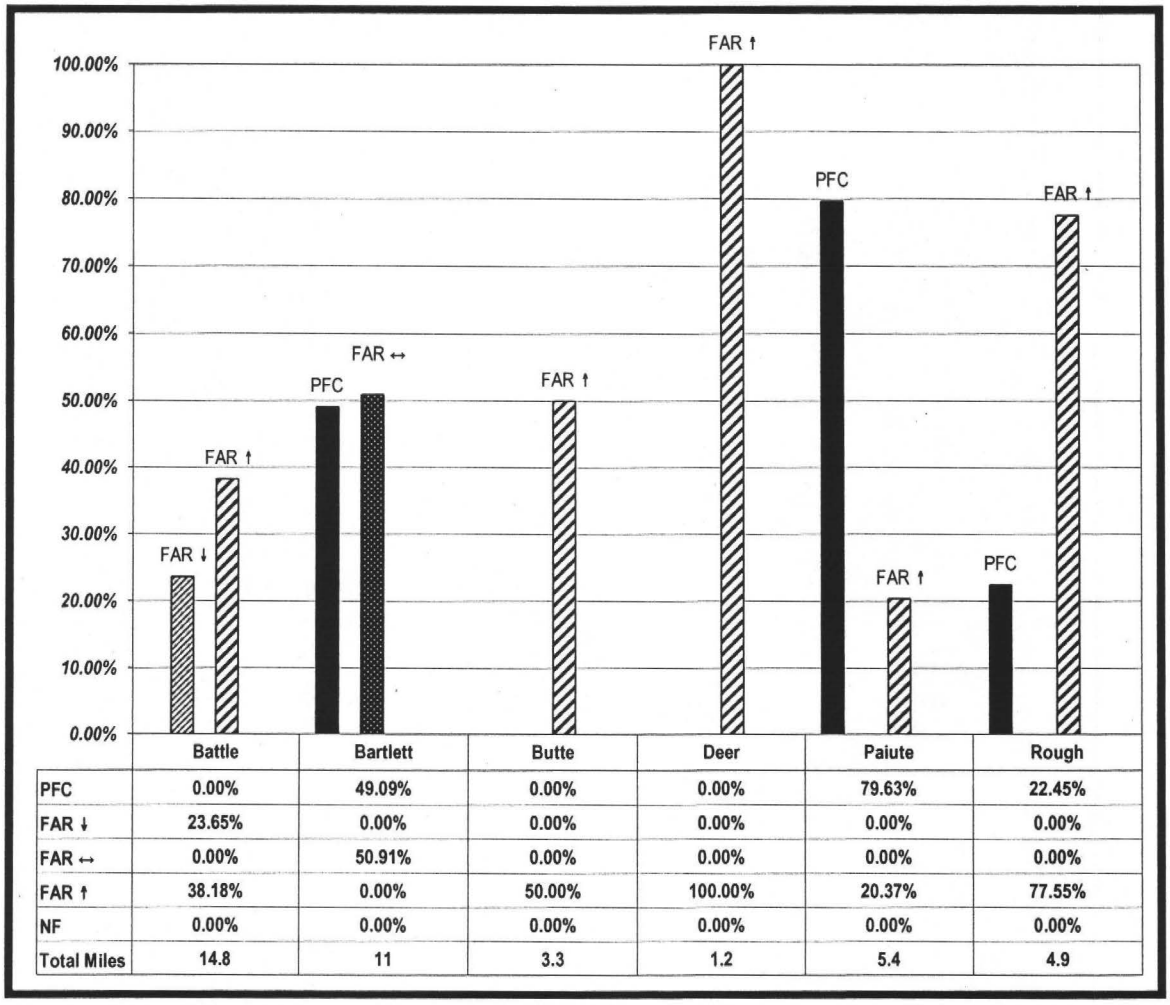
Riparian assessments are conducted to assess the riparian zones ability to dissipate stream energy, thus protecting stream banks and minimizing erosion. These assessments classify riparian zones into three categories: PFC, FAR, and NF. Trends can also be established for the riparian zone reach being surveyed. Currently, riparian data within the PMA indicate that approximately 51% of the reaches are FAR, while approximately 49% are at PFC (Graph 1).

Graph 1. PMA Riparian Functionality



	PFC	FAR ↓	FAR ↔	FAR ↑	NF
Lotic Functionality	26.60%	8.62%	13.79%	50.99%	0.00%

Graph 2. Individual Riparian Functionality Assessment Data



	Battle	Bartlett	Butte	Deer	Paiute	Rough
PFC	0.00%	49.09%	0.00%	0.00%	79.63%	22.45%
FAR ↓	23.65%	0.00%	0.00%	0.00%	0.00%	0.00%
FAR ↔	0.00%	50.91%	0.00%	0.00%	0.00%	0.00%
FAR ↑	38.18%	0.00%	50.00%	100.00%	20.37%	77.55%
NF	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total Miles	14.8	11	3.3	1.2	5.4	4.9

Below is a general description of the riparian functionality assessment conducted on the riparian areas, which were not discussed within the Stream Survey Data section. The riparian functionality class of these systems and the ones described in the Stream Survey Data Section are illustrated in Appendix 23.

Butte Creek

Butte Creek is a small perennial tributary to Paiute Creek. It was assessed in 1998 for riparian functionality and found to be FAR with an upward trend. Improvements in the form of increased vegetative cover would likely enhance this system to near PFC.

Deer Creek

Deer Creek is a small perennial tributary to Paiute Creek. It was assessed in 1998 for riparian functionality and found to be FAR with an upward trend. Improvements in the form of increased vegetative cover and a widened riparian zone would enhance this system to PFC. The incised nature of a portion of the stream is recovering and is in the process of floodplain development.

Rough Canyon
Rough Canyon is a small perennial drainage flowing easterly, which occurs north of Battle Creek and South of Bartlett Creek. It was assessed in 1998 for riparian functionality and split into two reaches, one assessed as FAR with an upward trend and the second being assessed as PFC. The first reach could be improved through increased vegetative cover and a widened riparian zone.

3.2.4 Riparian and Stream Ratings

In 1999, the Winnemucca BLM Field Office contracted Whitehorse Associates of Logan, Utah to develop an ecological classification of the LCT watersheds that exist on the district. Whitehorse Associates used a hierarchical classification based on seven levels. These levels included: Ecoregion, Geologic District, Subsection, Valley-bottom Type, State, Valley-bottom Landform, and Riparian Vegetation Type. The classification was designed to rate the stream and riparian attributes of a watershed from one of seven states. Each state had a numerical score attached to it from 0 (worst) to 100 (best). A class was then developed for each stream based on the number of valley bottom acres in each riparian state or the number of channel miles in each stream state. The results are shown in Table 4 below.

Table 4. Riparian and Stream Ratings

Watershed	Riparian Rating	Class	Stream Rating	Class
Bartlett Creek	89	Good	83	Good
Battle Creek	59	Fair	61	Fair
Paiute Creek	77	Good	75	Fair

These ratings are based on the streams potential given its landform, geology, and current conditions. The riparian areas for Bartlett Creek were assessed as PFC and FAR with a static trend. The riparian rating and class indicate that the system is near full potential, thus improvements in aquatic habitat will be incremental or relatively static over time. Battle Creek was found to be FAR with one of two reaches exhibiting a downward trend and the remaining reach an upward trend. The riparian and stream rating shown in the table above shows that the system is in need of improvement compared to its potential. Paiute Creek was found to be near potential, which coincides with its relatively good riparian functionality and static aquatic habitat conditions.

3.3 Terrestrial Wildlife

Terrestrial wildlife resources on the PMA are typical of much of the Northern Great Basin. This section will be divided into two sections covering priority species and special status species. Where riparian areas are referenced, they include meadows, streambank, and spring vegetative communities.

The habitat range of specific wildlife species within the PMA are illustrated in Appendices 25-29.

3.3.1 Priority Species

Priority species for the allotment include mule deer, pronghorn antelope and Neo-tropical migrant bird species associated primarily with riparian areas. California bighorn sheep and Greater sage-grouse are considered in the Special Status Species section below. There are many other wildlife species that occupy habitats within the allotment including raptors, predators, small mammals, reptiles, amphibians, and small game species. However, the above species were chosen because of past consideration in BLM's planning process, knowledge about habitat needs and conditions, and known potential impacts from ungulate grazing.

Mule deer (*Odocoileus heminonus*)

Mule deer are widespread, typically associated with complex middle to upper elevation landforms that support a wide variety of sagebrush, mountain shrubs, quaking aspen and herbaceous vegetation. Mule deer also use lower elevations during years when heavy snowfall depth forces them to move. Mule deer habitat in the PMA is comprised of about 45,825 acres for winter habitat, 50,936 acres for summer habitat, and 2,394 acres for yearlong habitat (see Appendix 27 for seasonal habitat map).

Mule deer are frequently associated with meadow and riparian habitat contiguous with large expanses of shrubs. The presence of green vegetation in riparian areas and palatable shrubs with high protein levels in the fall is essential for healthy fall breeding. It prepares mule deer for winter. If these habitats receive heavy grazing utilization, they decrease in value for mule deer.

Deer migrating from higher elevations to lower elevations increase populations of some local herds in winter. Based on NDOW survey data, mule deer numbers are currently low, relative to historic numbers and State management objectives. All of the spring fawn data indicate an overall healthy and viable mule deer population for the PMA. Drought and other biological factors (wildland fire, predation, disease) have contributed to these low numbers.

Deer are generally classified as browsers, shrubs and forbs make up the bulk of their annual diet. The diet of mule deer is quite varied, however, and the importance of various classes of forage plants varies by season. In winter, especially when grasses and forbs are covered with snow, the entire diet may consist of shrubby species. Tall shrubs and trees are very important for food and cover.

Rangeland management actions have the potential to influence mule deer cover and forage. Healthy quaking aspen, juniper, mountain shrub, and sagebrush communities provide important tall cover habitats for mule deer.

Pronghorn Antelope (*Antilocapra americana*)
Pronghorn antelope are distributed throughout much of PMA. There are about 31,846 acres of winter habitat and 33,877 acres of summer habitat, where pronghorn antelope are widely distributed throughout valleys and mountain foothill habitats. Yearlong habitat comprises about 33,877 acres (see Appendix 28 for seasonal habitat map). Pronghorn are sagebrush obligates, but are known to use salt desert scrub communities during the late winter and spring.

Rangelands with a mixture of grasses, forbs, and shrubs provide the best habitat (Yoakum 1972). The sagebrush community is used for both cover and forage. Competition for forage with livestock and wild horses is considered low due to differences in dietary preference. Lack of water at natural or developed sites can be a serious problem during periods of drought. NDOW data for 1992 to 2002 indicate that pronghorn populations within the PMA are stable.

Neo-tropical Migrant Birds
Executive Order #13186 (01/11/01) requires that migratory bird species considerations be included in federal actions. A complete Migratory Bird inventory has not been completed for this allotment. Preliminary surveys have been collected at several locations within the allotment. The data are insufficient to identify trends. Neo-tropic migrants species needs are generally met when a diversity of habitat structure, including structural diversity associated with multi-aged and multi-height woody vegetation, is contained across the landscape. Appendix 7 lists the potential neo-tropical birds that may be found in PMA.

Neo-tropical migrant birds are bird species that migrate from the temperate portions of the continent to winter in the tropics of North and South America. Neo-tropical migrants are most commonly associated with habitats with a strong vertical component of woody shrubs and trees. In the PMA, the most important habitats are associated with woody riparian communities. The primary locations of these communities include the riparian communities associated with Bartlett, Battle, and Paiute Creek systems. Secondary woody riparian communities include Butte Creek.

Riparian habitats comprise less than one percent of the PMA, but the value of these habitats far exceed their limited geographic extent. It is estimated that over half of the bird species considered potential breeders in the allotment are dependent upon riparian communities. Additionally migrants that pass through the allotment in the fall and spring make disproportionally higher use of riparian habitats.

Riparian habitats vary in size and quality for Neo-tropical migrants. Meadow habitats dominated by grasses and grass-like species without brush or tree cover have less bird species diversity than those with multi-layered canopies.

3.3.2 Sensitive Terrestrial Species (Federally listed Threatened, Endangered, or Candidate species, including BLM Sensitive and USFWS Species of Concern)

Special status species include those terrestrial species listed or proposed for listing under the Endangered Species, species designated by the USFWS and candidates for listing and species contained in the BLM's Nevada Species of Concern list. The USFWS Species List for the PMA is included in Appendix 6.

Species Existing or Likely To Occur Within the PMA

Pygmy rabbit

This species is the smallest North American rabbit and a sagebrush obligate. The rabbit uses tall, dense stands of big sagebrush, primarily basin big sagebrush, with deep, friable soils typically loamy in texture. The Pygmy rabbit mates in early spring and summer. Its primary food is sagebrush, which makes up to 98% of its winter diet. Grasses are important during the summer, comprising as much as 30-40% of its diet. No inventories for pygmy rabbits have been completed within the allotment, and potential high quality habitat sites are considered rare. Potential sites include the edges of floodplains in the upper portions of watersheds and degraded floodplains at lower elevation where channel down-cutting has allowed for the invasion of basin big sagebrush into sites that were formerly occupied by wet and semi-wet meadows.

Pale Townsend's big-eared bat
Pacific Townsend's big-eared bat
Spotted bat
Small-footed myotis
Long-eared myotis
Fringed myotis
Long-legged myotis
Yuma myotis

All of these species use natural caves and cracks in rock outcrops or man-made cavities for breeding, rearing, and/or hibernating habitat. There is no specific information related to breeding colonies of any of these species within the allotment. Potential breeding and hibernating habitat is considered common in mountainous and rocky areas. Bats depend upon insect prey and the best potential for insect prey within the allotment occurs near wet meadows and marshlands. Therefore potential high quality forage areas are less than one percent of the allotment.

California bighorn sheep

Populations of this species occur on the Black Rock Range (see Appendix 29 for habitat map). Due to a number of factors, bighorn sheep were eliminated from northern Nevada early in the

20th century. Existing populations are the result of numerous NDOW-initiated reintroductions and supplemental releases that began as early as 1963 and occurred most recently in January 2003. Bighorn sheep currently occupy about 6,954 acres of the 55,176 acres of potential habitat. Populations increase slowly as sheep expand into vacant habitat. The NDOW data for this population show excellent fall recruitment of lambs, which is indicative of bighorn sheep populations that are healthy and viable.

Bighorn sheep occupy mountainous areas dominated by large rock outcrops that serve as escape cover. Their diet is primarily grasses supplemented by forbs and limited browse.

Spatial separation in habitat preferences among wild horses, livestock and bighorn sheep results in forage competition in the region being generally low (Ganskopp 1983). Domestic sheep grazing/trailing permits do not occur within currently occupied bighorn sheep range, so the risk of disease transmission between domestic sheep and bighorn sheep is limited. Disease transmission between bighorn sheep and domestic sheep can result in massive bighorn sheep losses and the potential for public controversy.

Northern goshawk
This species is a potential breeder in aspen stands. Found in a variety of dense, mature or old growth aspen habitat, goshawks require large, healthy multi-story stands for nesting and foraging. They forage for prey in and near woodland communities.

Western burrowing owls
No known colonies of this species have been observed in the allotment, however Western burrowing owls are known to exist within the Black Rock desert area. Burrowing owls require open terrain with low vegetation, burrows created by mammals, and an adequate prey base.

Greater sage-grouse
This species is a large bird of the sagebrush zone. The PMA contains sage-grouse winter, summer, and nesting habitats and also 9 known leks (communal breeding sites). Sage-grouse nesting habitat is estimated[7] to total 83,888 acres within the PMA (see Appendix 25 for habitat map). Habitats within the PMA are also estimated to total 98,416 acres for sage-grouse winter habitat and 57,945 acres for sage-grouse summer habitat (see Appendix 26 for seasonal habitat map). Recent BLM habitat classifications have been completed as part of the Nevada sage-grouse conservation planning effort. The classifications indicate that about 44 percent of the habitat within the PMA contains all the required habitat components, 53 percent have adequate sagebrush cover but are lacking in appropriate amounts of herbaceous cover and 3 percent are lacking in adequate sagebrush cover. Upon completion of this planning effort, the developed guidelines would be adopted as objectives, where possible.

Sage-grouse are sagebrush obligates and require large areas of contiguous sagebrush communities. Sagebrush is the primary nesting cover and for much of the year, sagebrush leaves

[7] Habitat types overlap, which results in a cumulative total habitat area that is greater than the allotment size.

form the major component of their diet. Sage-grouse are found throughout the West and have been declining for many years. Historic records, which are mostly anecdotal, indicate that sage grouse populations have fluctuated widely in Nevada. NDOW has indicated it considers sage-grouse populations to be declining (Willis et al. 1993). Much of the regional decline is thought to be related to predation in areas of low quality nesting habitat and loss of sagebrush due to wildfire and cheatgrass invasion. A basic requirement of nesting cover is concealment of the sage-grouse hen and her nest. Quality nest sites offer shelter from above by branches, good growth of understory grasses, and sagebrush within 70 cm of the nest. (Wakkinen 1990, Fischer 1994, Sveum et al. 1998, Holloran 1999).

This species is highly dependent upon the presence of several species and subspecies of shrubs, notably Wyoming, mountain, and basin big sagebrush. Other species such as low and Lahontan sagebrush are also important. Nesting tends to occur at mid-elevation habitats that support adequate shrubby and herbaceous plant cover (Connelly et al. 2000). Spring, summer, and fall ranges with a good compliment of native grasses and forbs are associated with productive sage grouse habitat. During the winter, sage grouse forage almost exclusively on either big sagebrush or low sagebrush, depending upon severity of snowfall and migratory habits of populations.

Hens with broods require well-sheltered areas that provide protection from predators and the weather (Wakkinen 1990, Gregg 1991, Sveum et al. 1998). Proximity to preferred forbs and insects is important for hen and chick nutrition. (Patterson, 1952, Trueblood 1954, Klebenow and Gray 1968, Savage 1968, Peterson 1970, Johnson and Boyce 1990, Drut et al. 1994, Pyle and Crawford 1996). Chicks have limited mobility, so suitable food such as forbs and insects must be readily available. As plants mature and dry, broods move to areas still supporting succulent vegetation, especially native meadows and high elevation drainages. These areas are important as a source of forbs, insects, and free water (Girard 1937, Griner 1939, Patterson 1952, Trueblood 1954). Adult and juvenile birds congregate in these wetter areas during late summer and early fall (Peterson 1970, Wallestad 1975).

As these areas dry, sage grouse consumption of sagebrush increases and the grouse move to areas with sagebrush that is taller than the snow for the winter season. During the winter, sage-grouse feed almost entirely on sagebrush leaves (Wallestad et al. 1975, Remington and Braun 1985, Welch et al. 1988, 1991). Typical winter ranges are large expanses of dense sagebrush (>10% canopy cover) with an average height of 25 cm. This association with dense sagebrush stands typically begins in September and continues through the breeding season.

Least bittern

Habitat for this species is limited to fresh water marshes and reedy ponds. The only habitat of this type within the allotment is on private lands near the Paiute Meadows Ranch that are not part of any use area and not included in the grazing schedules of any alternative.

White-faced ibis
Ibis are seen occasionally as migrants in the fall. They nest in marshes (mainly hardstem bulrush) and feed in marshes and meadows. There is no known breeding habitat within the allotment.

Species Not Known to Occur within the PMA

The following species were also included in a Species List provided by the FWS as species of concern that may occur within the allotment. Each of these species is not known to occur within the SMA.

Western yellow-billed cuckoo
This species requires multistory cottonwood flood plain. The closest population is located along the Carson River to the south.

Black tern
This species is associated with open water wetlands. There are no habitats of this type within the allotment.

3.4 Vegetation

The PMA supports vegetation typical of the Great Basin. The extremes of climate, elevation, exposure, and soil types combine to produce a diverse variety of plant communities (Table 5). The Potential Vegetation Map (Appendix 20) including locations and acreages, is derived from the Natural Resource Conservation Service SSURGO database.

Table 5. Major Plant Species within the PMA

Common Name	Scientific Name
Low gray sagebrush	*Artemsisia arbuscula ssp. arbuscula*
Lahontan sagebrush	*Artemsisia arbuscula ssp. longicaulis*
Basin big sagebrush	*Artemsisia tridentata*
Mountain big sagebrush	*Artemsisia tridentate ssp. vaseyana*
Wyoming big sagberush	*Artemsisia tridentate var. wyomingensis*
Fourwing saltbush	*Atriplex canescens var. canescens*
Shadscale	*Atriplex confertifolia*
Bud sagebrush	*Artemsisia spinescens*
Black greasewood	*Sacrcobus vermiculatus*
Bailey greasewood	*Sacrcobus vermiculatus var.baileyi*
Bluegrass	*Poa spp.*
Willow	*Salix spp.*
Aspen	*Populus spp.*
Antelope Bitterbrush	*Purshia tridentata*
Mountainmahogany	*Cercocarpus spp.*
Sedges	*Carex spp.*
Rushes	*Juncus spp.*

3.4.1 Ecological Status Inventory

Ecological status site data for PMA was collected in 1991/1992. Ecological site inventory is designed to serve as a base inventory of present vegetation compared to potential. Four classes are used to express the degree to which production or composition of the present plant community reflects that of the potential natural community.

Table 6. Ecological Seral Status

Seral Stage	Percent of Present Plant Community to Potential	Acres by Seral Stage
Potential Natural Community (PNC)	76-100	7,311
Late	51-75	90,159
Mid	26-50	28,847
Early	0-25	1,273

The General Ecological Status Map (Appendix 16) represents seral stages for the allotment. This map consists of single seral stage units. The map shows dominant seral stages, estimated acres for each stage, and seeding condition class. Seeding condition classes are defined below.

Table 7. Seeding Condition Class

Seeding Condition Class	Acres per AUM	Acres by Seeding Condition Class
Excellent	Less 5 acres per AUM	0
Good	5 to 10 acres per AUM	0
Fair	10 to 15 acres per AUM	0
Poor	Greater than 15 acres	2,037

3.4.2 Sensitive Plant Species (Federally listed Threatened, Endangered, or Candidate species, including BLM Sensitive and USFWS Species of Concern)

The following species were also included in a Species List provided by the FWS as species of concern that may occur within the allotment. Each of these species is not known to occur within the PMA.

Windloving buckwheat (*Eriogonum anemophilum*)

This is a low perennial herb with leafless flower stalks rising above clumps of white leaves, which are associated with barren, rocky sites of volcanic or other origin. It blooms in late June and July. The nearest population is in Jackson Mountains east of the allotment. Other populations are located south and east of the allotment.

Grimy ivesia (*Ivesia rhypara var. rhypara*)
This is a low, spreading perennial cushion plant. Its habitat is dry, relatively barren, light-colored outcrops of welded tuffs on east, south, and west aspects. The nearest population is in Yellow Rock Canyon west of the allotment.

Smooth stickleaf (*Mentzelia mollis*)
An erect, bright yellow-flowered, annual herb that blooms in May and June. Habitat: dry, open, nearly barren, eroding shoulder and side slopes of brightly colored shrink-swell clay badlands formed by hydrothermal alteration and weathering of air-fall volcanic ash deposits, on all aspects with a very sparse cover of other annuals.

Crosby buckwheat (*Eriogonum crosbaye*)
This species commonly occur together on whitish lake deposited volcanic ash deposits that weather to deep clay soils. They generally occur on gentle slopes north and west of the allotment in the sagebrush steppe zone.

3.5 Noxious Weeds

Noxious weeds are defined by the State of Nevada and are typically non-native invasive plants. They are fast spreading and often expensive or difficult to control. Weeds introduced to an area can quickly dominate the landscape if management action is not initiated to control the infestations. Noxious weeds may proliferate, which can crowd out other plants that provide biodiversity and benefit wildlife and domestic animals. Noxious weeds are spread from infested areas by people, equipment, livestock/wildlife, and by the wind.

The potential for additional weed infestations grows along with increased weed populations as a result of man's activities. Grazing intensity and related vegetative condition and trend can effect the location, timing and magnitude of noxious weed invasions. If vegetative condition and trend decrease from an area's potential vegetation as a direct result of overgrazing, less desirable plant species, such as the non-native noxious weed species listed in Appendix 10, can become established, expand and result in monocultures.

The WFO conducts annual inventories of noxious weeds through contract and with office personnel. Although a complete inventory of the PMA has not been completed, inventory efforts completed to date, have identified numerous noxious weeds within the planning area, e.g., scotch thistle (*Onopodum acanthium*), bull thistle (*Cirsium vulgare*), and whitetop or hoary cress (*Cardaria draba*). Most areas occupied by noxious weeds are relatively small in size and generally associated with riparian areas, disturbed areas or road systems. The WFO is currently participating in developing Cooperative Weed Management Areas (CWMAs) that will include the PMA and result in coordinated weed management control efforts between state, federal, tribal, county agencies as well as private landowners.

3.6 Soils

Soils for the PMA are diverse, ranging from lake deposits in the Black Rock Desert to residual soils at the higher elevations of the Black Rock Range. PMA contains 50 soil map units and 14 general map units in the draft Soil Survey of Humboldt County Nevada, West Part and are shown in Appendix 19. These 14 general units were grouped into five categories, based on major landforms and are briefly described below:

PLAYAS

Playas are nearly level dry lakes that occupy the lowest depressions on the basin floor. Temporary flooding occurs primarily in response to precipitation-runoff events. Playa deposits are fine textured and are strongly saline and alkaline. Playas are barren of vegetation.

LAKE PLAIN TERRACES

The Sondoa-Wendane-Isolde, Wendane-Humboldt, Boton-Mazuma, and Toulon-Bluewing soil units are on lake plain terraces that are nearly level, very deep, and well drained. These soils occur along the margins of the Black Rock Desert Lake plain terrace. Textures are coarse through moderately fine with strongly saline and alkaline subsoils. Vegetation is mainly black greasewood and shadscale.

FAN PIEDMONTS

The McConnel-DunGlen-Pumper, Shawave-Deadyon, Aboten-Tumtum-Oxcorel, and Simon-Fulstone-Welch soils units are on fan piedmonts. These soil units are nearly level through strongly sloping, shallow through very deep, and well drained. These soils have medium textured surface layers and moderately fine and fine textured subsoils with strongly cemented layers. Vegetation is mainly shadscale/bud sagebrush at lower elevation, Wyoming big sagebrush at mid-elevation, and basin big sagebrush at higher elevations.

HILLS and MOUNTAINS

The Singatse-Grumblem-Sojor and Soughe-Hoot soils units are on the footslopes of mountains that are moderately steep and steep, shallow, and well drained. These soils have very cobbly, medium textured surfaces and very gravelly fine textured subsoils. Vegetation is mainly Wyoming big sagebrush and shadscale.

The Harcany-Long Creek-Cleavage soil units are on mountain slopes that are strongly sloping through very steep, shallow through very deep, and well drained. These soils have gravelly medium textured surface layers and extremely gravelly medium textured subsoils. Vegetation is mainly mountain big sagebrush, low sagebrush, bluebunch wheatgrass, and Idaho fescue.

PLATEAUS

The Wylo-Bucklake-Pickup and Devada-Tuffo soil units are on plateaus that are moderately sloping through very steep, shallow or moderately deep, and well drained. They have very stony medium textured surface layers and fine textured subsoils. Vegetation is mainly bluebunch wheatgrass, Lahontan sagebrush and big sagebrush.

SOIL EROSION HAZARD POTENTIAL

Soil erosion hazard potential varies with parent material, elevation, slope, aspect, and vegetation cover. Erosion hazard is the probability that erosion damage may occur as a result of site preparation, fires, and overgrazing (Soil Survey Manual 1993). Because of the number of soil units, it is only possible to make general assessment of erosion potential. Soil parameters are extracted from the Natural Resource Conservation Service Soil Survey Geographic (SSURGO) database and used to determine erosion hazard potential. Parameters are soil erodibility (K factor), slope percent (S factor) wind erodibility index (I factor), and climate (C factor). This information allows development of a general guide for estimating erosion hazards.

Water and wind erosion hazards are divided into three classes: slight, moderate, and high (National Soil Handbook 430-VI Supplement – NV-2). Erosion hazards are estimated by using the formulas:
Water Erosion Hazard = K x S
Wind Erosion Hazard = I x C

Refer to the erosion hazard maps in Appendices 17 & 18 for locations and acreages.

Table 8. Erosion Hazard Values (Water)

Erosion Hazard	Value
Slight	<4
Moderate	4-8
High	>8

Table 9. Erosion Hazard Values (Wind)

Erosion Hazard	Value
Slight	<40
Moderate	40-80
High	>80

3.7 Wild Horses

The Black Rock Range East HMA consists of 173,620 acres, the majority of which are in the PMA (see Appendix 15 for HMA map). Wild horses have been present in this HMA since before the Wild Free-Roaming Horse and Burro Act was passed in December of 1971. Wild horse populations are managed within a range of 40% below the Appropriate Management Level (AML) to AML. The established AML for the Black Rock East HMA is 93 Horses.

3.7.1 SEASONAL WILD HORSE DISTRIBUTION

BLACK ROCK RANGE EAST HMA

During the winter, wild horses are found at all elevations except the highest peaks and ridge tops. The majority of horses are located on mid slopes. By late spring the majority of horses move to higher elevations. North of Paiute Creek horses are concentrated in the vicinity of Burnt Spring and the South Fork of Battle Creek. South of Paiute Creek the majority of horses are found from Big Mountain north to Paiute Creek on the high benches and plateaus.

Distribution of horses in the summer is similar to late spring. North of Paiute Creek horses are concentrated between the North and South Forks of Battle Creek. It appears that many of the horses found in the vicinity of Burnt Spring and the South Fork of Battle Creek during the spring move to the Colman Creek area in the Black Rock Range West HMA. South of Paiute Creek the majority of horses are found from Big Mountain north to Paiute Creek on the high benches and plateaus. The distribution of horses in the fall is nearly the same as spring and summer except that horses are found at all elevations, and the number of horses found in the vicinity of Burnt Spring and the North and South Forks of Battle Creek increases.

WILD HORSE CENSUS

A wild horse census is usually conducted every 3 years. Censuses were conducted in August 1997 and July 2000. Another census was conducted in August 2001 following the November 2000 removal. The following represents the animals observed in the Black Rock Range East HMA during those censuses.

Date	Black Rock Range East	Estimated WH AUMs	Permitted Livestock AUMs	AUM Ratio of WH to Livestock
Aug. 1997	217 H	2,604	3,827	1:1.5
July 2000	360 H	4,320	4,730	1:1.1
Aug. 2001	121 H	1,452	4,466	1:3.1

WILD HORSE REMOVAL

Wild horse removals were conducted in November 1996 and November 2000. In 1996, removal criteria allowed the removal of wild horses 9 years old and younger. Removal criteria were not required or implemented for the 2000 removal. Removal numbers are shown below in Table 10.

Table 10. Wild horse removal numbers for the Black Rock Range East HMA

Date	Black Rock Range East
November 1996	236
November 2000	283

3.8 Cultural Resources

The PMA includes a rich array of prehistoric and historic sites. Prehistoric sites range from as early as 12,000 years ago to as late as the mid-1800's when Euro Americans entered the area. Prehistoric sites include paleo-Indian sites, rock shelters, occupation sites (with probable buried deposits), temporary camps, hunting blinds, quarry sites, and lithic scatters. The highest concentration of prehistoric sites is in association with permanent and intermittent water sources.

During the 1860s there were a number of hostilities between Native Americans and non-natives in and near the PMA. The Black Rock Desert was the domain of a mounted band of Native Americans led by a Paiute named Black Rock Tom. In 1865 a furious battle ensued between Black Rock Tom's band and the cavalry in the Black Rock Range, probably in Paiute Canyon. In 1866, the Fish Creek Valley Battle occurred on the east side of the Black Rock Range, probably in present day Battle Creek.

Other historic sites in the PMA include sites associated with homesteading, farming and ranching, Basque aspen carvings and other sites associated with sheep herding, historic mining sites and historic transportation routes. During World War II through the 1950s, the Black Rock Desert served as a gunnery range for the military. Remnants of this activity can still be found in the form of bullets, shell casings and targets.

Monitoring in the PMA indicates vegetative utilization levels were exceeded in the vicinity of Paiute Creek, Battle Creek, Bartlett Creek, Burnt Spring, Butte Creek, Rough Canyon, and Deer Creek. These areas have known or high potential for cultural resource sites. Although impacts to cultural resources by livestock grazing have not been documented in these areas, adverse impacts due to trampling and the effects of accelerated erosion may be present.

3.9 Native American Values

The PMA is within the traditional homeland of the Northern Paiute. The allotment falls within the areas traditionally used by the Agaipaninadokado ("fish lake eaters") and/or Moadokado ("wild onion eaters") of Summit Lake, the Sawawaktodo tuviwarai ("sagebrush mountain dwellers") of Winnemucca and the Atsakudokwa tuviwarai ("red butte dwellers") of McDermitt. The Summit Lake Paiute Reservation is located northwest of the PMA. The Pyramid Lake Paiute Reservation is located southwest of the PMA.

Ethnographic information and past consultation with Native American Tribes indicate they consider all water sacred. Hot springs are considered particularly valuable because of their role in healing, as places of prayer, and their association with water babies. Many of the plants in the PMA were used for medicinal purposes as well as for food, shelter, baskets, tools, and clothing. Riparian zones are particularly rich sources of such plants. Some Native Americans continue to gather medicinal and other plants.

Native Americans have also indicated that there are burials in the Black Rock Mountain Range. There were burials in Elephant Mountain cave, which were looted and recently repatriated to the Pyramid Lake Paiute Tribe.

3.10 Paleontology

The PMA is located in the northwest corner of the Great Basin portion of the Basin and Range physiographic province of the western United States. The north trending mountain ranges and intervening valleys are, in part, composed of rock and sediments (consolidated and unconsolidated) that contain fossils of plants and animals.

No systemic field survey has been conducted for paleontological resources in the PMA. However, numerous paleontological localities have been identified by independent researches in and near the PMA. Many of the sedimentary units that lie within the PMA are potential localities for occurrences of fossils.

A Pleistocene ground sloth fossil has been found within the boundaries of the PMA. Several sites yielding Pleistocene mammoths and associated fauna have been recorded in the east arm of the Black Rock Desert near the PMA. Associated fossils include wolf, horse, camel, saber tooth tiger, ducks, geese, rabbit, mice, rats, deer and bison. Springs and sloughs in the vicinity of the East Arm of the Black Rock Desert have potential for such sites.

The PMA also includes several sources of paleoenvironmental information. These include fossil pollen localities, ancient woodrat middens, quarternary sedimentary shoreline features/deposits related to Lake Lahontan, history. Areas that have been continuously wet through time (such as springs and meadows) or, conversely, areas that have been continuously dry (such as dry caves or woodrat middens) are most likely to preserve fossil pollen record. Woodrat middens are found in dry caves and on cliff faces. Volcanic ashes are also important stratigraphic and chronological markers. Streams also

have the potential to yield valuable information on changing stream flow and erosion through time. Information on fluctuations of Pleistocene Lake Lahontan is provided in wave-cut terraces, gravel bars, beaches, and tufa deposits.

3.11 Recreation

The PMA provides excellent opportunities for primitive recreation. Although a large percentage of the area is located outside of any specially designated areas, portions of the Black Rock Desert –High Rock Canyon Emigrant Trails National Conservation Area (NCA), including the North Black Rock Range, the Black Rock Desert, and Pahute Peak Wilderness areas are located within the PMA boundaries. A small portion of the Lahontan Cutthroat Trout WSA is also included in the northern portion of the allotment. While all the lands within the PMA are managed for multiple-use, certain areas are managed for specific environmental settings necessary to providing unique recreational experiences.

3.11.1 NCA, Wilderness, and the LCT WSA

The NCA was established to protect the nationally significant cultural, geological, ecological and recreation resources of the area. This area is a favorite recreation place for local communities, other areas in Nevada, and neighboring states. Visitors from other parts of the States and the world also frequent the area. The intent in creating the NCA was largely to preserve the terrain, scenic vistas and primitive conditions of the Black Rock Desert and High Rock Canyon areas as they were during the emigrant passage.

The three wilderness areas and the LCT WSA provide excellent opportunities for primitive recreation. Wilderness and Wilderness Study Areas are specially designated areas that are managed for primitive recreation. Solitude, naturalness, and unconfined recreation are high among the priorities for management in these areas. The LCT WSA has extensive aspen groves, perennial streams and abundant wildlife which provides unique recreational opportunities for the region. For further details please see the Wilderness Section.

3.11.2 Recreational Uses

The majority of recreational use consists of hunting, camping, OHV travel, rockhounding and some wilderness trekking and hot spring soaking. Areas in and adjacent to the allotment are popular destinations for big game and upland bird hunting. Therefore, the majority of use is expected to occur in the fall season. However, the shade and perennial streams located in the LCT WSA make it a desirable destination throughout the year. Pinto Hot Springs, which is located on private land adjacent to the Black Rock Desert Wilderness, is another draw to the area. With the exception of a few commercial hunting and guide services, there are no known recreation developments or other visitor services provided in the area.

3.11.3 Public Access

Although cross-country travel is permitted in the majority of the allotment, motorized or mechanized transport is prohibited in Wilderness Areas and is limited to designated roads in the WSA. Access through the PMA, on a few key roads outside of wilderness, has also been restricted in recent years due to actions taken by one private landholder in the area. The major access roads that traditionally provided East-West and North-South public access have been closed to public use where they cross private land.

3.12 Wilderness/Wilderness Study Area

3.12.1 Wilderness Areas

The PMA contains portions of the North Black Rock Range, Pahute Peak, and the Black Rock Desert Wilderness Areas. The total acreage of each Wilderness Area within the allotment is shown below.

Wilderness Area	Wilderness Acres in the PMA	Total acres in Wilderness	Percentage of the area in the PMA
North Black Rock Range	3,909	30,646	12%
Pahute Peak	30,535	56,890	53%
Black Rock Desert	37,990	314,829	12%

These Wilderness Areas were designated on December 31, 2000 by the Black Rock Desert - High Rock Canyon Emigrant Trails National Conservation Area Act of 2000, and must be managed in accordance with the Wilderness Act of 1964. Detailed descriptions of the areas can be found in the Nevada Statewide Wilderness Report, October 1991.

Wilderness Areas are to be managed to preserve and protect their wilderness character and provide for their use and enjoyment by the American people, in such a manner that will leave them unimpaired for future use and enjoyment as wilderness, and will allow for recreational, scenic, scientific, educational, conservation, and historical use (43 CFR 6300). Actions proposed within wilderness are evaluated on the basis of their possible direct and indirect impacts on wilderness values of naturalness, solitude and primitive or unconfined recreation, and special features. Several special features mentioned in the NCA Act of 2000 that are found in the wilderness portions of the PMA are prehistoric and historic Native American sites, a largely untouched emigrant trail viewshed, and threatened fish.

The Wilderness Act of 1964 and the BRHR NCA Act allowed grazing to continue in wilderness areas where it was established prior to designation, subject to reasonable regulations that are deemed necessary by the Secretary of the Interior. This EA is being prepared to analyze the impacts associated with the actual grazing of the allotment.

3.12.2 Wilderness Study Areas

The proposed action would also affect a small portion of the LCT WSA, which is located in the northern portion of the PMA along the headwaters of Bartlett Creek. Detailed descriptions of this area can also be found in the Nevada Statewide Wilderness Report, October 1991. Approximately 3% of the 12,378 acres of the WSA are located within the PMA. This area is managed under the BLM's Interim Management Plan for Lands under Wilderness Review (IMP). The area is to be managed in a way that will not impair its wilderness qualities until Congress decides to designate the area as wilderness or release it for other purposes.

The LCT WSA straddles the north end of the Black Rock Range. It is an outstandingly beautiful area with its running water, large stands of quaking aspen, willow and mahogany trees, lush meadows, colorful rock formations and good populations of wildlife. The area was originally designated as a Natural Area to ensure the preservation of the LCT in its natural habitat and to maximize available spawning areas.

There are good opportunities for primitive and unconfined recreation. Activities such as backpacking, hunting, nature study, horseback riding, photography, cross country skiing, and winter camping are all feasible. The presence of cool flowing water appeals to a number of people who desire a change from the lower hot, arid desert.

The 1991 Nevada Statewide Wilderness Report recommended that the area not be designated as wilderness, because of the small size of the study units, excessive intrusions and private property and extensive route system. Since 1991 most of the private property has come into federal ownership and now only two privately owned 40 acre parcels exist within the WSA.

3.13 Visual Resource Management

BLM uses visual resource management (VRM) in the planning area to manage the quality of the landscape by minimizing potential impacts to visual resources resulting from human activities or developments. The objectives of these classes vary from allowing very little change in the landscape, (e.g. Class 1) to activity that allows major landscape modifications (e.g., Class IV). VRM classes within the PMA vary from Class I to Class IV.

All three wilderness areas and the LCT WSA are currently managed as Class I. A corridor along the western edge of the Black Rock Range is managed as Class II. The remaining areas of the PMA are managed as Class IV (see Appendix 31 for the VRM Map).

As noted above, a large portion of the PMA lies within the boundaries of NCA. The NCA was established to protect the nationally significant cultural, geological, ecological and recreational resources of the area. The legislation creating the act was largely intended to preserve the terrain, scenic vistas and primitive conditions of the Black Rock

Desert and High Rock Canyon areas as they were during the emigrant passage. It is the pristine vastness of the area that appeals to many recreation users.

The viewshed from the Applegate-Lassen Emigrant Trail is of great importance for many area users. In fact, the visual landscape from the emigrant trail was a driving force behind wilderness designation in the NCA. Visitors traveling along segments of the trail, especially as part of an emigration reenactment, are able to relate to the emigrant experience, largely as a result of the relatively untouched scenic vistas, which include portions of the PMA. Protecting the viewshed and the associated experiences are high among management objectives for the NCA and the associated wilderness areas.

The most visible man-made features from the PMA include historic sites, such as Paiute Meadows Ranch, Leonard Creek Ranch, and placer gold mines in the Battle Creek area. More recent developments include the Highcroft gold mine, a geode mine, major access roads, secondary routes and ways, gravel pits, a few private ranches, and fences. The ranch landscapes typically include small dwellings, outbuildings, barns, fences, trees, corrals, and fields. They are all situated on private lands, and only the larger features (such as trees) are visible from a distance.

3.14 Socio-Economic

The PMA is located within Humboldt County, Nevada. Humboldt County is the fourth largest of 17 counties within the State. The County encompasses a total area of approximately 9,700 square miles and is sparsely populated. The City of Winnemucca is the only incorporated City within the County.

3.14.1 Local Economy & Business Climate

Approximately $323.6 million of work place earnings were generated within Humboldt County for 2002.[8] The Agriculture and Agricultural Services sector generated approximately $57.0 million of revenues.[9] Total employment for Humboldt County is approximately 9,836 jobs. Service industries are the largest employers followed by retail trade and mining. The Agriculture sector provides approximately 840 jobs.

The PMA is utilized by one grazing permittee. The existing livestock grazing permit authorizes 3550 AUMs of active use. A livestock grazing permit is not property, but rather is a revocable privilege to harvest forage from public lands. Any adjustment to the amount of active AUMs is expected to result in a subsequent change in the market value of base property to which the permit is attached. The permittee's current ranching operation is dependent upon public land grazing. Their economic base includes farming and ranching. The ranch currently employs fewer than two permanent and/or part-time employees.

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[8] Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, May 2002.

[9] Source: 1997 Census of Agricultural County Data, USDA National Agricultural Statistics Service

4 ENVIRONMENTAL CONSEQUENCES

4.1 Critical Elements

The following critical elements of the human environment are subject to requirements specified in statute, regulations, or executive order. Those elements present within the PMA have been analyzed in this EA; all others have not been further evaluated.

Critical Elements	Chapters	Present	Affected		Critical Elements	Chapters	Present	Affected	
			Yes	No				Yes	No
Air Quality		X		X	Nat. Amer. Rel. Concerns	3.9/4.10	X	X	
ACEC's				X	T & E Species	3.2/3.3/3.4 4.3/4.4/4.5	X	X	
Cultural Resources	3.8/4.9	X	X		Wastes, Hazardous/Solid				X
Environmental Justice				X	Water Quality	3.1/4.2	X	X	
Farmlands, Prime/Unique				X	Wetlands/Riparian Zones	3.2/4.3	X	X	
Floodplains				X	Wild & Scenic Rivers				X
Invasive, Nonnative Species	3.5/4.6	X	X		Wilderness	3.12/4.13	X	X	
Migratory Birds	3.3/3.4	X	X						

4.2 Water Resources

In general, livestock and wild horse grazing can impact water resources in many ways. They have the ability to alter the chemical, physical, and biological integrity of water. They also have the ability to modify the hydrologic response of watersheds by reducing infiltration and surface roughness and increasing compaction. All of these impacts are known to occur, but these impacts cannot be quantified in a predictive manner because there are too many independent variables that influence the degree of impact. Although impacts cannot be quantified, causal relationships have been identified that impact water resources and water quality. Through the development of mitigation measures implemented through allotment objectives and Terms and Conditions (see Appendix 2 & 3), these impacts can be minimized and grazing can co-exist with other multiple uses of the public lands.

4.2.1 ALTERNATIVE 1 - EXISTING SYSTEM

The water quality and riparian conditions presented in Chapter 3 are products of the existing grazing system, past and present wild horse use, natural factors, and past and present recreation. Recreation impacts to water quality are primarily limited to stream road crossings and the sediment that they produce. These impacts are relatively local when compared to grazing.

As shown in Table 2 of Chapter 3.1, the benchmark reference values were exceeded a total 14 times for the 9 sampling events. It is important to note that these events do not represent violations of the State of Nevada's water quality standards, since specific standards have not been established for these stream reaches. The EPA's nutrient recommendations are based upon the 25th percentile of a data set that contains samples from 249 streams within the Central Basin and Range Region. The 25th percentile was chosen to serve as a surrogate for a reference condition and is ***not*** a rigid standard. These values were selected to represent minimally impacted streams and to provide management flexibility (EPA 2000).

Of the 14 values that exceed the benchmarks, 9 are associated with the first sample event in May. These results are not out of character when flow conditions are taken into consideration. The month of May typically corresponds with peak runoff, or shortly thereafter. These flows serve to "flush" the stream channel of the accumulated sediments and debris. Consequently, elevated levels of turbidity and sediment are an expected and normal component of the hydrologic cycle. Further analysis of the data set demonstrates that the results for F. Coliform bacteria and E. Coliform bacteria are consistent with elevated levels of sediment due to the longer residence time that coliform bacteria possess within benthic sediments. As sediment becomes entrained within the water column, so do the bacteria residing there.

TKN is an acid digestion method that measures both organic nitrogen and ammonia. Organic Nitrogen also becomes sequestered within benthic sediments, so it follows that TKN becomes elevated during spring runoff and at other times when turbidity levels are increased. Any surface disturbing activity that leads to increased sediment and turbidity would cause a continual decline in overall water quality. Grazing practices, which cause riparian conditions that are less than

fully functional, would cause increases in all of the above referenced parameters. For stream temperature conditions and analysis refer to Chapter 3.2 Fisheries/Aquatic section.

Also noted in Table 2, are several instances where nitrate has exceeded the reference condition. In natural settings, there are relatively few sources of nitrate other than the denitrification of ammonia from animal waste and nitrogen fixing plant species (rhyzobium nodules). There does not appear to be any discernable trend from the limited data available. Both the reference condition and the actual results are low when compared to the national primary drinking water standard of 10 mg/l.

As described above the existing water quality is an interrelated process that cannot be fully described through three discreet sampling events. While not violating any water quality standards, the data indicate that reference conditions have been slightly exceeded for TKN, Nitrate, and turbidity. Given that wild horse and livestock grazing are the primary authorized land uses, there are few reasons to expect that conditions would improve by continuing with the current grazing system. It is not possible to discern the relative contribution from livestock and wild horses, and it is equally difficult to prevent wild horse use of the riparian zone. Therefore, in order to improve water quality, changes in livestock use would be required.

4.2.2 ALTERNATIVE 2 - WINTER USE

This alternative has four main components that distinguish it from the existing grazing system. They are:

- Creation of a new use area (SPLUA), by segregating the lower elevations (below 1550 meters) of the former South Paiute Use Area (SPUA).
- Creating a new winter season of use within the newly created South Paiute low elevation use area (SPLUA).
- Converting nonrenewable AUMs to Active AUMs.
- Deferring two weeks of livestock use from the use areas where sensitive riparian habitats exist (NPHUA and SPHUA) to the winter use area.

These proposed changes would result in a conversion of nonrenewable to Active AUMs, but would reduce AUMs in the NPHUA, where all the impaired riparian zones are located. This alternative would also reduce the amount of hot season grazing within the NPHUA by 63%. These changes would result in improved riparian habitat and should result in a corresponding improvement to water quality.

The creation of a new winter use area should have negligible impacts to water resources. There are few water resources present in the new use area, and, by grazing in the winter, livestock would be less dependant on water.

4.2.3 ALTERNATIVE 3 - PROPOSED ACTION

This alternative carries forward most of the provisions of both alternatives 1 and 2. It proposes the same seasons of use and use area rotation as alternative 1, but also brings forward the new winter use area proposed under alternative 2 and then shifts the boundary of the SPHUA northward to the South Fork of Battle creek. Although this alternative does not result in increased AUMs within the NPHUA, it does result in an increase in grazing intensity within the use area. This results from decreasing the size of the area without also adjusting the AUMs or season of use.

The impact to water resources by creating the winter use area and adding AUMs would be negligible as described under Alternative 2. By reducing the size of the NPHUA without also reducing the AUMs there are likely to be increased impacts to riparian zones and water quality. These impacts would be similar to those described under alternative 1 with a likely increase in severity.

4.2.4 ALTERNATIVE 4 - NO LIVESTOCK GRAZING

Under this alternative, all livestock grazing would be removed from the allotment, but wild horse use and recreational activities would continue. Water resources and water quality would experience a beneficial impact as physical habitat and water quality would improve. The degree of improvement would depend upon wild horse populations.

4.3 Fisheries/Aquatic Resources

Fisheries and Aquatic Resources for the most part are negatively affected by livestock grazing. Livestock impacts to these resources include increased sedimentation, degradation of the stream channel, increased turbidity, increased nutrient inputs, increased soil compaction, loss of flora diversity, reduced sediment capture ability, and the removal of riparian vegetation and overstory. These impacts will become more considerable as the intensity (i.e. numbers) of livestock and duration of grazing increases, especially during the summer months. Topographical complexity of an area can also contribute to increased impacts to these resources. Off-site water developments and herding are essential to minimizing negative impacts to riparian and aquatic environments. Impacts to aquatic and riparian resources by alternative will be described below based on the season of use, slope or topography of an area, intensity of grazing, amount of upland water developments, sensitivity of the channel, channel recovery potential, duration of use, and the known tendencies of livestock, specifically cow/calf pairs within each use area. Following the discussion of impacts for each alternative is a brief summary. The summary is designed to capture the ability of the specified alternative to achieve the Terms and Conditions, short-term objectives, and the SRH in the shortest period of time. Special emphasis is placed on the proposed changes for the use areas containing TES population and/or habitats and also riparian values. The Bureau is required to maintain, restore, or enhance habitats to assist in the recovery of Federal threatened or endangered species (43 CFR 4180.2).

4.3.1 ALTERNATIVE 1 - EXISTING SYSTEM

Livestock grazing would occur in the NPLUA from March 15th to May 15th. This use area contains very little perennial aquatic environments. The NPLUA contains an intermittent portion of Bartlett and Battle Creeks, several ephemeral drainages, and less than one dozen springs. These resources would be minimally impacted due to several factors, thereby allowing the attainment of the SRH and allotment objectives within this use area. These factors are listed below:

- Early spring seasons of use are generally the most compatible with conserving riparian values compared to other seasons of use, except for winter. Generally, during spring, livestock are widely distributed with proportionate forage utilization throughout an area.
- Numerous ephemeral waters exist throughout this use area that would be beneficial for livestock dispersion over the range, minimizing areas of concentrated activity.
- Herding livestock would promote a broad distribution throughout the use area.
- The slope of this use area is very low compared to the rest of the allotment, which would further contribute to a broad distribution of livestock within the use area.

Livestock would graze the North Paiute (high elevation) use area on May 16th to July 17th, which generally encompasses the peak of summer temperatures. This use area contains the entire[10] fisheries habitat[11] and the majority of the riparian habitats on the PMA. This use area also contains the majority of the spring systems found within the allotment. Typically hot season grazing results in concentrated livestock use within riparian areas, thereby negatively impacting the associated aquatic habitats. These impacts would be further elevated due to the lack of off site water within this use area, which is limited to only two water troughs. One of these troughs lies on the ridge northeast of the North Fork of Battle Creek while the other lies on a ridge to the north of the headwaters of Paiute Creek. Although these troughs are in good locations to help limit livestock concentrations within LCT habitats, they would provide little relief to the numerous springs that exist in the approximately 49,000 acre use area.

Impacts to the fisheries resources within this use area are compounded by the sensitivity of the stream channels to disturbance, which is especially critical for Bartlett Creek due to its poor recovery potential and future ability to support a metapopulation of LCT. Overall, the complexity of the topography, minimal off-site water developments, and season of use within this use area would make efforts to maintain or improve riparian and aquatic habitats difficult. Herding is the only method to alleviate these problems, yet to date these activities have failed to some degree. The non-attainment of the SRH and allotment objectives, as determined by the MASR, illustrates the challenges associated with this season of use in the NPHUA.

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[10] Paiute Creek is the boundary between South and North Paiute use areas, therefore it will be considered during the analysis for both use areas.

[11] Fisheries habitat is defined as streams that could potentially support salmonids based on their temperature regime, watershed size, and stream flow pattern.

From July 18th to October 6th livestock would graze the SPUA. This use area is divided from NPHUA by Paiute Creek. This use area contains Deer Creek and shares the boundary with the use area to the north with Paiute Creek. Both streams contain reaches that are FAR with Paiute having one reach being at PFC. Typically hot season grazing results in concentrated livestock use within riparian areas, thereby negatively impacting the associated aquatic habitats. Fall grazing often increases the potential for heavy willow (*Salix*) utilization levels, which is primarily due to the plants high palatability during this time period. These factors plus the topographical complexity of the use area would make efforts to maintain or improve aquatic habitats difficult. The abundance of livestock water developments away from riparian and aquatic habitats within the use area and herding efforts would reduce areas of concentrated use within these sensitive habitats, yet to date these activities have failed to some degree. The non-attainment of the SRH and allotment objectives, as determined by the MASR, illustrate the difficulties associated with this season of use although all riparian areas within this use area are making progress toward attainment of the Standards.

This grazing alternative proposes to continue the existing grazing system, which has led to the non-attainment of the SRH and allotment specific objectives, as indicated in the MASR. Therefore, it is likely that these impacts would continue if this alternative was selected.

4.3.2 ALTERNATIVE 2 - WINTER USE

This alternative proposes to divide the SPUA into two separate use areas, a high elevation (approximately 39,300 acres) and a low elevation (approximately 32,200 acres). It also proposes to decrease the hot season use within the NPHUA and also the SPHUA

Under this system, livestock would graze the NPLUA, which is approximately 49,000 acres, from March 15th to May 15th, which is the same season of use and intensity as described in Alternative 1. Therefore, impacts to the fisheries and aquatic resources would be the same as those described for Alternative 1 for this season of use.

Livestock would graze the NPHUA from May 16th to June 30th. This use area contains the entire fisheries habitat (see footnote 11 on previous page) and the majority of the riparian habitats on the PMA. This use area also contains the majority of the spring systems found within the allotment. Typically hot season grazing results in concentrated livestock use within riparian areas, thereby negatively impacting the associated aquatic habitats. However, the hot season use within this use area is limited to ten days using Platts' (1990) definition of hot season use within the Great Basin. Platts' definition provides a good general timeframe for this season within the Great Basin, but in high elevational areas in the northern portion of the Great Basin the hot season typically does not occur until July 1st. Therefore impacts to the fisheries and aquatic resources within this use area are reduced compared to Alternative 1. The complexity of the topography and minimal off-site water developments within this use area would require herding to prevent areas of livestock concentration. The relatively cool season of use would greatly

improve the effectiveness of herding efforts, which would prevent areas of livestock concentrations. These efforts would aid in the maintenance or improvement of riparian and aquatic habitats within this use area.

From July 1st to September 6th livestock would graze the SPHUA, which is approximately 39,200 acres. This use area is separated from NPHUA by Paiute Creek. This use area contains Deer Creek and Paiute Creek. Both streams contain reaches that are FAR with Paiute having one reach being at PFC. Typically hot season grazing results in concentrated livestock use within riparian areas, thereby negatively impacting the associated aquatic habitats. These factors plus the topographical complexity of the use area would make efforts to maintain or improve aquatic habitats difficult. The abundance of livestock water developments away from riparian and aquatic habitats within the use area and adequate livestock herding would help reduce areas of concentrated use within these sensitive habitats.

From November 1st to January 15th livestock would graze the SPLUA. This use area is approximately 32,200 acres and contains minimal perennial aquatic environments, which are limited to springs. Several factors would minimize impacts to these resources, thereby allowing the attainment of the allotment objectives and the SRH. These factors are listed below:

- Winter and early spring seasons of use are typically the most compatible with conserving riparian values compared to other seasons of use. Generally, during winter and spring, livestock are widely distributed with proportionate forage utilization throughout an area.
- Numerous ephemeral waters exist throughout this use area that would be beneficial for livestock dispersion over the range, minimizing areas of concentrated activity.
- Herding livestock would promote a broad distribution throughout the use area The slope of this use area is very low similar to the NPLUA, which would further contribute to a broad distribution of livestock within the use area.

The attainment of the SRH and allotment objectives would likely be achieved under Alternative 2 in the quickest period of time with minimal adjustments to the intensity or duration of grazing compared to the other alternatives.

4.3.3 ALTERNATIVE 3 - PROPOSED ALTERNATIVE

Under this alternative, the NPHUA would be split into two use areas. Livestock would graze the NPLUA from March 15th to May 15th, which is the same season of use proposed in Alternative 1. The NBUA would be grazed from May 16th to July 17th. This use area is approximately 23,000 acres smaller than the NPHUA and has the same season of use, which would result in greater negative impacts to the aquatic and riparian resources than those described for Alternative 1. This is due to the increased concentration of livestock within the use area, which is a result of the use area being reduced by approximately 46% compared to Alternative 1. In light of the sensitivity of the habitats within this portion of the allotment, coupled with: nearly twice the intensity of livestock grazing, the hot season of use, minimal off site livestock water developments and the topographical complexity, there would likely be major adverse impacts to

Battle Creek (including the North Fork) and Bartlett Creeks, which are both potential habitat for LCT (USFWS 1995) with the North Fork being occupied by LCT.

The SBUA is approximately 66,700 acres in size and combines a portion of the NPHUA with the SPHUA in Alternative 2. Impacts would be the same as those described for the SPHUA Alternative 2, yet the season of use would be extended to October 6th and the intensity of livestock grazing would be decreased through the increased use area size. The extension into the fall season would increase the potential for heavy willow (*Salix*) utilization levels, due to the plants high palatability that stems from the higher sugar concentration in the shoots during this time period. Although the increased size of the use area would aid in livestock distribution, the topographical complexity of the use area would make efforts to maintain or improve aquatic habitats difficult. The abundance of livestock water developments away from riparian and aquatic habitats within the use area and adequate herding would reduce areas of concentrated use within these sensitive habitats.

4.3.4 ALTERNATIVE 4 - NO LIVESTOCK GRAZING

Under this alternative, no livestock grazing would be authorized within Paiute Meadows Allotment. The removal of all livestock under this proposal would reduce the threat of potential adverse impacts to fisheries and aquatic resources. The potential would not be eliminated since the area would continue to be inhabited with wild horses. If wild horse populations exceed AML, the degree of impact to fisheries and aquatic resources and the range in general would be more severe since wild horses maintain a year round presence.

Please refer to the Paradise -Denio Grazing EIS (1982) for the additional impacts to aquatic/riparian resources from the No Livestock Grazing Alternative.

4.4 Terrestrial Wildlife

This section is subdivided into priority species and special status species.

Priority Species

Priority species for the PMA include mule deer, pronghorn antelope and Neo-tropical Migrant bird species associated primarily with riparian areas. California bighorn sheep and Greater sage-grouse are considered in the Special Status Species section below. Analyzing impacts on these species will provide a reasonable assessment of important wildlife habitat communities. The selected priority species are associated with sagebrush steppe and mid-elevation riparian systems. Attainment of the Terms and Conditions and the allotment objectives (Appendix 2 & 3) would ensure healthy wildlife populations and other wildlife related objectives.

Mule deer
Livestock and wild horse grazing during the hot and dormant seasons from mid June through March primarily affect mule deer. Hot season of use tends to concentrate livestock in riparian and upland areas where green forage remains. Riparian grazing removes both herbaceous and woody vegetation that provides cover and forage for mule deer year round. Dormant season grazing by livestock often includes a substantial amount of browse, particularly antelope bitterbrush, mountainmahogany and other palatable shrubs. Mule deer depend on these shrubs as a source of protein and escape and thermal cover for the summer, fall, and winter months.

Pronghorn antelope
Pronghorn antelope habitat often overlaps with areas preferred by livestock and wild horses during much of the year. Pronghorn prefer open terrain of moderate slope with access to water. Although there is little forage competition, all three species utilize forbs in the spring and browse shrubs in the dormant season. One area where livestock and wild horses graze that would be likely to affect pronghorn is on upland meadows, which provide green, succulent forage. Meadows grazed at light to moderate levels have increased forb composition desired by antelope. Heavily grazed meadows have decreased productivity of grasses and forbs that reduce the quality of pronghorn forage within these areas.

Neo-tropical Migrant Birds
Grazing can impact the quantity and quality of riparian habitats that support Neo-tropical Migrants. Grazing animals can remove herbaceous or woody vegetation that support nests and provide seeds, buds and leaves to birds. Decreased vegetation due to grazing also decreases insect production, which decreases food availability of insectivores. Grazing can lead to nest disturbance and trampling. Abusive grazing practices can lead to loss of plant species and structural classes due to direct grazing or browsing or indirectly through changes to the hydrology of riparian areas. These changes would lead to habitat loss or changes that reduce the number of bird species supported within each riparian area.

4.4.1 ALTERNATIVE 1 - EXISTING SYSTEM

Mule deer
In this alternative, hot season grazing occurs in the NPHUA and SPUA. Hot season grazing would be expected to remove upland browse vegetation, including bitterbrush and mountainmahogany, from mule deer use, slowing the improvement of mule deer habitats and populations. Shrub use by livestock would be concentrated in easily accessible areas. Light to moderate levels of grazing on upland habitats would maintain or improve habitats for mule deer.

Riparian vegetation communities are of high value to mule deer. Hot season grazing in these use areas has resulted in adverse impacts to some woody riparian communities, as indicated in the MASR and in Chapter 3.2 Fisheries/Aquatic Resources section.

Alternative 1 includes dormant season grazing in the NPLUA SPUA. These use areas contain winter mule deer habitat, therefore minimal impacts to mule deer habitat could potentially occur.

Pronghorn Antelope
Hot season grazing would occur in the NPHUA and SPUA in Alternative 1. These use areas contain both summer and yearlong pronghorn habitats. Hot season grazing has the potential to impact upland browse and lentic riparian habitats if levels exceed 50% utilization, although light to moderate levels of grazing would improve forage quantity on riparian habitats for pronghorn.

It is likely that yearlong horse use combined with hot season livestock use could result in over utilization of the meadows in this area. Continued use at this level could result in decreased production and availability of summer forbs for antelope.

Alternative 1 includes dormant season grazing in the NPLUA and SPUA. These use areas contain winter pronghorn habitat, therefore impacts to pronghorn habitat could potentially occur.

Neo-tropical Migrant Birds
In this alternative, hot season grazing occurs in NPHUA and SPUA. Hot season livestock grazing is likely to affect Neo-tropical Migrants. During this period, livestock tend to concentrate more in riparian areas, which are the primary habitat component for Neo-tropical Migrants, compared to uplands. Riparian vegetation communities of high value to Neo-tropical Migrants are more common in the Bartlett, Battle, Butte, and Paiute Creeks.

Hot season grazing in these use areas has adversely impacted woody riparian communities in the PMA, as indicated in the MASR and in Chapter 3.2 Fisheries/Aquatic Resources that are important for Neo-tropical Migrants. Riparian communities would be grazed every year during the spring and early summer. The livestock grazing within these areas has the potential to disturb or displace nesting birds.

4.4.2 ALTERNATIVE 2 - WINTER USE

Under this alternative, livestock would graze every year with no rest during a portion of the hot season in both the NPHUA and SPHUA. The duration of hot season grazing would be reduced by approximately 63% in the NPHUA from the existing system (alt. 1).

Mule deer
Similar impacts would occur as described in Alternative 1, except the impacts associated with hot season use would be reduced in NPHUA and the impacts associated with the dormant season grazing would be reduced in the SPHUA. However, there is a potential for increased impacts to riparian areas in the SPHUA from increased hot season livestock grazing.

Dormant season grazing impacts would be the same as described in Alternative 1 for the NPLUA, except livestock grazing would be extended by 2.5 months in the SPLUA This use area contains a portion of the winter habitat for mule deer on the PMA. However, livestock grazing has occurred in this area during the majority of the evaluation period (see Chapter 2.2 - Table 1). Potential impact from this season of use to mule deer habitat is limited to forage competition.

The large size of this use area compared to the small amount of mule deer habitat would result in minimal impacts.

Pronghorn Antelope
These use areas encompass the same area as discussed in Alternative 1, except the SPUA is divided into two use areas. The impacts associated with hot season use would be reduced in NPHUA and the impacts associated with the dormant season grazing would be reduced in the South Paiute high elevation use area. However, there is a potential for increased impacts to riparian areas in the SPHUA from increased hot season livestock grazing.

Dormant season grazing impacts would be the same as described in Alternative 1 for the NPLUA, except livestock grazing would be extended by 2.5 months in the SPLUA. This use area contains a portion of the winter habitat for pronghorn on the PMA. However, livestock grazing has occurred in this area during the majority of the evaluation period (see Chapter 2.2 - Table 1). Potential impact from this season of use to pronghorn habitat is limited to forage competition. The large size of this use area compared to the amount of pronghorn habitat would likely result in minimal impacts.

Neo-tropical Migrant Birds
The impacts associated with hot season use would be similar to those described in Alternative 1. Except the impacts associated with hot season use would be reduced in the NPHUA. However, there is a potential for increased impacts to riparian areas in the SPHUA from increased hot season livestock grazing.

4.4.3 ALTERNATIVE 3 - PROPOSED ACTION

Mule deer
Impacts to mule deer in the NPLUA and SPLUA would be the same as described in Alternative 2. Impacts to mule deer habitat in the high elevation use areas would be similar as described in Alternative 1. The NBUA would have an increased concentration of livestock grazing, due to the smaller use area size. This increased concentration would likely result in adverse impacts to riparian communities.

Pronghorn Antelope
Impacts to pronghorn antelope would be similar to those described for mule deer above.

Neo-tropical Migrant Birds
Impacts to Neo-tropical Migrants would be similar to Alternative 1. A substantial portion of the use would be expected to occur in riparian communities including aspen stands, which are important to Neo-tropical Migrants nesting and foraging habitat. This grazing would be expected to decrease cover and affect the prey base for Neo-tropical Migrants.

4.4.4 ALTERNATIVE 4 - NO LIVESTOCK GRAZING

As vegetation evolves from mid seral toward potential natural community it is anticipated that the composition of the wildlife community would change. For those species that prefer early to mid seral vegetative communities, their populations would decrease.

Mule deer

All the palatable shrub production in mule deer habitats would be available for wildlife use including mule deer. Riparian communities, especially those dominated or potentially dominated by woody vegetation would be expected to maintain or improve herbaceous and woody vegetation cover consistent with mule deer cover and forage needs. Where mule deer habitats are less than optimal as a result of past livestock grazing of forage, improvements in forage quantity and quality and improvements to vegetation structure would be expected to occur more rapidly than in other alternatives. However, this would only occur if wild horse populations are kept at or below AML.

Pronghorn Antelope

Any potential competition between antelope and livestock would be eliminated. In the NPHUA or NBUA meadows would be expected to improve in composition and production. Continued yearlong grazing by wild horses would be expected to maintain meadows favored by horses in less than optimal condition for summer forb availability by pronghorn.

Neo-tropical Migrant Birds

Riparian communities, especially those dominated, or potentially dominated, by woody vegetation would be expected to maintain or improve herbaceous and woody vegetation cover consistent with Neo-tropical Migrant habitat structure and forage needs. Where Neo-tropical Migrant habitats are less than optimal as a result of past livestock grazing, improvements in forage quantity and quality and improvements to vegetation structure would be expected to increase. This alternative, however, would result in a decrease in habitat for those species that prefer early to mid successional riparian communities. However, this would only occur if wild horse populations are kept at or below AML.

4.4.5 Sensitive Terrestrial Wildlife Species (Federally listed Threatened, Endangered, or Candidate species, including BLM Sensitive and USFWS Species of Concern)

Little specific information is known about the current status or habitat conditions within the PMA for a number of these species. Discussion of the potential impacts to these species would be in general terms related to their potential habitats.

Pygmy rabbit

Pygmy rabbits occupy tall, dense stands of big sagebrush growing on deep, well drained, loamy soils containing a good understory of native grasses. Within the PMA, such sites would likely

occur in small patches on the edge of upper elevation intact floodplains or on old floodplains that have been invaded by sagebrush following stream downcutting. Livestock or wild horse grazing could affect these sites during the hot season, when grazing is concentrated near water sources in or near the floodplain or during the spring when the forage provided by these sites is of high quality for livestock use.

In the alternatives with livestock (1, 2, and 3), hot season grazing use occurs during higher elevation portions of the allotment, which include the sagebrush plant communities. Livestock or wild horse grazing has the potential to decrease the native grass cover of these sites through direct harvest of grass and physical damage to sagebrush when livestock use these sites for grazing and shade. This could affect pygmy rabbits by decreasing forage availability and altering the sagebrush and herbaceous cover. Livestock and wild horses also damage pygmy rabbit burrows through trampling.

Spring livestock grazing would occur on the NPLUA, which are dominated by salt desert scrub communities. There is limited potential pygmy rabbit habitat within this use area. Therefore, there would be no impacts from livestock or wild horse grazing to pygmy rabbit habitats.

Livestock would not affect pygmy rabbit habitats if Alternative 4 (no grazing) were implemented. However, potential pygmy rabbit habitats in the northern portion of the allotment would be subject to impacts similar to those discussed above due to continued wild horse grazing.

Pale Townsend's big-eared bat
Pacific Townsend's big-eared bat
Spotted bat
Small footed-myotis
Long-eared myotis
Fringed myotis
Long-legged myotis
Yuma myotis
Potential impacts to bats from implementing any of the alternatives that include livestock grazing are largely unknown. Grazing would have no impact on breeding or hibernation sites. Hot season grazing could result in changes to riparian systems that are thought to provide a major portion of the flying insects that bats depend upon as prey. Hot season grazing that results in declines in insect production from riparian and meadow systems would be the primary mechanism that livestock grazing could affect bats.

Hot season grazing occurs in each alternative that allows livestock grazing on the PMA. However, in each of these alternatives hot season grazing occurs primarily in use areas with riparian and meadow areas. Potential impacts on bats of implementing any of the alternatives that include livestock grazing are related to the presence of woody riparian communities or large, healthy meadow systems. Therefore it is anticipated that livestock grazing may have impacts on these bat species.

Preble's shrew
Northern goshawk
Nevada viceroy
These three species are riparian obligates associated with woody sites or large semi-wet meadows in the case of the shrew. Hot season livestock grazing could result in the direct reduction of vegetation, compaction of meadow soils, and changes in vegetation structure within riparian systems that decrease the habitat quality of these species.

Hot season livestock grazing occurs in each grazing alternative on the PMA. However in each of these alternatives hot season grazing occurs primarily in the NPHUA or NBUA. Therefore it is anticipated that livestock grazing may have potential impacts on these species if present.

Western burrowing owl
Western burrowing owl habitat and colonies may occur in the eastern portions of the PMA in the spring and fall. Under all the grazing alternatives this area would be grazed during the spring and dormant seasons. Livestock use would overlap little with the burrowing owl presence. Impacts to this species are generally limited to trampling of their burrows and indirectly affecting prey base populations.

Least bittern
No known potential habitat exists on public land within the PMA. Therefore, none of the alternatives would impact the least bittern.

White-faced ibis
White-faced ibises are colonial nesters, associated with tule marshes in the Great Basin, and no suitable habitat exists on public lands within the PMA. Therefore, none of the alternatives would impact the white-faced ibis.

California bighorn sheep
Alternatives 1, 2, & 3
This species occupies a small portion (currently less than 7,000 acres) of the mountainous areas within the PMA. The potential, but currently unoccupied habitat, covers about 25 percent of the allotment. Although bighorn sheep, livestock and wild horses are primarily grazers, bighorn sheep habitat preference overlaps with livestock and wild horse preferred grazing areas only slightly, except on mountain meadow habitats. Bighorn sheep prefer rugged, rocky terrain and usually are found within a quarter mile of steep, rocky escape cover. Livestock and wild horses are usually found on more gentle terrain and avoid rocky areas if possible. Interaction is most likely at water sources seasonally in or near steep rocky country. Livestock, wild horses, and bighorn sheep are not closely related, so the potential for disease transmission between these animals is considered low.

In these alternatives, hot season grazing would occur in the NPHUA, which includes the NBUA. Livestock would be expected to use most of the use area, while bighorn sheep would be expected to summer at the upper elevations of the use area. There may be some impacts from livestock on bighorn sheep. Spring grazing would occur in the NPLUA which has minimal potential for bighorn sheep. Dormant season grazing would occur in the SPUA where bighorn sheep occupy the more rugged habitat. Overlap between bighorn sheep and livestock would be minimal, therefore few impacts to bighorn sheep would be anticipated. However, wild horses occur yearlong in the bighorn sheep occupied and potential habitats. As long as wild horse populations are kept at or below AML minimal impacts are anticipated.

Alternative 4
There would be no impact on bighorn sheep from grazing under this alternative. However, wild horse populations would limit optimal bighorn habitat if they exceed AML.

Greater sage-grouse
In October 2001, Nevada Governor, Kenny Guinn, introduce the Nevada Sage Grouse Conservation Strategy. This strategy includes development of a task force charged with the task of developing a plan that would conserve and protect Nevada's sage grouse and their habitat. The Nevada Sage Grouse Conservation Strategy guidelines would be adopted where possible. Under all alternatives the BLM Interim Sage Grouse Management Guidelines (IB 2001-28) would be applied.

Alternative 1

Sage-grouse are year round occupants of the sagebrush communities within the PMA. Livestock and yearlong wild horse grazing indirectly affects sage-grouse through alterations of habitat components important to sage-grouse during the nesting and brood rearing periods (March through September). This period corresponds to the spring and hot grazing seasons.

Grazing of grasses and forbs in nesting habitat decreases the herbaceous cover that provides visual screening of sage-grouse nests occur under sagebrush plants. Data collected on the Sheldon National Wildlife Refuge just northwest of the PMA indicate that nests without herbaceous vegetation greater than about seven inches are more subject to predation than nests with taller herbaceous cover. Sage-grouse hens require forbs in their diets prior to egg laying to be successful in raising chicks. Heavy grazing during the hot season on meadows and high elevation sites decrease the production of insects and forbs required by the rapidly growing sage-grouse chicks. Heavy grazing results in decreased herbaceous vegetation, including forbs, within nesting and brood rearing habitats. Some grazing has been shown to be effective in restoring forb production on meadows that have not been grazed for a number years.

Hot season grazing could also affect nesting sage-grouse within both high elevation use areas. Much of the sage-grouse incubation period occurs prior to the rapid growth period of bunch grasses and tall forbs that provide nest screening. Standing, residual vegetation from the previous growing season provides screening during much of the nesting period. Removal of grasses in the previous season by grazers may indirectly increase sage-grouse nest predation.

Spring grazing would occur in the NPLUA, where a small portion of potential nesting habitat exists. The sage-grouse nesting habitats are associated with the sagebrush zones at the top of the Black Rock Range while much of the livestock grazing occurs on the lower slopes of the range in the salt desert scrub zone where temperatures are warmer and slopes are gentler. Therefore, there would minimal impacts to nesting sage grouse by livestock in the spring use area.

Hot season livestock grazing would occur in the NPHUA, which includes approximately half of the nesting and brood rearing habitats in the PMA. There are meadows preferred by brooding sage-grouse within this use area; therefore these limited habitats are crucial for sage-grouse in the area. The MASR determined that several of these meadows were not meeting the short term allotment specific objectives. It also indicated that the SRH were not being attained, specifically on riparian areas. The combination of livestock grazing during the hot season and yearlong wild horse use would likely result in the meadows not producing the quantity or quality of forbs or insects required by sage-grouse brood.

Hot season livestock use within the NPHUA would be likely to maintain sub-optimal sage-grouse nest screening on portions of the use area. The portions affected would be associated with water sources used by livestock during the summer months. The available meadows are important for sage-grouse and likely to be potentially impacted by livestock and/or wild horses.

Alternative 2

In this alternative, livestock grazing seasons and use areas would generally correspond to those described in Alternative 1. Livestock would be moved between use areas during the nesting season and the brood rearing season, but livestock use would occur in large areas of sage-grouse brood rearing habitats in the NPHUA and SPHUA during the hot season. Impacts within the NPHUA would be reduced, due to the reduced hot season of use. The impacts to sage-grouse within SPHUA would be the same as described for Alternative 1.

Alternative 3

Impacts would be similar to those described in Alternative 1, except impacts to the riparian areas of the NBUA would be greater, due to the increased concentration of livestock and hot season of use. The livestock grazing in the SPLUA would have minimal impacts, due to the limited extent of sage-grouse habitat and season of livestock use.

Alternative 4

The removal of livestock grazing from the PMA would result in potential changes to sage-grouse nesting and brood rearing habitats. Elimination of grazing from sagebrush dominated areas used as nesting habitats would increase herbaceous vegetation desirable for nest screening. The area of nesting habitat where herbaceous vegetation screening would increase above the seven-inch threshold is unknown but may only involve a portion of these habitats. Continuous yearlong wild horse grazing would maintain some areas with less than the optimum nest screening cover.

Brood rearing habitats would not be expected to experience substantial changes from present conditions. The continued grazing by wild horses of these meadow systems, primarily in the western portion of the PMA, would allow changes in meadow conditions that would lead to incremental improvement of forb and insect availability for sage-grouse broods.

4.5 Vegetation

Proper vegetative management maintains or improves the plant community for protection of soil and water resources. Sufficient seedling and young plant recruitment is needed to maintain or increase status of species in the community. Development of adequate seedling root growth is necessary (to prevent uprooting by grazing animals) for seedlings to develop good vigor and produce viable seed. Ecological status inventory identifies that 6 percent of the PMA to be at potential natural community, 69 percent at late status, 22 percent at mid, 1 percent at early and 2 percent poor condition seeding.

For the analysis the following terms are defined below:

- **Boot Stage-** when first reproductive culm is in the sheath; that point where the discernible floral parts within the sheath and up to emergence of floral parts
- **Dough Seed-** seed with milky juice
- **Early Critical Growth Period-** boot to soft dough
- **Late Critical Growth Period**-soft dough to mature seed

4.5.1 ALTERNATIVE 1 - EXISTING SYSTEM

Livestock would graze during the early critical growth period for plants in the NPLUA. This early grazing would allow for the recovery of the grazed upland plants. Portions of the NPLUA are in early and mid status. This proposal would allow establishing upland plants to increase vigor, productivity, and cover. Grazing during the early critical growth period may allow for seedling establishment but may not allow adequate seedling root growth necessary to prevent uprooting by grazing animals. Ecological status would be maintained for upland plant communities.

Livestock would graze continually during the critical growth period for upland plants in the NPHUA. Portions of the NPHUA are in mid status. Sufficient seedling and young plant recruitment is needed to maintain or increase status of species in the community. Ecological status would decline for upland plant communities without periodic rest during the critical growth period. Hot season use would adversely impact riparian vegetation.

Livestock would graze after the critical growth period for upland plants in the SPUA. This system would allow existing grasses and forbs to increase vigor, productivity, cover, and to establish new seedlings. As grasses and forbs dry protein content decreases, therefore livestock grazing shifts to palatable shrubs in late summer and fall. This shift in grazing often results in over utilization and subsequent adverse impacts to those species. Livestock prefer live over dead material and leaf over stem. As palatable species cure alternate species would be consumed in an effort to maintain caloric status. Overall, the grass and forb communities would improve over the long term within this use area, yet the palatable shrubs would decrease. This would allow existing upland plants to increase cover and increase establishment of seedlings. Hot season use

would adversely impact riparian vegetation. Livestock would impact biological crusts when soils are dry. Ecological status would improve for upland plant communities.

This alternative would result in adverse impacts to riparian and upland vegetation, due to the non-attainment of the SRH.

4.5.2 ALTERNATIVE 2 - WINTER USE

Livestock would graze during the early critical growth period for plants in the NPLUA. This early grazing would allow for the recovery of the grazed upland plants. Portions of the NPLUA are in early and mid status. This proposal would allow establishing upland plants to increase vigor, productivity, and cover. Grazing during the early critical growth period may allow for seedling establishment but may not allow adequate seedling root growth necessary to prevent uprooting by grazing animals. Ecological status would be maintained for upland plant communities.

Livestock would graze continuely during the critical growth period for upland plants in the NPHUA. Portions of the NPHUA are in mid status. Sufficient seedling and young plant recruitment is needed to maintain or increase status of species in the community. Ecological status would decline for upland plant communities. The shortened duration of hot season grazing would improve riparian areas.

Livestock would graze after the critical growth period for upland plants in SPHUA. Portions of the SPHUA are in mid status. This system would allow existing grasses and forbs to increase vigor, productivity, cover, and to establish new seedlings. As grasses and forbs dry protein content decreases, therefore livestock grazing shifts to palatable shrubs in late summer and fall. This shift in grazing often results in over utilization and subsequent adverse impacts to those species. Livestock prefer live over dead material and leaf over stem. As palatable species cure alternate species items would be consumed in an effort to maintain caloric status. Overall, the grass and forb communities would improve over the long term within this use area, yet the palatable shrubs would decrease. This would allow existing upland plants to increase cover and increase establishment of seedlings. Hot season use would adversely impact riparian vegetation. Ecological status would improve for upland plant communities.

Livestock would graze after the critical growth, when plants are dormant in the SPLUA. Portions of the SPLUA are mid status. Grazing during the dormant season would maintain or improve the plant communities. Livestock grazing during the fall would allow for healthy biological soil crusts. Livestock grazing would occur when crusts are less vulnerable to shear and compressional forces. It is important to remove livestock before wet season's end to allow recovery of biological crusts. Ecological status would improve for upland plant communities.

This alternative would result in beneficial impacts to riparian and upland vegetation in the majority of the PMA. Impacts to riparian areas within the SPUA could occur.

4.5.3 ALTERNATIVE 3 - PROPOSED ACTION

Livestock would graze during the early critical growth period for plants in the NPLUA. This early grazing would allow for the recovery of the grazed upland plants. Portions of the NPLUA are in early and mid status. This proposal would allow establishing upland plants to increase vigor, productivity, and cover. Grazing during the early critical growth period may allow for seedling establishment but may not allow adequate seedling root growth necessary to prevent uprooting by grazing animals. Ecological status would be maintained for upland plant communities.

Livestock would graze continuely during the critical growth period for upland plants in the NBUA. Portions of the NBUA are in mid status. Sufficient seedling and young plant recruitment is needed to maintain or increase status of species in the community. Ecological status would decline for upland plant communities. Hot season use would adversely impact riparian vegetation.

Livestock would graze after the critical growth period for upland plants in the SBUA. Portions of the SBUA are in mid status. This system would allow existing grasses and forbs to increase vigor, productivity, cover, and to establish new seedlings. As grasses and forbs dry protein content decreases, therefore livestock grazing shifts to palatable shrubs in late summer and fall. This shift in grazing often results in over utilization and subsequent adverse impacts to those species. Livestock prefer live over dead material and leaf over stem. As palatable species alternate species would be consumed in an effort to maintain caloric status. Overall, the grass and forb communities would improve over the long term within this use area, yet the palatable shrubs would decrease. This would allow existing upland plants to increase cover and increase establishment of seedlings. Hot season use would adversely impact riparian vegetation. Ecological status would improve for upland plant communities.

This alternative would result in adverse impacts to riparian and upland vegetation and would increase the potential for non-attainment of the SRH.

4.5.4 ALTERNATIVE 4 - NO LIVESTOCK GRAZING

Reduced utilization of the vegetative resources would be achieved resulting in improved ecological condition. This improvement would increase vigor, production, cover, and composition of desirable species.

4.5.5 Sensitive Plant Species (Federally listed Threatened, Endangered, or Candidate species, including BLM Sensitive and USFWS Species of Concern)

The following species were also included in a Species List provided by the FWS as species of concern that may occur within the allotment. Currently there are no records that these species occur within the SMA. However there may be suitable habitat within the allotment and future inventories may determine that one or more species are present.

Smooth stickleaf (*Mentzelia mollis*)
Crosby buckwheat (*Eriogonum crosbaye*)
Windloving buckwheat (*Eriogonum anemophilum*)
Grimy ivesia (*Ivesia rhypara var. rhypara*)
These species are not known to occur but have the potential to exist within the PMA. Impacts from livestock grazing within the PMA on these species would be minimal due to their specialized habitat requirements. However, if one or more of the listed plants does occur within the allotment little interaction between any of the plant species and livestock grazing would be expected. All are rare because of limited habitats and these habitats have low value for livestock. In other areas where livestock grazing occurs and the plant species is present, livestock grazing has not been identified as an important risk factor for any of the species. Therefore it is unlikely that livestock grazing within the PMA would affect the species.

4.6 Noxious Weeds

Noxious weeds are very aggressive introduced plants that readily occupy disturbed sites. They are highly competitive and can effectively compete with and replace native perennial plant species. Once established, monocultures of weeds can develop and are accompanied by declining resource values, such as lack of plant biodiversity, wildlife habitat and livestock forage. Noxious weed infestations can also impact aesthetic values and reduce recreation and Wilderness experiences. Noxious weed infestations are frequently found in disturbed areas along roads and burned areas.

4.6.1 ALTERNATIVE 1 - EXISTING SYSTEM

Under alternative 1 there is a higher risk of noxious weed populations increasing in NPHUA, as grazing management within this use area is not achieving objectives or SRH. More areas within the allotment would be subject to concentrated livestock grazing and continued wild horse and burro use would create disturbed areas from grazing and trampling of vegetation. These disturbed areas would be more susceptible to the establishment of noxious weed populations.

4.6.2 ALTERNATIVE 2 - WINTER USE

Under this alternative, the NPHUA has a two week shorter grazing period. If the allotment specific objectives and SRH are achieved the risk of increasing noxious weeds or establishing new populations is low for this alternative. The spread of noxious weeds would be hampered by the gradual improvement of vegetation and watersheds, ultimately deterring the establishment of noxious weeds. Concentrated livestock grazing and wild horse use would continue to create disturbed sites that would be subject to noxious weed establishment. However these impacts would be fewer compared to alternatives 1 & 2. The degree of establishment would be dependent on any available noxious weed seed source, such as vehicles. Based on the limited amount of disturbance and the ability for existing vegetation to heal, this alternative would pose a low risk for spreading noxious weeds.

4.6.3 ALTERNATIVE 3 - PROPOSED ACTION

Under this alternative there is a higher risk of noxious weed populations increasing within the NBUA and SBUA. The existing system at similar livestock stocking rates as this alternative did not achieve allotment objectives or SRH. If the allotment specific objectives and SRH are achieved, the risk of increasing noxious weeds or establishing new populations is low for this alternative. The spread of noxious weeds would be hampered, as vegetation and watersheds would gradually improve, ultimately deterring the establishment of noxious weeds

4.6.4 ALTERNATIVE 4 - NO LIVESTOCK GRAZING

Under this alternative there would be no livestock grazing authorized. The potential for weed infestations would be reduced compared to the other alternatives. There would be fewer disturbed areas associated from livestock grazing activities.

4.7 Soils

Soils would be managed to maintain the natural habitat of the area and to minimize the potential for accelerated (man caused) wind and water erosion. To maintain soil processes a healthy, productive and diverse plant community is necessary. Improved ecological condition would increase productivity, litter, soil fertility, infiltration and nutrient cycling. Healthy plant communities must be able to complete their life cycle by preventing damage during the critical growth period. Critical growth period in a plant growth cycle is when food reserves are the lowest and grazing is the most harmful. This period begins with the boot stage and closes with complete mature seed. Periodic rest during the critical growth period allows for plants to increase vigor, maintain and increase root reserves, increase density and produce seed.

Adverse impacts from wild horses would continue under all alternatives, since wild horses are present year-round on the PMA.

The largest concentration of biological soil crusts occurs on the lake plain terrace and fan piedmont. Soil units are: Sondoa-Wendane-Isolde; Wendane-Humboldt; Boton-Mazuma,

Toulon-Bluewing; McConnel-DunGlen-Pumper; Shawave-Deadyon; Aboten-Tumtum-Oxcorel; and Simon-Fulstone-Welch. These landforms and soils occur primarily in the NPHUA, NPLUA and SPUA

4.7.1 ALTERNATIVE 1 - EXISTING SYSTEM

Livestock would graze during the early critical growth period for plants in the NPLUA. This early grazing would allow for the recovery of the grazed upland plants. Portions of the NPLUA are susceptible to high wind erosion. This proposal would allow existing plants to increase cover and increase establishment of seedlings, thus reducing bare soil and lessening the impacts from wind erosion. Livestock grazing during the early critical growth period would allow for healthy biological soil crusts. Livestock grazing would occur when crusts are less vulnerable to shear and compressional forces. It is important to remove livestock before the end of the wet season to allow recovery of biological crusts.

Livestock would graze after the critical growth period for upland plants in the SPUA. Portions of the SPUA are susceptible to high water and wind erosion. This would allow existing upland plants to increase cover and increase establishment of seedlings, thus reducing bare soil and lessening the impacts from erosion. Hot season use would impact riparian vegetation increasing water erosion. Livestock would impact biological crusts when soils are dry.

4.7.2 ALTERNATIVE 2 - WINTER USE

Livestock would graze during the early critical growth period for plants in the NPLUA. This early grazing would allow for the recovery of the grazed upland plants. Portions of the NPLUA are susceptible to high wind erosion. This proposal would allow existing plants to increase cover and increase establishment of seedlings, thus reducing bare soil and lessening the impacts from wind erosion. Livestock grazing during the early critical growth period would allow for healthy biological soil crusts. Livestock grazing would occur when crusts are less vulnerable to shear and compressional forces. It is important to remove livestock before the end of the wet season to allow recovery of biological crusts.

Livestock would graze after the critical growth period for upland plants in the SPHUA. Portions of the SPHUA are susceptible to high water erosion. This would allow existing upland plants to increase cover and increase establishment of seedlings, thus reducing bare soil and lessening the impacts from erosion. Hot season use would impact riparian vegetation increasing the potential for water erosion.

Livestock would graze after the critical growth, when plants are dormant in the SPLUA. Portions of the SPLUA are susceptible to high wind erosion. Grazing during the dormant season would maintain or improve the plant communities, resulting in the protection of the soil resources from erosion. Livestock grazing during the fall would allow for healthy biological soil crusts. Livestock grazing would occur when crusts are less vulnerable to shear and compressional

forces. It is important to remove livestock before the end of the wet season to allow recovery of biological crusts.

4.7.3 ALTERNATIVE 3 - PROPOSED ACTION

Livestock would graze during the early critical growth period for plants in the NPLUA. This early grazing would allow for the recovery of the grazed upland plants. Portions of the NPLUA a are susceptible to high wind erosion. This proposal would allow existing plants to increase cover and increase establishment of seedlings, thus reducing bare soil and lessening the impacts from wind erosion. Livestock grazing during the early critical growth period would allow for healthy biological soil crusts. Livestock grazing would occur when crusts are less vulnerable to shear and compressional forces. It is important to remove livestock before soils dry to allow for the recovery of biological crusts.

Livestock would graze after the critical growth period for upland plants in the SBUA. Portions of the SBUA are susceptible to high water erosion. This would allow existing upland plants to increase cover and increase establishment of seedlings, thus reducing bare soil and lessening the impacts from erosion. Hot season use would impact riparian vegetation increasing water erosion

In the SPLUA livestock would graze after the critical growth, when plants are dormant. Portions of the SPLUA are susceptible to high wind erosion. Grazing during the dormant season would maintain or improve the plant communities, resulting in the protection of the soil resources from erosion. Livestock grazing during the fall would allow for healthy biological soil crusts. Livestock grazing would occur when crusts are less vulnerable to shear and compressional forces. It is important to remove livestock before soils dry to allow for the recovery of biological crusts.

4.7.4 ALTERNATIVE 4 - NO LIVESTOCK GRAZING

Reduced utilization of the vegetation resources would be achieved lessening soil and water erosion. Improved ecological condition would increase productivity, litter, soil fertility, infiltration and nutrient cycling.

4.8 Wild Horses

Wild horses have been present in the Black Rock Range East HMA within the PMA since before the Wild Free-Roaming Horse and Burro Act was passed December 1971. Three censuses have been conducted since the 1995 allotment evaluation along with two wild horse removals (see Chapter 3.7). For all of the alternatives horse management would remain the same as identified in the 1995 PMA FMUD.

4.8.1 ALTERNATIVE 1 - EXISTING SYSTEM

Continuation of the existing system would result in impacts due to the non-attainment of the SRH and allotment objectives as determined in the MASR. Competition between wild horses, livestock, and wildlife would increase as equine numbers increase, and would decrease following wild horse removals.

4.8.2 ALTERNATIVE 2 - WINTER USE

This alternative would maintain the same number of livestock for the same period of time in the NPLUA as alternative one. This would have no effect on wild horses because this use area is outside of the HMA and there are currently no horses present.

Alternative two would maintain the same number of livestock grazing the NPHUA. Grazing would be for a shorter period of time, effectively reducing pressure on the vegetative resource and riparian areas during the remainder of the growing season. This would result in positive impacts to the vegetative resource, the riparian areas, and to wild horses by reducing competition for forage and water.

The existing SPUA would be split into two use areas of approximately the same size. After grazing the NPHUA livestock would be herded into the SPHUA for a slightly longer period of time than they presently graze the entire SPUA, which was described in Alternative 1. At all times of the year, the majority of the Black Rock Range East HMA wild horses are found in the SPHUA.

Currently, only a few wild horses use the far west side of the SPLUA. Most of this use area is outside the HMA and impacts to wild horses would be minimal from winter livestock grazing.

4.8.3 ALTERNATIVE 3 - PROPOSED ACTION

The proposed action would graze approximately the same number of livestock (522) in the NPLUA for the same length of time as it is currently grazed. This is outside of the HMA and there are currently no horses present in this use area. No impacts to wild horses would occur.

Livestock would then move into the NBUA, which is approximately half the size of the existing NPHUA. The livestock would graze for the same length of time as they presently do under alternative one. Not many wild horses are currently utilizing the NBUA, but if their population

levels increase due to use area shifts, competition with livestock would increase and wild horses would be impacted to some degree. Livestock would graze the use area during the latter part of the growing season and the early portion of the hot season. Impacts to the vegetative resource and the riparian areas may be more than with the existing grazing system.

Livestock would then move into SBUA. Although the boundaries of the use area are different than the existing SPUA, the size would remain approximately the same. The grazing period would be the same as now exists in the SPUA. Grazing by both wild horses and livestock would be during the hot season of the year, therefore impacts would be similar to that of the existing system. Livestock would be off the allotment for a period of five weeks after which they would be moved into the SPLUA. Impacts on wild horses would be the same as for alternative 2.

4.8.4 ALTERNATIVE 4 - NO LIVESTOCK GRAZING

Under this alternative all livestock would be removed and only grazing by wild horses would occur. This would allow horses to widely disperse and would minimize potential negative impacts to resources as long as AML was maintained. These reduced impacts would allow the vegetative resource and riparian areas to improve.

4.9 Cultural Resources

Because most of the cultural resource sites in the PMA are situated on or just below the ground surface, they are susceptible to disturbance or destruction by erosional and weathering processes. While these processes occur naturally, the reduction in vegetative cover and soil disturbance resulting from ungulate grazing accelerates these processes, resulting in deterioration of cultural resource sites. In areas where there are concentrations of livestock and wild horses, cultural resource sites can also be damaged by trampling. Adverse impacts to cultural resource sites from overgrazing and trampling include modification, displacement and increased erosion of artifacts features and organic middens. This can result in the loss of valuable information regarding site function, dates of use, plants and animals utilized and past environments.

Areas in the vicinity of permanent and intermittent water sources (i.e. riparian areas) have the highest potential for cultural resource sites. Rock shelters are also rich sources of cultural data and are areas where livestock and wild horses often seek shade.

Impacts to cultural resource sites due to wild horses would occur under all alternatives.

4.9.1 ALTERNATIVE 1 - EXISTING SYSTEM

Under this alternative, cultural resources in the vicinity of Paiute Creek, Battle Creek, Bartlett Creek, Burnt Spring, Butte Creek, Rough Canyon, and Deer Creek would continue to be impacted by trampling and grazing related erosion.

4.9.2 ALTERNATIVE 2 - WINTER USE

Under this alternative, the availability of abundant water sources, low elevations, and herding would disperse livestock use reducing trampling and erosion impacts to cultural resources which would result from concentrations of livestock. Changes in season of use would also help to minimize impacts to cultural resources.

4.9.3 ALTERNATIVE 3 - PROPOSED ACTION

Under this alternative, impacts to cultural resources would be greater than under alternative 1 or 2 due to increased intensity of use and changes in season of use. Trampling and erosion of cultural resource sites would occur in areas where there are concentrations of livestock.

4.9.4 ALTERNATIVE 4 - NO LIVESTOCK GRAZING

Elimination of grazing would be beneficial to cultural resources. Vegetation cover would improve, thereby eliminating adverse impacts from livestock grazing related erosion. Impacts from livestock trampling would also be eliminated.

4.10 Native American Resources

4.10.1 ALTERNATIVE 1 - EXISTING SYSTEM

No known areas of Native American concern would be impacted by this alternative. However, there may be medicinal plants or other plants utilized by Native Americans which grow in the vicinity of Paiute Creek, Battle Creek, Bartlett Creek, Burnt Spring, Butte Creek, Rough Canyon, and Deer Creek. These could be impacted by over utilization by livestock in these areas.

4.10.2 ALTERNATIVE 2 - WINTER USE

Potential impacts to medicinal and other plants would be reduced under this alternative because of the dispersion of livestock due to the availability of abundant water sources, low elevations, and herding. Changes in seasons of use would also reduce these impacts.

4.10.3 ALTERNATIVE 3 - PROPOSED ACTION

Under this alternative, potential impacts to Native American medicinal and other plants would be greater than under alternative 1 or 2 due to increased intensity of use and changes in season of use.

4.10.4 ALTERNATIVE 4 - NO LIVESTOCK GRAZING

Elimination of grazing would be beneficial to medicinal and other plants as it would allow for regeneration of these plants in areas were they have been over utilized by livestock in the past.

4.11 Paleontology

Potential impacts to paleontological resources include the following: Trampling of surface deposits and erosion of subsurface deposits resulting from vegetation over utilization. Potential impacts to paleoenvironmental information include destruction of fossil pollen records at springs, in meadows and in dry caves. Spring developments can also lead to dessication of meadows resulting in the loss of pollen records.

4.11.1 ALTERNATIVE 1 - EXISTING SYSTEM

No known paleontological resources would be impacted by this alternative. However, any unknown paleontological/paleoenvironmental resources in the vicinity of Paiute Creek, Battle Creek, Bartlett Creek, Burnt Spring, Butte Creek, Rough Canyon, and Deer Creek would be impacted by trampling and grazing related erosion.

4.11.2 ALTERNATIVE 2 - WINTER USE

Potential impacts to paleontological/paleoenvironmental resources would be reduced under this alternative because of the dispersion of livestock due to the availability of abundant water sources, low elevations, and herding. Changes in seasons of use would also reduce these impacts.

4.11.3 ALTERNATIVE 3 - PROPOSED ACTION

Under this alternative, impacts to paleontological/paleoenvironmental resource would be greater than under alternative 1 or 2 due to increased intensity of use and changes in season of use. Trampling and erosion of cultural resource sites would occur in areas where there are concentrations of livestock.

4.11.4 ALTERNATIVE 4 - NO LIVESTOCK GRAZING

Elimination of grazing would be beneficial to paleontological/paleoenvironmental resources. Vegetation cover would improve, thereby eliminating adverse impacts from livestock grazing related erosion. Impacts from livestock trampling would also be eliminated.

4.12 Recreation

Proposed actions contained in this EA for the PMA could impact important environmental settings necessary to provide the desired range of recreation opportunities. Increased interactions between recreation users and livestock grazing, as well as improved or degraded range conditions, may result from the various alternatives. It is being proposed under alternatives 2 and 3 that those AUMs authorized by the nonrenewable permits become part of the active AUMs for the grazing permit.

4.12.1 ALTERNATIVE 1 - EXISTING SYSTEM

Active grazing operations, such as herding could have short and long-term impacts to the recreation experience. Most impacts arising from interaction between recreation users and livestock grazing would be short-term in duration and dependant on the location and perception of individual visitors. As indicated in the MASR under the current grazing system, the SRH and allotment objectives are not being achieved in riparian areas. Therefore, long-term adverse impacts to naturalness and the visual appearance of the landscape would be expected. Recreation use in the area may be adversely impacted by non-attainment of allotment objectives and the SRH.

4.12.2 ALTERNATIVE 2 - WINTER USE

Adverse impacts to recreation users, as a result of interaction with livestock grazing operations, would be similar to those described in alternative one. However, this grazing system would have a higher potential to meet the SRH. Hot season grazing would be reduced in the NPHUA, resulting in long-term improvements to the naturalness and the visual appearance of the landscape. Hot season grazing would be extended in the SPHUA, resulting in long-term impacts to the naturalness and the visual appearance of the landscape. The increase in the season of use would be the result of converting nonrenewable AUMs to Active AUMS. This would occur in an area and season where recreation use is minimal and therefore would not likely adversely impact recreation users. Additionally, the enhanced protection of spring and riparian resources in the NPHUA, where recreation use is often concentrated, would benefit primitive recreation. Indirect beneficial impacts to the recreation experience, due to an increased potential for wildlife viewing, hunting and fishing associated with improved habitat, would also be expected to occur under this alternative.

4.12.3 ALTERNATIVE 3 - PROPOSED ACTION

Impacts under this alternative would be similar to Alternative one. Hot season grazing would continue in the NBUA for the same duration as in past years, but the use area would be reduced in size. This combination would reduce the area of impact, but would have the potential to intensify resource impacts to spring and riparian resources. Degraded conditions would adversely impact recreation users by diminishing the naturalness and visual appearance of the landscape. This alternative also allows converting nonrenewable AUMs to Active AUMS. This

would occur in an area and season where recreation use is minimal, therefore would not likely adversely impact recreation users.

4.12.4 ALTERNATIVE 4 - NO LIVESTOCK GRAZING

Impacts related to domestic livestock grazing operations would not occur under this alternative.

4.13 Wilderness/Wilderness Study Area

4.13.1 Wilderness Areas

As previously described in the Description of the Alternatives, the Active AUMs for the current grazing permit is 3,550 AUMs, but an additional 1182 AUMs were authorized and being grazed under a nonrenewable permit at the time of wilderness designation in December 2000. These additional AUMs were authorized from 11/01 to 02/28 in the SPUA, which includes portions of the Black Rock Desert and Pahute Peak Wilderness Areas. It is being proposed under alternatives 2 and 3 that those AUMs authorized by the nonrenewable permit become part of the Active AUMs for the grazing permit.

Converting the nonrenewable AUMs to Active AUMS would be consistent with the Congressional Grazing Guidelines, because the nonrenewable AUMs were authorized at the time of designation and would not have adverse impacts on the wilderness qualities of the Black Rock Desert or Pahute Peak Wilderness Areas.

The Congressional Grazing Guidelines for Wilderness state that; "It is anticipated that the numbers of livestock permitted to graze in wilderness would remain at the approximate levels existing at the time an area enters the wilderness system. If land management plans reveal conclusively that increased livestock numbers or AUMs could be made available with no adverse impact on wilderness values such as plant communities, primitive recreation, and wildlife populations or habitat, some increases in AUMs may be permissible".

4.13.2 ALTERNATIVE 1 - EXISTING SYSTEM

Naturalness

As indicated in the MASR, the existing grazing system has contributed to the non-attainment of the Standards for Rangeland Health and the allotment specific objectives on some areas of the allotment inside of the Wilderness Areas. The naturalness of the Wilderness Areas has been decreased by not attaining the Standards and other allotment objectives, for specifics on these impacts see the Aquatic/Fisheries and Vegetation Sections. These impacts have occurred primarily in the riparian areas of the North Fork of Battle Creek and the area around Butte Spring in the North Black Rock Range Wilderness. Naturalness would continue to decrease in portions of the Wilderness Areas, due to the non-attainment of the Standards and allotment objectives under this alternative.

Opportunities for solitude/primitive or unconfined recreation
Under the current system, grazing occurs in the three use areas on an annual basis. The table below shows the duration of grazing in each of the Wilderness Areas during the annual cycle.

Table 11. Grazing Duration in Wilderness Areas

Wilderness Area	# of months grazing occurs in portion of area during a year
North Black Rock Range	2
Pahute Peak	2.4
Black Rock Desert	4.4

During the time that the Wilderness Areas are grazed by domestic livestock the opportunities for primitive recreation and solitude are decreased by the sights and sounds associated with the livestock and the grazing operations needed to manage the livestock (i.e. herding, range developments, fences). Under this alternative there are approximately 8.8 months during the yearly cycle when portions of the affected Wilderness Areas are being grazed.

4.13.3 ALTERNATIVE 2 - WINTER USE

Naturalness
Because the amount of hot season grazing in the NPHUA would be reduced by 63% under this alternative, the naturalness of the North Fork of Battle Creek and the area around Butte Springs in the North Black Rock Range Wilderness would be maintained or enhanced. Reducing the time that the livestock were in the NPHUA would alleviate the impacts of livestock congregating along the riparian corridors, which has led to the non-attainment of Standards in the area.

Changing the active permit of the allotment from 3,550 to 4,040 would have little impact on the naturalness of the Wilderness Areas. These AUMs have been authorized in these areas since 1997 under a nonrenewable permit. The additional AUMs would be grazed in the lower elevation salt scrub communities during the winter dormant season. Because the grazing would occur during the dormant season there would be very little impact to the plant community and the naturalness of the Wilderness Areas.

Opportunities for solitude/primitive or unconfined recreation
Under this alternative, grazing would occur in four use areas on an annual basis. The table below shows the duration of grazing in each of the Wilderness Areas during the annual cycle.

Table 12. Grazing Duration in Wilderness Areas

Wilderness Area	# of months grazing occurs in portion of area during a year
North Black Rock Range	1.5
Pahute Peak	5.2
Black Rock Desert	4.5

During the time that portions of the Wilderness Areas are grazed by domestic livestock the opportunities for primitive recreation and solitude are decreased by the sights and sounds associated with the livestock and the grazing operations needed to manage the livestock (i.e. herding, range developments, fences). Under this alternative there are approximately 11.2 months during the annual cycle when portions of the affected Wilderness Areas are being grazed. This is an additional 2.4 more months that portions of the Wilderness Areas are grazed as compared to the existing system. While there is an increase in the amount of overall time that solitude and primitive recreation could be impacted under this alternative. Impacts would be mitigated by the fact that the additional time would be during the winter when little or no wilderness visitation occurs.

If the active permit were changed there would be no change in the level of impacts to solitude and primitive recreation because the livestock have been grazed in the area since 1997 under a nonrenewable permit, therefore the actual number of livestock on the ground would not change under this alternative. The additional AUMs would also be grazed during the winter months when very few if any visitors are in the Wilderness Areas.

4.13.4 ALTERNATIVE 3 - PROPOSED ACTION

Naturalness

The NBUA would decrease in size under this alternative, but would still be grazed for the same amount of time during the hot season as Alternative 1. This could lead to livestock congregating and focusing their use along the riparian corridors in the North Black Rock Range Wilderness Area, which would decrease naturalness.

Changing the active permit of the allotment from 3,550 to 4147 would have little impact on the naturalness of the Wilderness Areas. These AUMs have been authorized in these areas since 1997 under a nonrenewable permit. The additional AUMs would be grazed in the lower elevation salt scrub communities during the winter dormant season. Because the grazing would occur during the dormant season, there would be very little impact to the plant community and the naturalness of the Wilderness Areas.

Opportunities for solitude/primitive or unconfined recreation
Under this alternative, grazing would occur in four use areas on an annual basis. The table below shows the duration of grazing in each of the Wilderness Areas during the annual cycle.

Table 13. Grazing Duration in Wilderness Areas

Wilderness Area	# of months grazing occurs in portion of area during a year
North Black Rock Range	4.4
Pahute Peak	4.4
Black Rock Desert	4

During the time that portions of the Wilderness Areas are grazed by domestic livestock the opportunities for primitive recreation and solitude are decreased by the sights and sounds associated with the livestock and the grazing operations needed to manage the livestock (i.e. herding, range developments, fences). Under this alternative use months within Wilderness Ares would increase the use months during the annual cycle (see Table 11). There is an additional four months that portions of the Wilderness Areas are grazed as compared to the existing system. While there is an increase in the amount of overall time that solitude and primitive recreation could be impacted under this alternative, it would be mitigated by the fact that the additional time would be during the winter when little or no wilderness visitation occurs.

If the active permit were changed there would be no change in the level of impacts to solitude and primitive recreation because the livestock have been grazed in the area since 1997 under a nonrenewable permit, therefore the actual number of livestock on the ground would not change under this alternative. The additional AUMs would also be grazed during the winter months when very few if any visitors are in the Wilderness Areas.

4.13.5ALTERNATIVE 4 - NO LIVESTOCK GRAZING

Naturalness
Naturalness of the Wilderness Areas would be enhanced by not authorizing any livestock grazing in the area. Plant communities would not be subject to grazing pressure from large domestic ungulates. Natural processes would determine the composition of the plant communities in wilderness.

Opportunities for solitude/primitive or unconfined recreation
Solitude and primitive recreation would be enhanced by not authorizing livestock grazing in the area. Impacts associated with the sights and sounds of the grazing operations would not occur.

Special Features
There may be a benefit to the special features of prehistoric and historic sites, because the potential trampling and increased erosion associated with livestock grazing would not occur, see Cultural Section for details. Impacts to LCT associated with livestock grazing would not occur under this alternative, see Fisheries Section for details.

4.13.6 Wilderness Study Area
There are no developments proposed inside the Wilderness Study Area in this allotment. All potential impacts to the Wilderness Study Area would be associated with changes in livestock grazing practices (i.e. number of livestock, season of use). For purposes of analysis it is assumed that the sights and sounds associated with the grazing operation has an impact on the opportunities for solitude and primitive recreation in the Wilderness Study Area.

4.13.7 ALTERNATIVE 1 - EXISTING SYSTEM
Naturalness
Impacts to Naturalness within the WSA are similar to those described under Alternative 1 in chapter 4.13.2 of the previous section.

Opportunities for solitude/primitive or unconfined recreation
During the two months that the portion of the WSA is grazed by domestic livestock, the opportunities for primitive recreation and solitude are decreased by the sights and sounds associated with the livestock and the grazing operations needed to manage the livestock (i.e. herding, range developments, fences).

Special Features
If the SRH and allotment objectives are achieved there would be no impact to Special Features associated with the WSA.

4.13.8 ALTERNATIVE 2 - WINTER USE
Naturalness
Impacts to Naturalness within the WSA are similar to those described under Alternative 1 in chapter 4.13.2 of the previous section.

Opportunities for solitude/primitive or unconfined recreation
Impacts would be similar to alternative 1, but the impacts would only occur for 1.5 months instead of 2 months during the year.

Special Features
Impacts to Naturalness within the WSA are similar to those described under Alternative 1 in chapter 4.13.2 of the previous section.

4.13.9 ALTERNATIVE 3 - PROPOSED ACTION

Naturalness

Impacts to Naturalness within the WSA are similar to those described under Alternative 1 in chapter 4.13.2 of the previous section.

Opportunities for solitude/primitive or unconfined recreation

Impacts would be similar to alternative 1, but the impacts would occur for 4.4 months instead of 2 months during the year.

Special Features

If the SRH and allotment objectives are achieved there would be no impact to Special Features associated with the WSA.

4.13.10 ALTERNATIVE 4 - NO LIVESTOCK GRAZING

Naturalness

Impacts to Naturalness within the WSA are similar to those described under Alternative 4 in the previous section.

Opportunities for solitude/primitive or unconfined recreation

Not authorizing grazing in the WSA would maintain the opportunities for solitude and primitive recreation in the area. Impacts associated with the sights and sounds of the grazing operations would not occur.

Special Features

Not authorizing grazing in the WSA would maintain the special features associated with the area.

4.14 Visual Resource Management

Proposed actions contained in this EA for the SMA could impact important visual requirements necessary to provide the desired range of recreation opportunities. Increased animal management activities and increasing AUMs have the potential for both long and short-term impacts to the visual resources.

4.14.1 ALTERNATIVE 1 - EXISTING SYSTEM

Long-term impacts to visual resources would be expected under this alternative. Those areas currently experiencing a downward trend would be expected to continue in a downward trend, while those areas showing improved conditions would be expected to keep improving. Long-term depreciation of range conditions would negatively impact the visual resources, especially in riparian and spring areas, where the majority of use occurs. Impacts would be greatest in those areas currently managed as Class I VRM, since the remaining areas are managed as Class IV, which allows for major landscape modifications.

4.14.2 ALTERNATIVE 2 - WINTER USE

Long-term beneficial impacts to visual resources would be expected under this alternative. Introduction of this alternative would likely improve visual resources on a landscape level, if the SRH are achieved and maintained.

4.14.3 ALTERNATIVE 3 - PROPOSED ACTION

Impacts to visual resources would be similar to those described in Alternatives 1 and 2. The conversion of nonrenewable AUMs to Active AUMs in SPLUA would not be expected to adversely impact visual resources, because the use would occur outside of the hot season and because of the relative absence of springs and riparian communities.

4.14.4 ALTERNATIVE 4 - NO LIVESTOCK GRAZING

Impacts to visual resources related to domestic livestock grazing operations would not occur under this alternative.

4.15 Socio-Economic

4.15.1 ALTERNATIVE 1 - EXISTING SYSTEM

Environmental effects of the No Action alternative would be to remain at status quo. The existing socio-economic conditions would continue by restricting livestock to private lands during the winter. This limitation would necessitate the purchase of additional hay thereby continuing livestock operating expenses. Overall, socio-economic impacts remain static and the potential for economic growth would remain limited.

4.15.2 ALTERNATIVE 2 - WINTER USE

This alternative would have similar environmental effects to socio-economic resources as those described in Alternative three.

4.15.3 ALTERNATIVE 3 - PROPOSED ACTION

Environmental effects of this alternative would generally improve the economics of the Paiute Meadows Ranch by allowing the opportunity to use additional AUMs. This increase in AUMs would allow livestock to graze public lands during the winter thereby eliminating the need and subsequent expense of purchasing additional hay. Overall, socio-economic impacts would improve from implementation of this alternative and the potential for economic growth would slightly increase.

4.15.4 ALTERNATIVE 4 - NO LIVESTOCK GRAZING

Under the No Grazing Alternative, ranch operations would be limited to private lands with no public land grazing. This alternative would reduce the number of livestock that the ranch could support and consequently reduce income. The loss of income to the ranch would most likely

cause reduction of employment and cutbacks in purchasing agricultural related services and equipment. Although, grazing privileges on public lands is not a property right, loss of such privileges may reduce the market value of the Paiute Meadows Ranch. Therefore, implementation of the No-Grazing Alternative would most likely cause adverse socio-economic impacts to the ranch.

5 CUMULATIVE IMPACTS

The Council of Environmental Equality (CEQ) regulations implementing NEPA defines cumulative impacts as: "...[T]he impact on the environment which results from the incremental impact of the action when added to other past, present, ore reasonably foreseeable future actions regardless of what agency (Federal or Non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

The cumulative impact analysis area for this EA is the public lands administered by BLM in the PMA and portions of the Black Rock Region Hydrographic Basin and the Northwest Region Hydrographic Basin shown in the map located in Appendix 27. The area includes 6 other grazing allotments: Soldier Meadows, Knott Creek, Pine Forest, Leadville, Wall Canyon East, and Buffalo Hills.

5.1 Past, Present, and Reasonably Foreseeable Future Actions.

5.1.1 Past Actions

The major past uses within the cumulative impact assessment area are ranching, recreation, mineral exploration, livestock, wild horse and burro management, and wildlife management. Grazing is the dominant land use that has occurred within the assessment area. The NCA Act was designated by the Congress in 2000.

5.1.1.1.1 Grazing

Over the past 15 years, livestock grazing evaluations have been conducted or are currently being conducted on the allotments listed above. On March 3, 2003, BLM issued a MASR & Determination document and Final AE for the SMA and PMA. The last evaluation had been completed on the SMA in 1994 and on PMA in 1995. Past decisions have resulted in adjustments of livestock and wild horse for the PMA and other allotments. While these adjustments were not associated with the SRH, they were done to improve rangeland conditions, improve habitat for sensitive or threatened species, and to balance livestock and wild horse and burro use.

The Bureau of Land Management and the Nature Conservancy in the early 1990s worked cooperatively to secure a conservation easement and to purchase private lands within the SMA. This effort helped facilitate the increased protection of several sensitive species, two federally listed Threatened species of fish, and their habitats. These purchased lands included the federally designated critical habitat for the desert dace and several in-holdings within the Mahogany Creek watershed.

5.1.1.1.2 Wildlife Management

Bighorn sheep and LCT were reintroduced within the analysis area over the last two decades.

5.1.1.1.3 Recreation

Past dispersed recreation uses include camping, hunting, hiking, rockhounding, off highway vehicle (OHV) use, and commercial activities such as motorcycle and OHV racing events. Past BLM management actions for commercial events were addressed through issuance of special recreation permits (SRPs).

5.1.1.1.4 Mineral Activity

Past activity includes exploration and small developments of mineral resources. After 1981, these activities were managed under the Surface Management Regulations, 43 CFR 3809 & 3802.

5.1.2 Present Actions

The major present uses within the cumulative impact assessment area are ranching, recreation, mineral exploration, livestock, wild horse and burro management, and wildlife management. Grazing is the dominant land use that occurs within the assessment area.

5.1.2.1.1 Grazing

There are currently two grazing allotment evaluations in progress within the assessment area. These evaluations include the Knott Creek and Pine Forest Allotments. The evaluations will assess if these allotments are meeting specific allotment objectives and SRH. A MASR was issued for the SMA and PMA on March 3, 2003. The MASR concluded that some of the Allotment objectives and SRH were not being met or achieved under existing livestock and wild horse and burro management.

5.1.2.1.2 Wildlife Management

Bighorn sheep and LCT populations have been augmented within the analysis area in 2003 and 2001, respectively. Management of wildlife habitats have been implemented using guidance from applicable recovery plans, habitat management plans, and species management plans

5.1.2.1.3 Recreation

Dispersed recreation uses include camping, hunting, hiking, rockhounding, off highway vehicle (OHV) use, and commercial activities such as motorcycle and OHV racing events continue within the analysis area.

5.1.2.1.4 Mineral Activity

Mineral activity includes hard rock mining and exploration, geothermal exploration and development, and mineral materials (gravel). Mineral activities are limited to the portion of the analysis area outside of the NCA boundary, with the exception of valid existing

rights. For those operations, whose rights are determined to be valid, activity will continue.

5.1.3 Reasonable Foreseeable Future Actions (RFFAs)

The RFFAs applicable to the assessment area are:

1. Issuance of multiple use decisions and grazing permits for ranching operations through the allotment evaluation process and the reassessment of the allotments within the NCA boundary.
2. Construction of rangeland improvement projects.
3. Wild horse and burro gathers.
4. Changes in livestock grazing management.
5. Development of Sage Grouse Management Plans
6. Development and issuance of a Resource Management Plan for the NCA.
7. Augmentations of LCT and bighorn sheep
8. Land tenure adjustments
9. Recreational facility development
10. Continued mineral activity

5.1.3.1.1 Summary

Issuance of grazing permits would be expected for all grazing allotments within the analysis area, subject to the allotment evaluation process and achievement of the SRH. A MASR was issued for the SMA and PMA on March 3, 2003. It is anticipated that grazing management within these allotments would change. No MASR has been issued for any other allotments within the analysis area. There are a number of range improvement projects, such as fencing, that are pending on allotments within the assessment area. BLM will continue to conduct wild horse and burro gathers to maintain AML and attain allotment objectives and the SRH. In October 2001, Nevada Governor, Kenny Guinn, introduce the Nevada Sage Grouse Conservation Strategy. This strategy includes development of a task force charged with the task of developing a plan that would conserve and protect Nevada's sage grouse and their habitat. Augmentations of the existing bighorn and LCT will likely continue in the future as populations require. Land tenure adjustments will be considered as opportunities become available.

With the passage of the NCA Act in 2000, the development of a Resource Management Plan (RMP) was required. The RMP would include management actions to address recreation and other resource uses within the NCA. The RMP would also include a management plan for the Wilderness areas included as part of the NCA Act.

5.1.4 IMPACT ANALYSIS

Unless otherwise specified, the cumulative impact analysis below pertains to Alternatives 2 & 3.

5.1.4.1 Water Resources & Fisheries/Aquatic Resources/Special Status Aquatic Species

Past Actions

Livestock grazing led to the gradual deterioration of watershed health until the passage of the Taylor Grazing Act in 1934. Until the passage of the Endangered Species Act of 1973 (ESA), few livestock management actions addressed aquatic resources or aquatic special status species, which subsequently led to the imperilment of numerous aquatic species.

Present

Although conditions have improved since the 1930s, portions of the analysis area continue to have adverse impacts to water resources and watersheds. These impacts are due primarily to concentrated livestock use in riparian areas, which reduces habitat diversity needed to sustain aquatic organisms by altering channel morphology, increasing sediment loads, and altering the natural water quality characteristics within areas. Other impacts are associated with recreational bathing, which have impacted the aquatic biota of hot springs within the analysis area.

RFFAs

Implementing grazing management and the NCA RMP within the analysis area will ensure the attainment of the SRH, thereby allowing for the gradual improvement of overall watershed conditions. Continued livestock grazing will lead to minor negative impacts to fisheries and aquatic resources within small-localized areas. The elimination of livestock within the most sensitive areas containing special status species, will lead to improvements to fisheries and aquatic habitats. Meeting SRH would result in an incremental improvement or stabilization of resources within the PMA. Other changes in livestock management as a result of allotment evaluations and meeting SRH would also improve watersheds outside of the PMA. Implementation of the NCA RMP would include management actions to protect sensitive species and aquatic habitats.

Summary

The incremental impacts from past, present and RFFA would result in an overall improvement of watershed condition based on the attainment of allotment specific objectives and Standard for Rangeland Health within the analysis area. Although fisheries and aquatic habitats would maintain or improve in overall condition over time, areas of small-localized impacts would be likely to continue.

Alternative 1
The non-attainment of the SRH would result in incremental degradation of the water resources and fisheries/aquatic resources within the analysis area.

Alternative 4
The elimination of livestock grazing would lead to improvement of the water resources and fisheries/aquatic resources within the analysis area.

5.1.4.2 Terrestrial Wildlife/Special Status Terrestrial Wildlife Species

Past

Overgrazing by livestock and wild horses coupled with introduction of invasive or exotic species has adversely impacted habitat for cover and forage availability for wildlife prior to the passage of the Taylor Grazing Act of 1934.

Present

Current conditions within the analysis area include areas where concentrated livestock and wild horses and also wildfires have caused degradation of wildlife habitat. This impact has lead wildlife to seek other suitable habitat within the assessment areas. This displacement creates more competition between species occupying similar habitat niches.

RFFAs

Implementation of grazing management actions that ensure attainment of allotment specific objectives and Standards for Rangeland Management should maintain or improve wildlife habitats within the PMA and adjoining allotments. Nevada Sage Grouse Conservation Strategy guidelines would be adopted where possible. Increased recreational activities due to the passage of the NCA Act, could impact wildlife species through habitat alteration, temporary species displacement, and harassment. These impacts would be mitigated through the implementation of the NCA RMP.

Summary

Impacts from past, present and RFFA have varied from low to moderate for wildlife resources within the analysis area. Adverse impacts from large wildfires could be major dependant on the ability of the range to recover or if management actions to restore burned areas are not implemented. The attainment of allotment specific objectives and Standard for Rangeland Health would maintain or improve overall habitat conditions for wildlife species, including special status species. Impacts from recreational activities would be mitigated through the implementation of the NCA RMP.

5.1.4.3 Vegetation/Sensitive Plant Species

Past Actions

Historic impacts to desert sink scrub, saltbush scrub, and sagebrush scrub habitats occurred from overgrazing livestock at the turn of the century. These impacts combined with the introduction of invasive species, such as cheatgrass led to a reduction in understory grasses and forbs, and recreational activities. It also led to early to mid ecological status in the remaining sagebrush habitats.

Present Actions

Impacts continue as in the past with the exception that wildland fires have increased in size and frequency, combined with the yearlong grazing by wild horse. The non-attainment of allotment objectives and the SRH within portions of the analysis area continues to affect upland/riparian habitat by reducing native species diversity and vigor.

RFFAs

Implementation of grazing management actions that ensure attainment of the allotment specific objectives and SRH should improve vegetation communities throughout the analysis area by increasing cover and diversity of vegetation. Increased recreational use resulting from the NCA Act would potentially lead to increased areas of impacted vegetation from trampling, OHV use, and human caused fires. These impacts would be partially mitigated by the NCA RMP and its recreational management guidance.

Summary

Impacts from past, present and RFFAs to vegetation has varied from low to moderate. Incremental impacts to vegetation from the livestock grazing alternatives would be low within the analysis area. Present impacts remain low to sensitive species without implementation of management actions within the analysis area. Implementation of management actions to attain the SRH would allow for overall improvement of upland vegetation condition in portions of the analysis area. Maintaining wild horse populations at or below AML would allow for the maintenance or improvement of vegetative resources.

Impacts to sensitive species from all the grazing alternatives would be minimal, due to their lack of occurrence within the PMA.

Alternative 1

The non-attainment of the SRH would result in incremental degradation of the vegetation resources within a portion of the analysis area. This is due to an increased reduction in vegetative cover and diversity, which would result in declines of ecological status. Adverse impacts to the vegetative resources would be moderate within a portion of the analysis area.

Alternative 4

The elimination of livestock grazing would lead to improvement of the vegetative resources within the analysis area towards a climax community state. The rate of succession to a climax community state would be dependent on fire frequency and wild horse population levels.

5.1.4.4 Noxious Weeds

Past Actions

Noxious weeds were of little consideration in the past and no comprehensive weed management programs were developed. Historic overgrazing, road maintenance, recreational activities, and wildland fires created disturbances allowing for the introduction and spread of noxious weeds.

Present Actions

There are no complete inventories within the analysis area, although the presence of noxious weeds is known to occur. Large range fires would continue in intensity, thereby creating larger disturbed areas where invasive weeds could become established. Impacts from rangeland fires are mitigated by rehabilitation treatments to prevent weed establishment. Road maintenance and recreational activities continue, thereby creating areas of disturbance and increasing the potential for noxious weed infestation. Excessive grazing allows increased areas of disturbance subject to noxious weed invasion, creating the future potential for monocultures of weed communities to develop.

RFFAs

Increases in noxious weed populations within the analysis area could occur if allotment objectives and SRH are not achieved. Noxious weeds could also continue to spread dependent on rates of increased areas of disturbance. Declines in native plant vigor from other causal elements, such as recreation and road maintenance, could also lead to noxious weed infestation. Increased recreational use resulting from the NCA Act would potentially lead to increased areas of surface disturbance and weed infestations. These impacts would be partially mitigated by the NCA RMP and its recreational management guidance.

Summary

Impacts from Past, Present, and RFFAs would incrementally increase the spread of noxious weeds over time consistent with levels of surface disturbance. These impacts would be low subject to the implementation of livestock management actions to allow achievement of the SRH, the maintenance of wild horses at AML, management of recreation per the NCA RMP, and implementation of cooperative efforts between BLM, State and Counties to control weeds.

Alternative 1
The non-attainment of the SRH would result in increased areas of surface disturbance, which would lead to increases in noxious weed infestations.

Alternative 4
The elimination of livestock grazing would lead to diverse native plant communities eliminating the spread of noxious weeds by livestock.

5.1.4.5 Soils

Past Actions
Past areas where overgrazing from livestock and wild horses combined with the introduction of invasive or exotic species has adversely impacted soils leaving them susceptible to erosion.

Present Actions
Current areas within allotments where concentrated livestock grazing, wild horses use has occurred has resulted in removal of vegetation making soils vulnerable to erosion. These conditions are compounded by wildfires and recreation.

RFFAs
Implementation of grazing management actions that ensure allotment specific objectives and Standards for Rangeland Management are achieved should limit soil erosion throughout the assessment area by increasing cover and diversity of vegetation. Increased recreation could lead to increased areas of vegetation removal and soil compaction from OHV use and concentrated recreational uses.

Summary
Incremental impacts from past, present and RFFA to soils has varied over time from low to moderate depending on the degree of grazing intensity, size of wildfires, and recreation use. Present impacts remain moderate to soils without the implementation of management actions. Attainment of allotment objectives and the SRH would allow for overall improvement of vegetation condition, thereby reducing the potential for soil erosion. Implementation of fire rehabilitation efforts and the NCA RMP would further reduce soil erosion.

Alternative 1
The non-attainment of the SRH would result in incremental degradation of the soil resources within the analysis area. This is due to increased compaction and reduced vegetative cover, which could increase levels of erosion.

Alternative 4

The elimination of livestock grazing would lead to improvement of the soil resources within the analysis area, if wild horse and burro population levels are maintained at or below AML.

5.1.4.6 Wild Horses

Past Actions

Prior to the Wild Free-Roaming Horse and Burro Act of 1971, wild horses and burros were unprotected. Wild horse and burro numbers were limited by natural processes, permittee control, and mustanging. Management of wild horses in the Black Rock Range East HMA by BLM has included two wild horse gathers since the 1995 PMA FMUD (see Chapter 3.7). Wild horse populations and subsequent grazing impacts were dependent on adoptions, long-term holding facility capacity, and funding. Impacts to herd demographics and herd health in wild horse populations occurred from artificial management related to gathers. The occurrence of wildfire displaced wild horse populations, which increased competition within other areas. Increased recreation temporarily displaced wild horse populations as a result of human interaction, especially during the foaling season.

Present Actions

Current actions and impacts continue as described above after the 1995 PMA FMUD to the present.

RFFAs

Implementation of grazing management actions to attain allotment specific objectives and the SRH, should improve forage availability. Managing at or below AML would result in the stabilization of populations by reducing grazing intensity and improving habitat. Increased recreation as a result of the NCA Act, would lead to increased chances of recreational conflicts and impacts to wild horses and burros.

Summary

Incremental impacts from past, present and RFFAs to wild horses has varied over time depending on the degree of grazing intensity, wild horse removal frequency, recreational activities, and the size of wildfires. Present impacts to wild horse habitat remain moderate without continued implementation of management actions to maintain the wild horses at AML. The attainment of allotment objectives and the SRH would improve forage quality, allowing for viable healthy herds in the long term within the analysis area. The incremental impacts to wild horses associated with the grazing alternatives would be low.

Alternative 1
Continuing with Alternative 1 would result in reduced forage availability for wild horses and burros within a small portion of the analysis area, due to the non-attainment of the SRH.

Alternative 4
The elimination of livestock grazing would lead to increased forage availability for wild horses within a portion of the analysis area.

5.1.4.7 Cultural Resources/ Paleontological Resources/Native American Values

Past Actions

In the past, major adverse impacts to cultural and vertebrate paleontological sites have occurred from unauthorized collection and excavation. A well publicized example of such activities was the recent conviction of an individual for the looting of the Elephant Mountain cave cultural site in the PMA. This site included burials, which were repatriated to the Pyramid Lake Paiute Tribe. Passage of the National Historic Preservation Act of 1966, the National Environmental Policy Act of 1969, the Federal Land Policy & Management Act of 1976, and the Archaeological Resources Protection Act of 1979 led to increased protection of cultural resources or paleontological resources. This reduced adverse impacts to these resources that resulted from resource development and use activities and unauthorized collection and excavation.

OHV use and concentrations of livestock and wild horses have displaced, buried and trampled artifacts and fossils. OHV use has also adversely impacted the setting of the Applegate-Lassen Emigrant Trail. The availability of OHVs has also increased access, resulting in increased potential for looting of cultural and paleontological sites. Recreation, concentrations of wild horses and livestock and wildfires have removed vegetation leading to erosion of cultural and paleontological sites, and destruction of valuable data. These activities also have removed Native American medicinal plants and other plants, thus limiting their availability.

Continuously wet springs and meadows are sources of fossil pollen records which can be valuable in reconstructing past environments. Spring developments have dessicated these meadows leading to destruction of these records. Other impacts to paleoenvironmental records have occurred from uses discussed above.

Present Actions

Unauthorized collection and excavation continue to adversely impact cultural and paleontological/paleoenvironmental resources as do recreation, concentrations of livestock and wild horses, and wildfires. However, increased cultural and paleontological/paleoenvironmental resource management through implementation of

laws and regulations, BLM presence, law enforcement and public education have helped to decrease these impacts.

Impacts to other areas of Native American concern are tied to the condition of and the impacts to resources by land use activities.

RFFAs

Implementation of grazing management actions to attain allotment specific objectives and the SRH should improve vegetation cover and dispersion of ungulates, which would reduce impacts to cultural, paleontological, and paleonenvironmental resources and would address Native American concerns within the analysis area. The implementation of the NCA RMP will address the management of recreation, taking into consideration Native American concerns as well as impacts to cultural, paleontological and paleoenvironmental resources.

Summary

Cumulative impacts from past, present and RFFAs to cultural, paleontological/paleoenvironmental and Native American resources has been high to moderate in the past through the present. Present impacts remain moderate as activities continue in portions of the analysis area. Impacts resulting from the implementation of the alternatives would be minimal.

The attainment of allotment objectives and the SRH would allow for overall improvement of vegetation cover and the broad distribution of ungulates, reducing adverse impacts to cultural, paleontological, and paleonenvironmental resources in the long term and improving conditions in areas that are important or sacred to Native Americans. Implementation of the NCA RMP would reduce impacts to cultural resources from recreational activities.

Alternative 1

The non-attainment of the SRH would result in incremental degradation of the cultural and paleontological/paleonenvironmental resources within the analysis area as well as improve conditions in areas that are important or sacred to Native Americans. This is due to more trampling and reduced vegetative cover, which would increase levels of erosion. Impacts resulting from the implementation of the alternatives would be minimal.

Alternative 4

The elimination of livestock grazing would lead to increased protection of the cultural and paleontological/paleonenvironmental resources within the analysis area as well as conditions in areas that are important or sacred to Native Americans resources--if wild horse and burro populations remain at AML. Beneficial impacts would result from the implementation of this alternative.

5.1.4.8 Recreation

Past

Dispersed recreation use within the analysis area was unconstrained prior to the 1970s and included hunting, fishing, rockhounding, hiking, and other outdoor activities. Restrictions on these activities occurred in the 1970s, due to the LCT listing under the ESA and wilderness study area and other designations.

Present

Since the passage of the NCA Act, the BLM has developed a draft NCA RMP. A portion of the NCA is within the analysis area. Recreation growth within the analysis area has steadily increased along with changing the diversity of recreation use. Access to public lands has recently become more difficult within the analysis area, due to private landowners limiting access and special designations.

RFFAs

It is anticipated that recreational growth would expand within the area. Commensurate with this growth, increased management of recreational activities in accordance with the NCA RMP would occur. The NCA RMP would manage recreation uses to conserve resources and enhance specific recreational opportunities. Attainment of allotment objectives and the SRH would increase opportunities for wildlife related recreation.

Summary

Incremental impacts from past, present, and RFFAs to recreational use have varied over time from low to moderate depending on the level of management and recreational use. Incremental impacts from the proposed alternatives would be minimal for recreation. The NCA RMP would address future recreational growth while establishing management actions to protect resources.

Alternative 1

Same as described above.

Alternative 4

Same as described above.

5.1.4.9 Wilderness Areas/Wilderness Study Areas

Past Actions

In 1980, 14 Wilderness Study Areas were designated within the analysis area. These areas have been managed under BLM's Interim Management Policy to protect their wilderness values until Congress decides to designate them as wilderness or release them for other purposes. Impacts to these areas have been primarily limited to unauthorized motorized traffic. The NCA Act of 2000 designated 11 WSAs within the analysis area as Wilderness Areas.

Present Actions

With the enactment of the NCA Act, management of the Wilderness Areas and WSAs in the area has improved, resulting in increased boundary identification, disturbance inventories, route rehabilitation, visitor contacts, and compliance checks. These management actions have improved wilderness values for those seeking naturalness and solitude.

RFFAs

The NCA RMP proposes a management plan for wilderness, which should improve wilderness values.

Summary

Incremental impacts from past, present, and the RFFAs on wilderness/WSAs have remained consistent since the mid 1980s as special designations continued to exist. Present impacts remain minimal to wilderness values. Implementation of the NCA RMP would address future recreation growth while establishing management actions to protect wilderness resources.

Alternative 1

Same as described above.

Alternative 4

The elimination of livestock grazing would improve wilderness values and opportunities for naturalness and solitude

5.1.4.10 Visual Resource Management

Past

Visual resources were not considered when making land use decisions until the late 1970s. Impacts, such as range improvement projects, mineral exploration and development, recreational activities, agricultural development, and powerlines, caused adverse impacts to the viewsheds within the analysis area. The private land conservation easement and land purchase by The Nature Conservancy in the 1990s within the SMA limited the construction of facilities or activities that would impact the historical characteristic of the Soldier Meadows Ranch, which includes visual resource values. Restrictions associated with the designation of wilderness areas maintained visual resource values within a portion of the analysis area. Wildland fires have changed the character of the viewsheds within portions of the analysis area.

Present

VRM is considered for all federal actions within the analysis area. Impacts, which include range improvement projects, mineral exploration and development, recreational activities, powerline construction, and agricultural development, create features that may intrude on viewsheds. However, the implementation of VRM techniques and mitigation measures would minimize these impacts within the analysis area. Wildland fires frequency and size has increased, which has further changed the character of the viewsheds within portions of the analysis area.

RFFAs

With the passage of the NCA Act, visual resource management classifications may change within the analysis area. These changes may limit the extent or degree of development and visual intrusion of the viewshed. Wildland fires will continue, which will continue to alter the character of viewsheds within portions of the analysis area.

Summary

Incremental impacts from past, present and RFFAs on visual resources have been minimal. Present and RFFAs impacts would be mitigated by implementation new VRM classifications and the impacts would remain low, outside of the Applegate-Lassen Emigrant Trail viewshed. Wildland fires will continue, which will continue to alter the character of viewsheds within portions of the analysis area.

Alternative 4

The elimination of livestock grazing would lead to improvements to visual resources, due to the lack of need for fences.

5.1.4.11 Social & Economic

Past Actions

Historically, agriculture has consistently contributed to the economic base of Humboldt County. In the early 1980s, mining became a major contributor to the economy. There is little mining within the analysis area and impacts to social and economic resources have remained static.

Present Actions

Attainment of allotment objectives and the SRH may result in an increase or decrease in AUMs to livestock operations within the analysis area. Decreases in AUMs would result in the ranches within the analysis area purchasing fewer agriculture related goods and services due to reduced ranch income. Conversely, an increase in permitted AUMs would proportionally result in additional ranch income and local economic.

RFFA

With the implementation of the NCA Act, it is anticipated that recreation use would increase. Human interaction with livestock may increase livestock stress from

displacement into other areas. There may be economic gain to the area from increased recreation use as local economies may react by providing goods and services to recreation users.

Summary

Overall, past, present, and RFFAs impacts to socio and economic resources would be considered minor compared to the Humboldt County earnings base (See Socio-Economic Section Chapter 3.14).

Alternative 2

Same as described above

Alternative 4

The elimination of livestock grazing would result in greater impacts to the ranches, due to private operations requiring a smaller herd size commensurate with private land size. The ranches within the analysis area may also have to purchase feed to sustain livestock, further reducing profits and increasing expenses. Although livestock grazing permits are not property rights, loss of said privileges may reduce the market value of ranches within the area.

6 Agency/Group/Individuals Contacted

1. Estill Ranches LLC
2. Irv and Sandy Brown
3. U.S. Fish and Wildlife Service – Reno Office
4. U.S. Geological Services – BRD
5. NDOW – Winnemucca
6. NDOW – Fallon
7. Western Watershed Project
8. Committee for High Desert
9. USDA – Carson City
10. Humboldt County Commissioners
11. Natural Resources Defense Council (NRDC)
12. Dawn Lappin, Wild Horse Organized Assistance (WHOA)
13. Kathy Barcomb, Nevada Commission for the Preservation of Wild Horses (NCPWH)
14. International Society for the Protection of Mustangs and Burros (ISPMB)
15. Sierra Club
16. USDA – NRCS – Reno Office
17. Cedarville Field Office – BLM
18. Summit Lake Paiute Tribe
19. Intermountain Range Consultants
20. Shaaron Netherton, Friends of Nevada Wilderness
21. Nevada Outdoor Recreation Association, C/O Charles Watson
22. The Sierra Club, Toiyabe Chapter, C/O Marjorie Sill
23. The Wilderness Society, C/O Jay Watson
24. The Sierra Club, Toiyabe Chapter, C/O Glen Miller
25. The Wilderness Society
26. Sierra Club, Debbie Sease
27. John Davis
28. Roger Scholl
29. Phil Briggs
30. Rose Strickland, Sierra Club
31. Paul Clifford
32. James Morefield, Nevada Heritage Program
33. Nevada United 4-Wheel Association
34. Joanna Wald, Natural Resources Defense Council
35. Leah Brashear
36. Tom Myers
37. Susan Lynn, Public Resource Associates
38. Nobby Reidy, Executive Director, Wild Spaces
39. Bob Ellis
40. Steve Tabor, Desert Survivors

41. Wilderness Watch
42. Northern Nevada Native Plant Society
43. Northwest Great Basin Association
44. Mr. Whitney, Washoe County Dept. of Comprehen.
45. Denise Pollard, Ft. Bidwell Tribal Council
46. Gale Dupree, NV Wildlife Federation
47. Jim Eaton, CA Wilderness Coalition
48. John Walker, Division of Administration
49. Karen Boeger, Friends of NV Wilderness
50. Marisha Fragua, Cedarville Rancheria
51. Senator Harry Reid's Office
52. Mary Conelly
53. Pyramid Lake Tribe
54. Norman Harry
55. Rich Heap, NDOW
56. Robert P. Davison, Wildlife Mgt. Institute
57. Stephen Smith, BLM State Office
58. Terry Williams, Modoc County
59. Vicky Hoover, Sierra Club
60. Willie Molini, The Wildlife Society
61. Dave Pulliam, NDOW
62. Great Old Broads for Wilderness
63. Oregon Natural Desert Association
64. Resource Concepts
65. Nevada Cattleman's Association
66. Nevada Woolgrowers Association
67. William Cowen
68. Friends of Nevada Wilderness
69. Donna Potter, Orient Farms
70. Schroeder & Lezamiz

7 Coordination and Consultation

7.1 List of Preparers

Mike Zielinski	**Soils/Vegetation**
Matthew Varner	**Fisheries/Riparian/T&E**
Clarence Covert	**Wildlife**
Craig Drake	**Water Resources**
Nadine Paine	**Wild Horses & Burros**
Peggy McGuckian	**Cultural/NativeAmerican/Paleontology**
Brian Murdock	**Wilderness/WAS**
Ron Pearson	**Range**
Dave LeFevre	**Recreation/VRM**
Jeff Johnson	**Environmental Coordinator/Socio-Economic**
Roger Farschon	**Ecologist**
Lynnda Jackson	**GIS Support/Maps**
Chuck Neil	**Noxious Weeds**

APPENDIX 1 - THE STANDARDS FOR RANGELAND HEALTH

1. Soil processes will be appropriate to soil types, climate and land form.

2. Riparian/wetland systems are in proper functioning condition.

3. Water quality criteria in Nevada or California State Law shall be achieved or maintained.

4. Populations and communities of native plant species and habitats for native animal species are healthy, productive and diverse.

5. Habitat conditions meet the life cycle requirements of special status species.

APPENDIX 2 - PAIUTE MEADOWS ALLOTMENT OBJECTIVES FOR ALTERNATIVE 1

A. Short Term Objectives:

1. Livestock grazing within use areas that are habitat or potential habitat for the federally listed threatened Lahontan cutthroat trout (LCT) will be subject to the following restrictions. These standards would apply to the North Fork of Battle Creek, Bartlett Creek and Paiute Creek.

    a. Maintain a minimum stubble height of six inches (6") based on site potential, in streambank herbaceous vegetative sites consisting of primarily: sedges (Carex spp.), rushes (Juncus spp.), and tufted hairgrass (Deschampsia cespitosa).

    b. The objective for utilization of key woody plant species is thirty percent (30%) for aspen (Populus tremuloides) and willows (Salix spp.).

    c. Mechanical streambank damage such as livestock hoof action resulting in bank punching or shearing shall not exceed ten percent (10%) within use areas that are habitat or potential habitat for the federally listed threatened Lahontan cutthroat trout. This standard would apply to the North Fork of Battle Creek, Bartlett Creek and Paiute Creek.

2. The objective for utilization of key plant species in wetland riparian habitats is fifty percent (50%) for sedges (Carex spp.), rushes (Juncus spp.) and bluegrass (Poa).

3. The objective for utilization of key plant species in upland habitats is fifty percent (50%) on the following: bluebunch wheatgrass (Agropyron spicatum), serviceberry (Amelanchier), curlleaf mountainmahogany (Cercocarpus ledifolius), basin wildrye (Elymus cinereus), ephedra (Ephedra), winterfat (Eurotia lanata), Idaho fescue (Festuca idahoensis), meadow barley (Hordeum brachyantherum), Baltic rush (Juncus balticus), lupine (Lupinus caudatus), Indian ricegrass (Oryzopsis hymenoides), bluegrass (Poa), Nevada bluegrass (Poa nevadensis), Sandberg bluegrass (Poa secunda), antelope bitterbrush (Purshia tridentata), bottlebrush squirreltail (Sitanion hystrix), needleandthread (Stipa comata), Thurber needlegrass (Stipa thurberana),and snowberry (Symphoricarpos).

B. Long Term Objectives:

1. Manage, maintain, or improve rangeland conditions to provide forage on a sustained yield basis for big game, with an initial forage demand of 1,838 AUMs for mule deer, 307 AUMs for pronghorn, and 180 AUMs for bighorn sheep.

   a. Improve to or maintain good to excellent mule deer habitat conditions.

   b. Improve to or maintain fair to good pronghorn habitat conditions.

   c. Improve to or maintain good to excellent bighorn sheep habitat conditions.

2. Improve or maintain suitable sage grouse strutting, nesting, brood rearing, and/or wintering habitat in good condition within the site potential of the rangeland habitat.

   The following parameters have been found to constitute optimum (good) conditions for sage grouse use:

   Strutting Habitat

   Low sagebrush or brush free areas for strutting and nearby areas of sagebrush having 20-50% canopy cover for loafing.

   Nesting Habitat

   1. Sagebrush between seven 7 and 31 inches in height (optimum= 16 inches).
   2. Sagebrush canopy cover of 15-30% (optimum = 27%).
   3. 25-35% basal ground cover.
   4. Average understory height of 6-7 inches (grasses).

   Brood Rearing Habitat

   Early Season

   1. Sagebrush canopy cover 10-21% (optimum = 14%).

   Late Season

   1. Meadow areas that are in functioning condition.
   2. Residual meadow vegetation of no less than 3-6 inches in height.

Winter Habitat

1. Greater than 20% sagebrush canopy cover.

3. Improve public rangeland conditions to provide forage on a sustained yield basis for livestock, with a stocking level of 4,143 AUMs.

4. Maintain and improve the free-roaming behavior of wild horses by protection and enhancing their home ranges.

   a. Manage, maintain, or improve public rangeland conditions to provide 1,116 AUMs of forage on a sustained yield basis for wild horses.

   b. Maintain and improve wild horse habitat by assuring free access to water.

5. Improve to and/or maintain ceanothus (Ceanothus) habitat by allowing for successful reproduction and recruitment based on site potential.

6. Improve to and/or maintainmahogany (Cercocarpus) habitat by allowing for successful reproduction and recruitment based on site potential.

7. Improve to and/or maintain aspen (Populus tremuloides) habitat by allowing for successful reproduction and recruitment based on site potential.

8. Improve to and/or maintain riparian and meadow habitat types to ensure species diversity and quality and to maximize reproduction and recruitment.

9. Improve to and/or maintain serviceberry (Amelanchier), bitterbrush (Purshia tridentata), ephedra (Ephedra)and winterfat (Eurotia lanata) habitat by allowing for successful reproduction and recruitment based on site potential.

10. Improve to and/or maintain Riparian Condition Class to an overall optimum of 60% or above Paiute Creek, North Fork of Battle and Bartlett Creek by achieving the following:
    1) Streambank Cover to 60% or above
    2) Streambank Stability to 60% or above
    3) Maximum summer water temperatures below 68 degrees Fahrenheit

APPENDIX 3 - PAIUTE MEADOWS ALLOTMENT OBJECTIVES and TERMS & CONDITIONS FOR ALTERNATIVE 2 & 3

A. Short Term Objectives:

1. Livestock grazing within use areas that are habitat or potential habitat for the federally listed threatened Lahontan cutthroat trout (LCT) will be subject to the following restrictions. These standards would apply to the North Fork of Battle Creek, Bartlett Creek and Paiute Creek.

    a. Maintain a minimum stubble height of six inches (6") based on site potential, in streambank herbaceous vegetative sites consisting of primarily: sedges (Carex spp.), rushes (Juncus spp.), and tufted hairgrass (Deschampsia cespitosa).

    b. The objective for utilization of key woody plant species is thirty percent (30%) for aspen (Populus tremuloides) and willows (Salix spp.).

    c. Mechanical streambank damage such as livestock hoof action resulting in bank punching or shearing shall not exceed ten percent (10%) within use areas that are habitat or potential habitat for the federally listed threatened Lahontan cutthroat trout. This standard would apply to the North Fork of Battle Creek, Bartlett Creek and Paiute Creek.

2. The objective for utilization of key plant species in wetland riparian habitats is fifty percent (50%) for sedges (Carex spp.), rushes (Juncus spp.) and bluegrass (Poa).

3. The objective for utilization of key plant species in streambank riparian habitats on lotic systems, which are not specified above, is thirty percent (30%) for sedges (Carex spp.), rushes (Juncus spp.) and bluegrass (Poa).

4. The objective for utilization of key plant species in upland habitats is fifty percent (50%) on the following: bluebunch wheatgrass (Agropyron spicatum), serviceberry (Amelanchier), curlleaf mountainmahogany (Cercocarpus ledifolius), basin wildrye (Elymus cinereus), ephedra (Ephedra), winterfat (Eurotia lanata), Idaho fescue (Festuca idahoensis), meadow barley (Hordeum brachyantherum), Baltic rush (Juncus balticus), lupine (Lupinus caudatus), Indian ricegrass (Oryzopsis hymenoides), bluegrass (Poa), Nevada bluegrass (Poa nevadensis), Sandberg bluegrass (Poa secunda), antelope bitterbrush (Purshia tridentata), bottlebrush squirreltail (Sitanion hystrix), needleandthread (Stipa comata), Thurber needlegrass (Stipa thurberana),and snowberry (Symphoricarpos).

B. Long Term Objectives:

1. Manage, maintain, or improve rangeland conditions to provide forage on a sustained yield basis for big game, with an initial forage demand of 1,838 AUMs for mule deer, 307 AUMs for pronghorn, and 180 AUMs for bighorn sheep.

   a. Improve to or maintain good to excellent mule deer habitat conditions.

   b. Improve to or maintain fair to good pronghorn habitat conditions.

   c. Improve to or maintain good to excellent bighorn sheep habitat conditions.

2. Improve or maintain suitable sage grouse strutting, nesting, brood rearing, and/or wintering habitat in good condition within the site potential of the rangeland habitat.

   The following parameters have been found to constitute optimum (good) conditions for sage grouse use:

   Strutting Habitat

   Low sagebrush or brush free areas for strutting and nearby areas of sagebrush having 20-50% canopy cover for loafing.

   Nesting Habitat

   1. Sagebrush between seven 7 and 31 inches in height (optimum= 16 inches).
   2. Sagebrush canopy cover of 15-30% (optimum = 27%).
   3. 25-35% basal ground cover.
   4. Average understory height of 6-7 inches (grasses).

   Brood Rearing Habitat

   Early Season

   1. Sagebrush canopy cover 10-21% (optimum = 14%).

   Late Season

   1. Meadow areas that are in functioning condition.
   2. Residual meadow vegetation of no less than 3-6 inches in height.

Winter Habitat

1. Greater than 20% sagebrush canopy cover.

3. Improve public rangeland conditions to provide forage on a sustained yield basis for livestock.

4. Maintain and improve the free-roaming behavior of wild horses by protection and enhancing their home ranges.

   a. Manage, maintain, or improve public rangeland conditions to provide forage on a sustained yield basis for wild horses.

   b. Maintain and improve wild horse habitat by assuring free access to water.

5. Improve to and/or maintain ceanothus (Ceanothus), maintainmahogany (Cercocarpus), serviceberry (Amelanchier), bitterbrush (Purshia tridentata), ephedra (Ephedra), winterfat (Eurotia lanata) and maintain aspen (Populus tremuloides) habitats by allowing for successful reproduction and recruitment based on site potential.

6. Improve to and/or maintain riparian and meadow habitat types to ensure species diversity and quality and to maximize reproduction and recruitment.

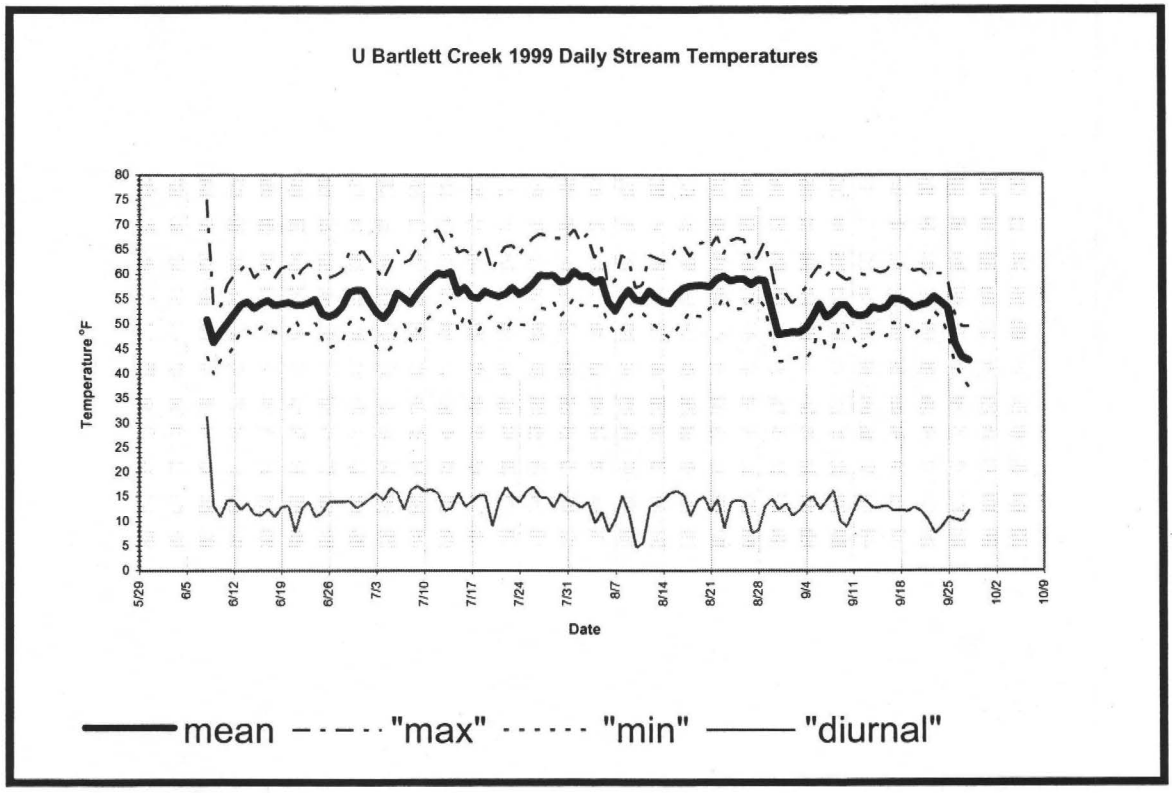
7. Improve to and/or maintain fisheries habitat in good to excellent condition based on the stream's potential.

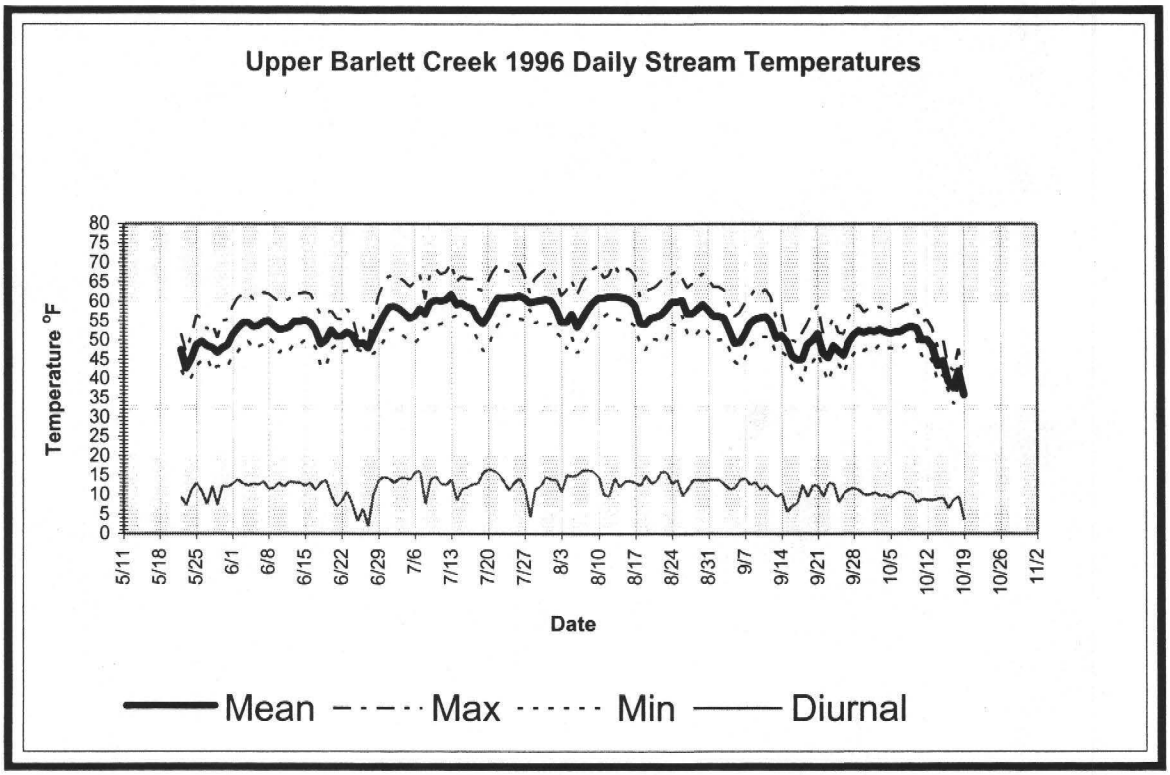
8. Improve to and/or maintain lentic and lotic riparian habitats to Properly Functioning Condition (PFC).

9. Numbers of wild horses shall be managed at or below AML within the Black Rock Range East HMA. Gathers shall occur periodically as needed when monitoring reveals numbers are approaching or exceeding AML.

10. Wild horse gather activities within or adjacent to LCT habitat shall be minimized (e.g., animal stream crossings) or avoided (eg., vehicle stream crossings, animal holding pens, ground crew/ equipment staging areas), where possible. Activities occurring within LCT habitat should take place when the ground is frozen to minimize effects of trampling, machinery, and ground crews.

APPENDIX 4 - WATER QUALITY - THERMOGRAPH DATA

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Temperature °F
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65
60
55
50
45
40
35
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20
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10
5
0
5/11
5/18
5/25
6/1
6/8
6/15
6/22
6/29
7/6
7/13
7/20
7/27
8/3
8/10
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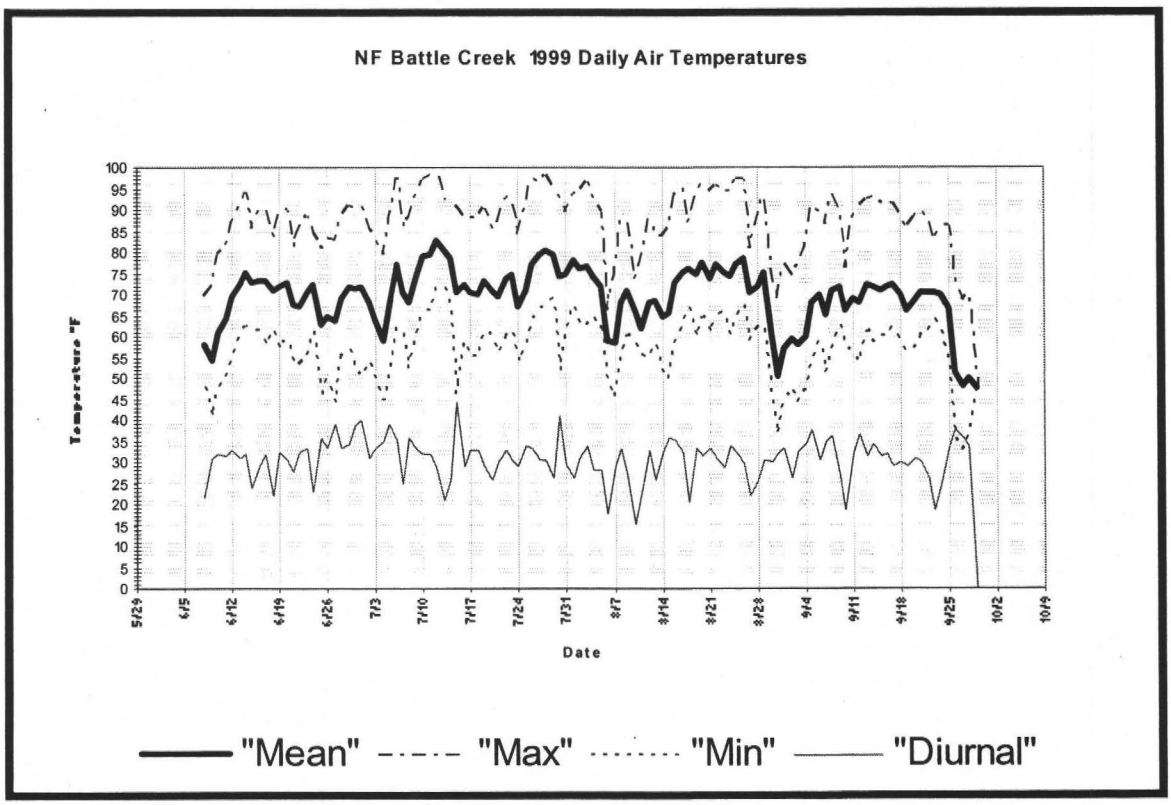
NF Battle Creek 1999 Daily Air Temperatures
Temperature °F
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95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
5/29
6/5
6/12
6/19
6/26
7/3
7/10
7/17
7/24
7/31
8/7
8/14
8/21
8/28
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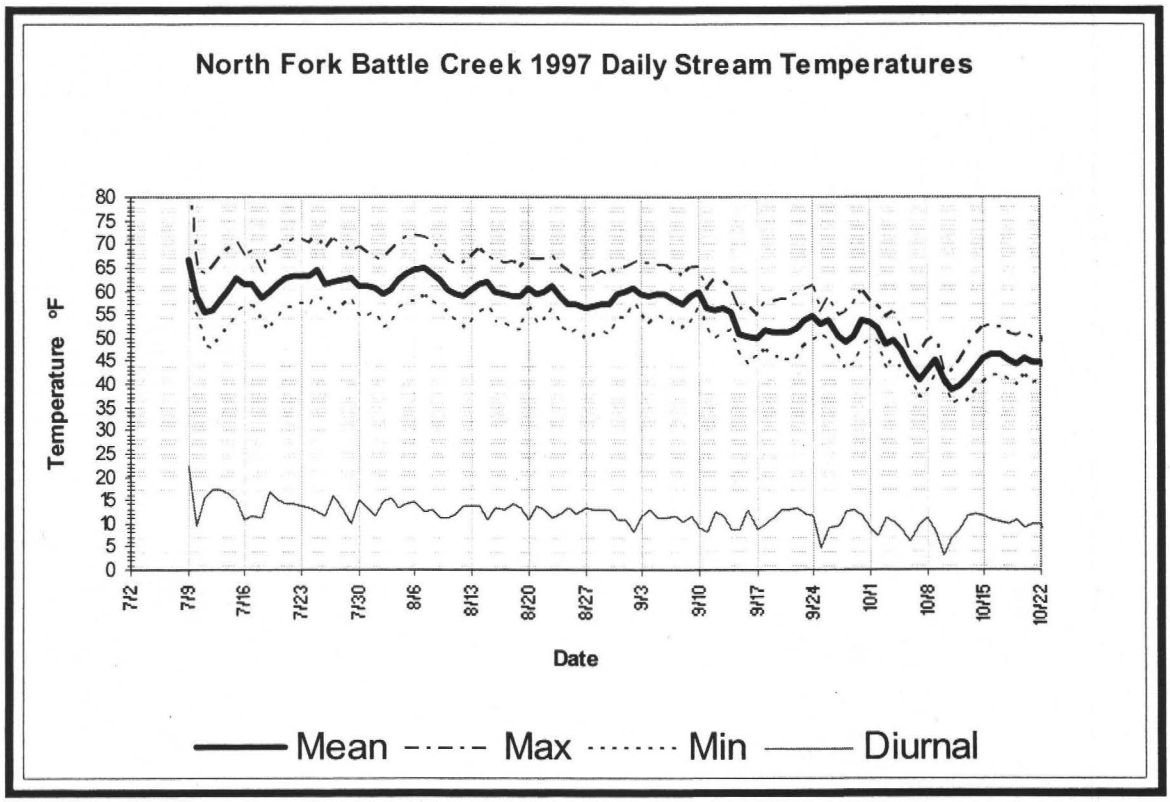
9/25
10/2
10/9
Date
"Mean"
"Max"
"Min"
"Diurnal"


North Fork Battle Creek 1997 Daily Stream Temperatures
Temperature °F
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
7/2
7/9
7/16
7/23
7/30
8/6
8/13
8/20
8/27
9/3
9/10
9/17
9/24
10/1
10/8
10/15
10/22
Date
Mean
Max
Min
Diurnal

APPENDIX 5 - ACRONYM LIST

AE	Allotment Evaluation
AML	Appropriate Management Level
AUM	Animal Unit Month
BA	Biological Assessment
BLM	Bureau of Land Management
BO	Biological Opinion
BRHRNCA	Black Rock High Rock National Conservation Area
CFR	Code of Federal Regulations
CFS	Cubic feet per second
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Act
ESA	Endangered Species Act
ESI	Ecological Site Inventory
FAE	Final Allotment Evaluation
FAR	Functional – At Risk
FONSI	Finding on No Significant Impacts
GAWS	General Aquatic Wildlife Survey
GIS	Geographic Information System
HMA	Herd Management Area
ISA	Instant Study Area
LCT	Lahontan cutthroat trout
LLC	Limited Liability Corporation
MASR	Management Action Selection Report
MUD	Multiple Use Decision
NAC	Nevada Administrative Code
NB	North Battle use area
NCA	National Conservation Area
NDEP	Nevada Department of Environmental Protection
NDOW	Nevada Division of Wildlife
NEPA	National Environmental Policy Act
NF	Not Functional
NHPA	National Historic Preservation Act
NPLUA	North Paiute low elevation use area <1550m

NPHUA	North Paiute high elevation use area >1550m
NRS	Nevada Revised Statutes
PMA	Paiute Meadows Allotment
PFC	Properly Functioning Condition
RA	Resource Area
RFFA	Reasonable Foreseeable Future Action
SHPO	State Historic Preservation Office
SB	South Battle use area
SMA	Soldier Meadows Allotment
SPHUA	South Paiute high elevation use area >1550m
SPLUA	South Paiute low elevation use area <1550m
SPUA	South Paiute use area
SRH	Standards for Rangeland Health
T&C	Terms and Conditions
T&E	Threatened & Endangered
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WSA	Wilderness Study Area

APPENDIX 6 - USFWS SPECIES LIST FOR THE PMA

File No. 1-5-03-SP-100

Threatened Species

Fish

Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*

Candidate Species

Bird

Western yellow-billed cuckoo	*Coccyzus americanus*

Species of Concern

Mammals

Pygmy rabbit	*Brachylagus idahoensis*
Pale Townsend's big-eared bat	*Corynorhinus townsendii pallescens*
Pacific Townsend's big-eared bat	*Corynorhinus townsendii townsendii*
Spotted bat	*Euderma maculatum*
Small-footed myotis	*Myotis ciliolabrum*
Long-eared myotis	*Myotis evotis*
Fringed myotis	*Myotis thysanodes*
Long-legged myotis	*Myotis volans*
Yuma myotis	*Myotis yumanensis*
California bighorn sheep	*Ovis canadensis californiana*

Birds

Northern goshawk	*Accipiter gentiles*
Western burrowing owl	*Athene cunicularia hypugea*
Sage grouse	*Centrocercus urophasianus*
Black tern	*Childonias niger*
Least bittern	*Ixobrychus exilis hesperis*
White-faced ibis	*Plegadis chihi*

Plants

Windloving buckwheat	*Eriogonum anemophilum*
Crosby buckwheat	*Eriogonum crosbyae*
Grimy ivesia	*Ivesia rhypara var. rhypara*
Smooth stickleaf	*Mentzelia mollis*

APPENDIX 7 - NEO-TROPICAL BIRDS

The following bird list contains 245 species of Neo-Tropical birds, which may be seen in the planning area. Not all birds listed are common in the planning area, some only occur on rare occasions.

Common Names	Scientific Name
Loons	
Common Loon	*Gavia immer*
Grebes	
Eared Grebe	*Podiceps nigricollis*
Western Grebe	*Aechmophorus occidentalis*
Pied-billed Grebe	*Podilymbus podiceps*
Horned Grebe	*Podiceps auritus*
Pelicans and Cormorants	
White Pelican	*Pelecanus erythrorhynchos*
Double-crested Cormorant	*Phalacrocorax auritus*
Herons, Bitterns, Ibises, Egrets	
Great Blue Heron	*Ardea herodias*
Black-crowned Night Heron	*Nycticorax nycticorax*
Green-backed Heron	*Butorides striatus*
White-faced Ibis	*Plegadis chihi*
Great Egret	*Casmerodius albus*
Snowy Egret	*Egretta thula*
American Bittern	*Botaurus lentiginosus*
Least Bittern	*Ixobrychus exilis*
Waterfowl	
Whistling Swan	*Cygnus columbianus*
Canada Goose	*Branta canadensis*
White-fronted Goose	*Anser albifrons*
Snow Goose	*Chen caerulescens*
Ross' Goose	*Chen rossii*
Black Brant	*Branta nigricans*
Mallard Duck	*Anas platyrhynchos*
Gadwall Duck	*Anas strepera*
Pintail Duck	*Anas acuta*
Green-winged Teal	*Anas crecca*

Blue-winged Teal	*Anas discors*
Cinnamon Teal	*Anas cyanoptera*
Shoveler	*Anas clypeata*
Wood Duck	*Aix sponsa*
Fluvous Duck	*Dendrocygna bicolor*
Redhead	*Aythya americana*
Canvasback Duck	*Aythya valisineria*
Greater Scaup	*Aythya marila*
Lesser Scaup	*Aythya affinis*
Common Goldeneye	*Bucephala clangula*
Barrow's Goldeneye	*Bucephala islandica*
Bufflehead	*Bucephala albeola*
Ruddy Duck	*Oxyura jamaicensis*
Common Merganser	*Mergus merganser*
Red-breasted Merganser	*Mergus serrator*
Hooded Merganser	*Lophodytes cucullatus*
American Widgeon	*Anas americana*
Eurasian Widgeon	*Anas penelope*
Ring-necked Duck	*Aythya collaris*
Oldsquaw	*Clangula hyemalis*
White-winged Scoter	*Melanitta fusca*
Surf Scoter	*Melanitta perspicillata*

Vultures, Hawks, and Falcons

Turkey Vulture	*Cathartes aura*
Sharp-shinned Hawk	*Accipiter striatus*
Cooper's Hawk	*Accipiter cooperii*
Red-tailed Hawk	*Buteo jamaicensis*
Swainson's Hawk	*Buteo swainsoni*
Rough-legged Hawk	*Buteo lagopus*
Ferruginous Hawk	*Buteo regalis*
Marsh Hawk	*Circus cyaneus*
Pigeon Hawk	*Falco columbarius*
Sparrow Hawk	*Falco sparverius*
Prairie Falcon	*Falco mexicanus*
Peregrine Falcon	*Falco peregrinus*
Golden Eagle	*Aquila chrysaetos*
Bald Eagle	*Haliaeetus leucocephalus*
Goshawk	*Accipiter gentilis*
Osprey	*Pandion haliaetus*

Cranes, Rails, and Gallinules

Greater Sandhill Crane	*Grus canadensis*

Virginia Rail	*Rallus limicola*
Sora Rail	*Porzana carolina*
American Coot	*Fulica americana*
Common Gallinule	*Gallinula chloropus*

Shorebirds

Mountain Plover	*Charadrius montanus*
Semipalmated Plover	*Charadrius semipalmatus*
Snowy Plover	*Charadrius alexandrinus*
Black-bellied Plover	*Pluvialis squatarola*
Ruddy Turnstone	*Arenaria interpres*
Kildeer	*Charadrius vociferus*
Common Snipe	*Gallinago gallinago*
Long-billed Curlew	*Numenius americanus*
Spotted Sandpiper	*Actitis macularia*
Solitary Sandpiper	*Tringa solitaria*
Baird Sandpiper	*Calidris bairdii*
Least Sandpiper	*Calidris minutilla*
Western Sandpiper	*Calidris mauri*
Stilt Sandpiper	*Calidris himantopus*
Willet	*Catoptrophorus semipalmatus*
Red Knot	*Calidris canutus*
Greater Yellowlegs	*Tringa melanoleuca*
Lesser Yellowlegs	*Tringa flavipes*
Dunlin	*Calidris alpina*
Long-billed Dowitcher	*Limnodromus scolopaceus*
Short-billed Dowitcher	*Limnodromus griseus*
Marbled Godwit	*Limosa fedoa*
Sanderling	*Calidris alba*
American Avocet	*Recurvirostra americana*
Black-necked Stilt	*Himantopus mexicanus*
Wison's Phalarope	*Phalaropus tricolor*
Red-necked Phalarope	*Phalaropus lobatus*

Gulls, Tern, and Murrelets

Herring Gull	*Larus argentatus*
California Gull	*Larus californicus*
Ring-billed Gull	*Larus delawarensis*
Bonapart's Gull	*Larus philadelphia*
Heermann's Gull	*Larus heermanni*
Forester's Tern	*Sterna forsteri*
Caspian Tern	*Sterna caspia*
Black Tern	*Chlidonias niger*

Ancient Murrelet	*Synthliboramphus antiquus*

Dove

Mourning Dove	*Zenaida macroura*

Owls

Barn Owl	*Tyto alba*
Great Horned Owl	*Bubo virginianus*
Screech Owl	*Otus kennicottii*
Burrowing Owl	*Athene cunicularia*
Long-eared Owl	*Asio otus*
Short-eared Owl	*Asio flammeus*
Pigmy Owl	*Glaucidium gnoma*
Saw-whet Owl	*Aegolius acadicus*
Flammulated Owl	*Otus flammeolus*

Goatsuckers

Poor-will	*Phalaenoptilus nuttallii*
Common Nighthawk	*Chordeiles minor*

Swifts

Black Swift	*Cyseloides niger*
White-throated Swift	*Aeronautes saxatalis*
Vaux's Swift	*Chaetura vauxi*

Hummingbirds

Broad-tailed Hummingbird	*Selasphorus platycercus*
Rufous Hummingbird	*Selasphorus rufus*
Calliope Hummingbird	*Stellula calliope*
Black-chinned Hummingbird	*Archilochus alexandri*

Kingfisher

Belted Kingfisher	*Ceryle alcyon*

Woodpeckers

Red-shafted Flicker	*Colaptes cafer*
Yellow-shafted Flicker (Northern)	*Colaptus auratus*
Lewis' Woodpecker	*Melanerpes lewis*
Hairy Woodpecker	*Picoides villosus*
Downy Woodpecker	*Picoides pubescens*
William's Sapsucker	*Sphyrapicus thyroideus*
Yellow-bellied Sapsucker	*Sphyrapicus varius*

Flycatchers

Cassin's Kingbird	*Tyrannus voriferans*
Western Kingbird	*Tyrannus verticalis*
Eastern Kingbird	*Tyrannus tyrannus*
Black Phoebe	*Sayornis nigricans*
Say's Phoebe	*Sayornis saya*
Ash-throated Flycatcher	*Myiarchus cinerascens*
Gray Flycatcher	*Empidonax wrightii*
Trail's Flycatcher(Willow)	*Empidonax trailii*
Western Flycatcher	*Empidonax difficilis*
Hammond Flycatcher	*Empidonax hammondii*
Dusky Flycatcher	*Empidonax oberholseri*
Olive-sided Flycatcher	*Contopus borealis*
Western Wood Pewee	*Contopus sordidulus*

Larks and Swallows

Horned Lark	*Eremophila alpestris*
Violet-green Swallow	*Tachycineta thalassina*
Tree Swallow	*Tachycineta bicolor*
Bank Swallow	*Riparia riparia*
Rough-winged Swallow	*Stelgidopteryx serripennis*
Cliff Swallow	*Hirundo pyrrhonota*
Barn Swallow	*Hirundo rustica*

Jays, Magpies, and Crows

Scrub Jay	*Aphelocoma coerulescens*
Pinyon Jay	*Gymnorhinus cyanocephalus*
Steller's Jay	*Cyanocitta stelleri*
Black-billed Magpie	*Pica pica*
Common Raven	*Corvus corax*
Common Crow	*Corvus brachyrhynchos*
Clark's Nutcracker	*Nucifraga columbiana*

Chickadees and Bushtits

Mountain Chickadee	*Parus gambeli*
Black-capped Chickadee	*Parus atricapillus*
Common Bushtit	*Psaltriparus minimus*
Plain Titmouse	*Parus inornatus*

Nuthatches

Red-breasted Nuthatch	*Sitta canadensis*
White-breasted Nuthatch	*Sitta carolinensis*

Dippers and Wrens

Dipper	*Cinclus mexicanus*
House Wren	*Troglodytes aedon*
Bewick's Wren	*Thryomanes bewickii*
Long-billed Marsh Wren	*Cistothorus palustris*
Rock Wren	*Salpinctes obsoletus*
Winter Wren	*Toglodytes troglodytes*
Canyon Wren	*Catherpes mexicanus*

Thrashers

Sage Thrasher	*Oreoscoptes montanus*
Mockingbird	*Mimus polyglottos*

Thrushes

Robin	*Turdus migratorius*
Varied Thrush	*Ixoreus naevius*
Hermit Thrush	*Catharus guttatus*
Swainson's Thrush	*Catharus ustulatus*
Western Bluebird	*Sialis mecicana*
Mountain Bluebird	*Sialis currucoides*
Townsend's Solitaire	*Myadestes townsendi*

Kinglets, Gnatcatchers, and Pipets

Ruby-crowned Kinglet	*Regulus calendula*
Golden-crowned Kinglet	*Regulus satrapa*
Blue-gray Gnatcatcher	*Polioptila caerulea*
Witer Pipet	*Anthus spinoletta*

Waxwings

Cedar Waxwing	*Bombycilla cedrorum*
Bohemian Waxwing	*Bombycilla garrulus*

Shrikes

Northern Shrike	*Lanius excubitor*
Loggerhead Shrike	*Lanius ludovicianus*

Vireos

Warbling Vireo	*Vireo gilvus*
Solitary Vireo	*Vireo solitarius*

Warblers

Orange-crowned Warbler	*Vermivora celata*
Yellow Warbler	*Dendroica petechia*

Black-throated Blue Warbler	*Dendroica caerulescens*
Black-throated Gray Warbler	*Dendroica nigrescens*
Myrtle Warbler (Yellow-rumped)	*Dendroica coronata*
MacGilliivray's Warbler	*Oporonis tolmiei*
Wislon's Warbler	*Wilsonia pusilla*
Nashville Warbler	*Vermivora ruficapilla*
Virginia Warbler	*Vermivora virginiae*
Townsend's Warbler	*Dendroica townsendi*
Hermit Warbler	*Dendroica occidentalis*
Yellow-throated Warbler	*Dendroica dominica*
Yellow-breasted Chat	*Icteria virens*

Blackbirds and Orioles

Western Meadowlark	*Sturnella neglecta*
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*
Red-winged Blackbird	*Agelaius phoeniceus*
Tricolored Blackbird	*Agelaius tricolor*
Brewer's Blackbird	*Euphagus cyanocephalus*
Brown-headed Cowbird	*Molothrus ater*
Common Grackle	*Quiscalus quiscula*
Northern Oriole	*Icterus galbula*

Tanager

Western Tanager	*Piranga ludoviciana*

Grosbeak, Finches, Sparrows, Buntings

Black-headed Grosbeak	*Pheucticus melanocephalus*
Blue Grosbeak	*Guiraca caerulea*
Evening Grosbeak	*Coccothraustes vespertinus*
Pine Grosbeak	*Pinicola enucleator*
Cassin's Finch	*Carpodacus cassinii*
House Finch	*Carpodacus mexicanus*
Black Rosy Finch	*Leucosticte atrata*
American Goldfinch	*Carduelis tristis*
Lesser Goldfinch	*Carduelis psaltria*
Pine Siskin	*Carduelis pinus*
Red Crossbill	*Loxia curvirostra*
Green-tailed Towhee	*Pipilo chlorurus*
Rufous-sided Towhee	*Pipilo erythrophthalmus*
Savannah Sparrow	*Passerculus sandwichensis*
Vesper Sparrow	*Pooecetes gramineus*
Lark Sparrow	*Chondestes grammacus*
Black-throated Sparrow	*Amphispiza bilineata*

Sage Sparrow	*Amphispiza belli*
Chipping Sparrow	*Spizella passerina*
Brewer's Sparrow	*Spizella breweri*
White-crowned Sparrow	*Zonotrichia leucophrys*
Fox Sparrow	*Passerella iliaca*
Grasshopper Sparrow	*Ammodramus savannarum*
Harris' Sparrow	*Onotrichia querula*
Lincoln's Sparrow	*Melospiza lincolnii*
Tree Sparrow	*Spizella arborea*
Song Sparrow	*Melosipza melodia*
Dark-eyed Junco	*Junco hyemalis*
Lark Bunting	*Calamospiza melanocorys*
Lazuli Bunting	*Passerina amoena*
Common Redpoll	*Carduelis flammea*

APPENDIX 8 - STATE OF NEVADA'S CLASS A STANDARDS (NAC 445A.124)

Description; beneficial uses; quality standards.

1. Class A waters include waters or portions of waters located in areas of little human habitation, no industrial development or intensive agriculture and where the watershed is relatively undisturbed by man's activity.

2. The beneficial uses of class A waters are municipal or domestic supply, or both, with treatment by disinfection only, aquatic life, propagation of wildlife, irrigation, watering of livestock, recreation including contact with the water and recreation not involving contact with the water.

3. The quality standards for class A waters are:

Specifications

(a) Floating solids, sludge deposits, tastes or odor-producing substances.	*None attributable to man's activities.*
(b) Sewage, industrial wastes or other wastes.	*None.*
(c) Toxic materials, oils, deleterious substances, colored or other wastes.	*None.*
(d) Settleable solids.	*Only amounts attributable to man's activity which will not make the waters unsafe or unsuitable as a drinking water source or which will not be detrimental to aquatic life or for any other beneficial use established for this class.*
(e) pH.	*Range between 6.5 to 8.5.*
(f) Dissolved oxygen.	*Must not be less than 6.0 milligrams/liter.*
(g) Temperature.	*Must not exceed 20°C. Allowable temperature increase above natural*

receiving water temperature: None.

(h) Fecal coliform. *The fecal coliform concentration, based on a minimum of 5 samples during any 30 day period, must not exceed a geo-metric mean of 200 per 100 milliliters nor may more than 10 percent of total samples during any 30 day period exceed 400 per 100 milliliters.*

(i) Total phosphate. *Must not exceed 0.15 mg/l in any stream at the point where it enters any reservoir or lake, nor 0.075 mg/l in any reservoir or lake, nor 0.30 mg/l in streams and other flowing waters.*

(j) Total dissolved solids. *Must not exceed 500 mg/l or one-third above that characteristic of natural conditions (whichever is less).*

APPENDIX 9 - STREAM SURVEY PARAMETER DISCUSSION (INCLUDING RIPARIAN FUNCTIONALITY DESCRIPTION)

Pool measure (PM) is a rating derived from the pool to riffle ratio of a given reach. Studies indicate that the optimum pool to riffle ratio for salmonid production and over-winter survival is approximately 1:1 (Nickelson et al. 1992). This ratio allows for optimal resting habitat while in close proximaty to feeding habitats. PM is rated 100% if the pool to riffle ratio is 1:1 using the GAWS protocols.

Pool Structure (PS) is a rating based on the quality of a given pool. The quality rating is derived from a pool's size, depth, and availability of cover. These factors are important in determining whether a pool is optimal, marginal, or poor habitat for salmonids, due to its ability to provide forms of refugia. Refugia can be described as anything that provides security to a species, such as turbulent flows, undercut banks, deep water, dense overhanging vegetation, or a variety of in-stream materials. As salmonids grow larger they require various forms of cover (Balz et al. 1991), which represents one of the most important aspects of a salmonid's life. Cover yields security and visual isolation, which is important to the survival of young salmonids. Studies have shown that salmonids spent over 90% of their time utilizing cover (Hunter 1991, Young 1995, Kershner et al. 1997). Cover is a necessary habitat component for trout to mature and survive in the aquatic biota. Both pool volume and overhead cover have been found to be important for salmonid survival during winter within all age classes (Chapman and Knudson 1980). Reproductive habitat quality and success is dependent on several factors, one of which includes cover (Bjornn and Reiser 1991).

Streambottom (SB) is derived from the composition of the reaches' substrate, which is composed of those materials found to be beneficial to cold-water aquatics. Optimum substrate composition can be characterized as being relatively silt-free with a complexity of substrate sizes, which includes rubble and gravel. Shifts to a sand/silt substrate can occur as a result of anthropogenic influences or catastrophic event within a watershed. Elevated turbidities and benthic sedimentation can have detrimental effects on an aquatic community. Sedimentation and increased turbidity levels have been shown to cause decreased reproduction and reduced foraging efficiency in salmonids (Marschall and Crowder 1996, Davies and Nelson 1993, Waters 1995, Sweka and Hartman 2001), reduced macroinvertebrate abundance and diversity (Waters 1995, Hartman et al. 1996), and to alter stream geomorphology (Alexander and Hansen 1986). Embryo survival in salmonids has been shown to be reduced to less than 25% when spawning redds are infiltrated with 30% or less fine sediment (<6.35mm)(see Bjornn and Reiser 1991). In addition, successful emergence of fry after hatching has been shown to be less than 15% when redds are infiltrated with fines ranging from 2-6.4mm in diameter (see Bjornn and Reiser 1991). By reducing reproductive rates, fish populations are more susceptible to population declines by catastrophic events, such as a drought, fire, or flood. Macroinvertebrate declines caused by the filling of interstitial spaces can further impact the aquatic system, since their condition affects the entire food web from the bottom up.

Bank Cover (BC) is derived using the riparian vegetative community composition and density within a reach based on a numerical rating scale. Bank cover (i.e. riparian vegetation) affects the aquatic community in a number of ways. Reduced canopy cover has been shown to cause increased thermal variability and to reduce thermal refugia for aquatic species (Platts and Nelson 1989a, Brown and Krygier 1970), which can be detrimental to the aquatic community. This insulating effect protects the aquatic system from extreme temperatures in both summer and winter; and is also critical to protecting streambanks from freeze-thaw fractures (Bohn 1989) and subsequent mass erosion events during spring runoff periods. The insulating effect of riparian vegetation is also critical for the maintenance of the aquatic ecosystem at the watershed scale, since the effects of extreme temperatures on in-stream habitats can fragment reaches and increase seasonal mortality of aquatic species.

Bank Soil Stability (BSS) and **Bank Vegetation Stability (BVS)** are derived using a rating system based on the percentage of the streambank within a reach that are stable and the amount of vegetative soil cover and type of bank material present, respectively. As stated in the SB section, erosion and the subsequent effects of sedimentation and turbidity levels can be detrimental to aquatic communities.

The **Habitat Condition Index (HCI)** value attempts to qualify the overall condition of a given stream habitat based on the extrapolation of reach based information to the watershed. The conditions of the above described parameters cumulatively affect aquatic habitat conditions within a watershed. Since stream habitat quality for cold water aquatic species is based on the conditions of a variety of habitats and the connectivity of these habitats, thus it is important to determine the level of cumulative impacts occurring within a system. Cumulative impacts on fish and other aquatic species, such as sedimentation, loss of undercut banks, loss of canopy cover, degradation of the stream channel, increased turbidity, increased nutrients, soil compaction, loss of flora diversity, and reduced sediment capture ability often result from livestock use within the streamside riparian zone (Meehan et al. 1977, Stuber 1985, Bjornn and Reiser 1991, Clary and Webster 1989, 1990a, 1990b, Murphy and Meehan 1991, Armour et al. 1994, Waters 1995). The maintenance of good to excellent aquatic habitat at the watershed scale is important since fish require different physical habitats, spatial heterogeneity and the connectivity of habitat patches for the completion of their life cycles (Bisson et al. 1982). Furthermore, the maintenance of watershed connectivity has become a major issue in the recovery of Lahontan cutthroat trout, other salmonid species, and aquatic biodiversity; since fragmentation eliminates the ecological, genetic, and demographic dispersion of a population (see Zwick 1992, Vinyard and Dunham 1994).
Therefore by maintaining optimal aquatic habitats throughout a watershed the potential for a population or for an important habitat component to become isolated is significantly reduced.

Ungulate Damage (UD) is determined by assessing the percent of a reach that exhibits ungulate induced streambank damage. This factor is very important since livestock impacts on channel morphology and stream margins can dramatically affect the quality of aquatic habitat for cold-water aquatics. The removal of riparian vegetation reduces bank stability causing increased hoof shear and bank slough (Clary and Webster 1989), which increases bank angle and water width while reducing water depth (Platts 1990). Hoof shearing and mechanical damage on the streambanks increases erosion and stream sedimentation (see Powell et al. 2000, Pfankuch 1978, Hayslip 1993, Platts et al. 1987, Montana Working Group 1998, Thompson et al. 1998, Bengeyfield and Svoboda 1998, Hockett and Roscoe 1994). According to the authors, the amount of unaltered streambank necessary for channel maintenance ranged from 70-100 percent stable banks. Thus a 30 percent altered streambank (natural and unnatural) appears to be the maximum allowable amount for streambank maintenance. Improper or unmanaged grazing within the riparian-stream ecosystem can lead to an imbalance between the aquatic ecosystem, riparian zone, and watershed (Debano and Schmidt 1989), therefore it is important to monitor the direct impacts livestock have on stream systems.

Evaluations of streambank condition and stability are conducted during the stream survey protocol and also using a stand alone streambank alteration protocol. These data are used to evaluate impacts from livestock and wild ungulates on stream morphology. The degree of morphological impacts can also be determined using a reach's sensitivity to disturbance and recovery potential using its Rosgen channel type (Rosgen 1996). Riparian structure and function can be evaluated using several techniques, one of which is the Bureau's Riparian Functionality Assessment (PFC Survey).

APPENDIX 10 - NOXIOUS WEED SPECIES LIST

Symbol	Scientific Name	Noxious Common Name	State Noxious Status	U.S. Nativity[12]
ACRE3	*Acroptilon repens (L.) DC.*			I
CERE6	*Centaurea repens L.*	Russian knapweed	Noxious weed	
ALMA12	*Alhagi maurorum Medik.*			I
ALCA	*Alhagi camelorum Fisch.*	camelthorn	Noxious weed	
ANCO2	*Anthemis cotula L.*	mayweed chamomile	Noxious weed	I
CADR	*Cardaria draba (L.) Desv.*	whitetop or hoary cress	Noxious weed	I
CANU4	*Carduus nutans L.*	musk thistle	Noxious weed	I
CANUL	*Carduus nutans L. ssp. leiophyllus (Petrovic) Stojanov & Stef.*	musk thistle	Noxious weed	I
CANUM	*Carduus nutans L. ssp. macrocephalus (Desf.) Nyman*	musk thistle	Noxious weed	I
CANUM2	*Carduus nutans L. ssp. macrolepis (Peterm.) Kazmi*	musk thistle	Noxious weed	I
CANUN	*Carduus nutans L. ssp. nutans*	musk thistle	Noxious weed	I
CEBI2	*Centaurea biebersteinii DC.*			I
CEMA4	*Centaurea maculosa auct. non Lam.*	spotted knapweed	Noxious weed	
CECA2	*Centaurea calcitrapa L.*	purple starthistle	Noxious weed	I

[12] *N =Native, N? =probably native, NI=some populations native, some introduced, I=Introduced, I? =probably introduced, XU = Not in US or cultivated, ? =unknown.

CEDI3	*Centaurea diffusa Lam.*	diffuse knapweed	Noxious weed	I
CEIB	*Centaurea iberica Trev. ex Spreng.*	Iberian starthistle	Noxious weed	I
CESO3	*Centaurea solstitialis L.*	yellow starthistle	Noxious weed	I
CETR8	*Centaurea triumfettii All.*			I
CEVI	*Centaurea virgata Lam.*	squarrose knapweed	Noxious weed	
CHJU	*Chondrilla juncea L.*	rush skeletonweed	Noxious weed	I
CIMA2	*Cicuta maculata L.*	water hemlock	Noxious weed	N
CIMAA	*Cicuta maculata L. var. angustifolia Hook.*	water hemlock	Noxious weed	N
CIMAB	*Cicuta maculata L. var. bolanderi (S. Wats.) Mulligan*	water hemlock	Noxious weed	N
CIMAM	*Cicuta maculata L. var. maculata*	water hemlock	Noxious weed	N
CIAR4	*Cirsium arvense (L.) Scop.*	Canada thistle	Noxious weed	I
COMA2	*Conium maculatum L.*	poison hemlock	Noxious weed	I
CRVU2	*Crupina vulgaris Cass.*	common crupina	Noxious weed	I
CYOF	*Cynoglossum officinale L.*	houndstongue	Noxious weed	I
EUES	*Euphorbia esula L.*	leafy spurge	Noxious weed	I
EUESE	*Euphorbia esula L. var. esula*	leafy spurge	Noxious weed	I
EUESO	*Euphorbia esula L. var. orientalis Boiss.*	leafy spurge	Noxious weed	I
EUESU	*Euphorbia esula L. var. uralensis (Fisch. ex Link) Dorn*	leafy spurge	Noxious weed	I
GAOF	*Galega officinalis L.*	goat's rue	Noxious weed	I
HYVE3	*Hydrilla verticillata (L. f.) Royle*	hydrilla	Noxious weed	I

HYNI	*Hyoscyamus niger L.*	black henbane	Noxious weed	I
HYPE	*Hypericum perforatum L.*	St. Johnswort	Noxious weed	I
ISTI	*Isatis tinctoria L.*	dyer's woad	Noxious weed	I
LELA2	*Lepidium latifolium L.*	perennial pepperweed	Noxious weed	I
LIDA	*Linaria dalmatica (L.) P. Mill.*	Dalmatian toadflax	Noxious weed	I
LIDAD	*Linaria dalmatica (L.) P. Mill. ssp. dalmatica*	Dalmatian toadflax	Noxious weed	I
LIDAM	*Linaria dalmatica (L.) P. Mill. ssp. macedonica (Griseb.) D.A. Sutton*	Dalmatian toadflax	Noxious weed	I
LIVU2	*Linaria vulgaris P. Mill.*	yellow toadflax	Noxious weed	I
LYSA2	*Lythrum salicaria L.*	purple loosestrife	Noxious weed	I
LYVI3	*Lythrum virgatum L.*	purple loosestrife	Noxious weed	I
MYSP2	*Myriophyllum spicatum L.*	Eurasian watermilfoil	Noxious weed	I
ONAC	*Onopordum acanthium L.*	Scotch thistle	Noxious weed	I
PEHA	*Peganum harmala L.*	African rue	Noxious weed	I
PORE5	*Potentilla recta L.*	sulfur cinquefoil	Noxious weed	I
ROAU	*Rorippa austriaca (Crantz) Bess.*	Austrian fieldcress	Noxious weed	I
SAAE	*Salvia aethiopis L.*	Mediterranean sage	Noxious weed	I
SOCA3	*Solanum carolinense L.*	Carolina horsenettle	Noxious weed	N
SOCAC4	*Solanum carolinense L. var. carolinense*	Carolina horsenettle	Noxious weed	N
SOCAF	*Solanum carolinense L. var. floridanum (Shuttlw. ex Dunal) Chapman*	Carolina horsenettle	Noxious weed	N

SOCAH2	*Solanum carolinense L. var. hirsutum (Nutt.) Gray*	Carolina horsenettle	Noxious weed	N
SOEL	*Solanum elaeagnifolium Cav.*	white horsenettle	Noxious weed	N
SOAR2	*Sonchus arvensis L.*	sowthistle	Noxious weed	I
SOARU	*Sonchus arvensis L. ssp. uliginosus (Bieb.) Nyman*	sowthistle	Noxious weed	I
SOAL	*Sorghum almum Parodi*	Columbus grass	Noxious weed	I
SOBI2	*Sorghum bicolor (L.) Moench*	shattercane	Noxious weed	I
SOBIA	*Sorghum bicolor (L.) Moench ssp. arundinaceum (Desv.) de Wet & Harlan*	shattercane	Noxious weed	I
SOBIB	*Sorghum bicolor (L.) Moench ssp. bicolor*	shattercane	Noxious weed	I
SOBID	*Sorghum bicolor (L.) Moench ssp. drummondii (Nees ex Steud.) de Wet & Harlan*	shattercane	Noxious weed	I
SOHA	*Sorghum halepense (L.) Pers.*	johnsongrass	Noxious weed	I
SOPR3	*Sorghum propinquum (Kunth) Hitchc.*	sorghum	Noxious weed	XU
SPSA3	*Sphaerophysa salsula (Pallas) DC.*	Austrian peaweed	Noxious weed	I
TACA8	*Taeniatherum caput-medusae (L.) Nevski*	medusahead	Noxious weed	I
TAPA4	*Tamarix parviflora DC.*	saltcedar	Noxious weed	I
TARA	*Tamarix ramosissima Ledeb.*	saltcedar	Noxious weed	I
TRTE	*Tribulus terrestris L.*	puncturevine	Noxious weed	I

GLOSSARY

ACEC – Area of Critical Environmental Concern; type of special land use designation specified within the Federal Land Policy and Management Act (FLPMA).

AUM – Animal Unit Month; the amount of forage required to sustain one cow and calf for one month.

BLM - Bureau of Land Management; government agency with the mandate to manage Federal lands under its jurisdiction for multiple uses.

Candidate Species – Any species included in the Federal Register Notice of Review that are being considered for listing as threatened or endangered by the U. S. Fish and Wildlife Service.

CFR – Code of Federal Regulations; government publication listing all Federal regulation in existence.

Cherrystemmed-A term used by BLM to decribe narrow linear areas, usually roads or routes, which intrude into an area surrounded by a wilderness or wilderness study area but which are not part of the wilderness or wilderness study area.

Cumulative Impacts – The impact that results from identified actions when they are added to other past, present, present and reasonably foreseeable future actions, regardless of who undertakes these actions. Such impacts can result from individually minor, but collectively significant actions occurring over a period of time.

Endangered Species – Any species defined under the endangered Species Act as being in danger of extinction throughout all or a significant portion of its range. Listing are published in the Federal Register.

EA – Environmental Assessment; one type of document prepared by Federal agencies in compliance with the National Environmental Policy Act (NEPA) which portrays the environmental consequences of proposed Federal actions which are not expected to have significant impacts on the human environment.

Fluvial- Flowing as in streams, or of streams

HMA – (Wild Horse/Burro) Herd Management Area; public land under the jurisdiction of the Bureau of Land Management that has been designated for special management emphasizing the maintenance of an established wild horse herd.

Lacustrine- Refers to lakes and aspects of lakes

Lacustrine Habitat – Riparian areas that are permanently flooded lakes and reservoirs, and both seasonally and intermittently flooded lakes; typically extensive areas of deep water with extensive wave action.

Lentic Habitat – Riparian areas with low flows or standing water habitats such as lakes, ponds, seeps, bogs and meadows.

Lotic Habitat – running water habitat such as rivers, streams and springs.

Midden – A organic archeological deposit marking a former habitation site it might contain such artifacts as bone, food products, charcoal, ash, etc.

Monitoring and Evaluation – The collection and analysis of data used to evaluate the progress and effectiveness of on-the-ground actions in meeting resource management goals and objectives.

NEPA – National Environmental Policy Act of 1969; law requiring all Federal agencies to evaluate the impacts of proposed major Federal actions with respect to their significance on the human environment.

Noxious Weed – a plant specified by law as being especially undesirable, troublesome and difficult to control.

Seral Stage – the rated departure of a plant community from a described potential natural community (PNC) for a specific ecological site. Low-seral stage is an existing plant community which is defined as 0-25% comparability to the defined PNC; Mid-seral stage is an existing plant community which has 26-50% comparability to the defined PNC; Late seral stage is 51-75% comparability to the defined PNC; PNC is an existing plant community with 76-100% comparability to the defined PNC.

Special Status Species – Plant or animal species falling into any one of the following categories: Federally listed threatened or endangered species, species proposed for Federal listing as threatened or endangered, candidate species for Federal listing, State listed species, Bureau assessment species (see separate definition for each).

Species Diversity – The number, different kinds of, and relative abundances of species present in a given area.

Threatened Species – Any plant or animal species defined under the Endangered Species Act as likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Listing are published in the Federal Register.

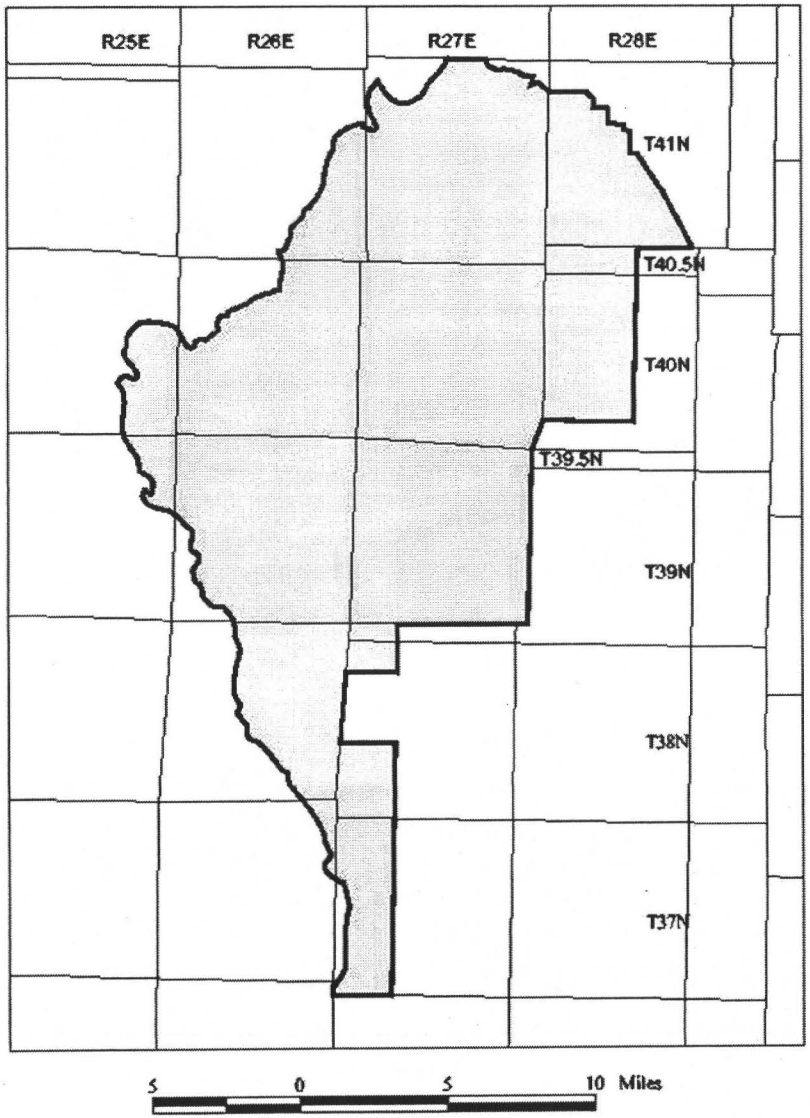
USFWS – U.S. Fish and Wildlife Service; a government agency responsible for managing fish and wildlife and their habitats.

Visual Resource – The visible physical features of a landscape.
Management classes are determined on the basis of overall scenic quality, distance from travel routes, and sensitivity to change.

> **Class I**: Provides primarily for natural ecological changes only. It is applied to wilderness areas, some natural areas, and similar situations where management activities are to be restricted.
>
> **Class II**: Changes in the basic elements caused by a management activity may be evident in the characteristic landscape, but the changes should remain subordinate to the visual strength of the existing character.
>
> **Class III**: Changes in the basic elements caused by a management activity may be evident in the characteristic landscape, but the changes should remain subordinate to the visual strength of the existing character.
>
> **Class IV**: Changes may subordinate the original composition and character but must reflect what could be a natural occurrence within the characteristic landscape.

WSA – Wilderness Study Area; public land under the jurisdiction of the Bureau of Land Management which has been studied for wilderness character and is currently in an interim management status awaiting official wilderness designation or release from WSA status by Congress.

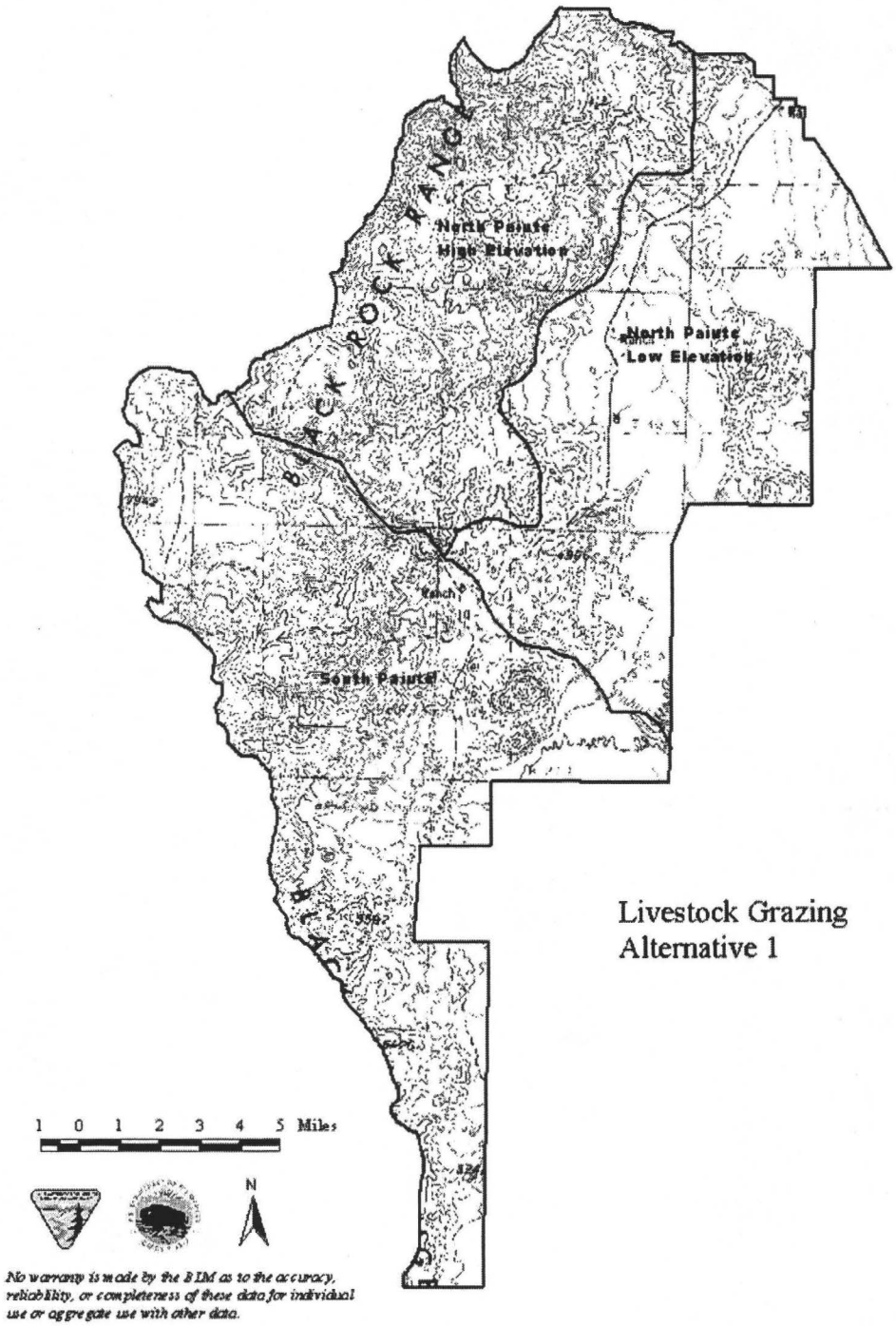
APPENDIX 11 - ALLOTMENT LOCATION MAP



Location of
Paiute Meadows Allotment

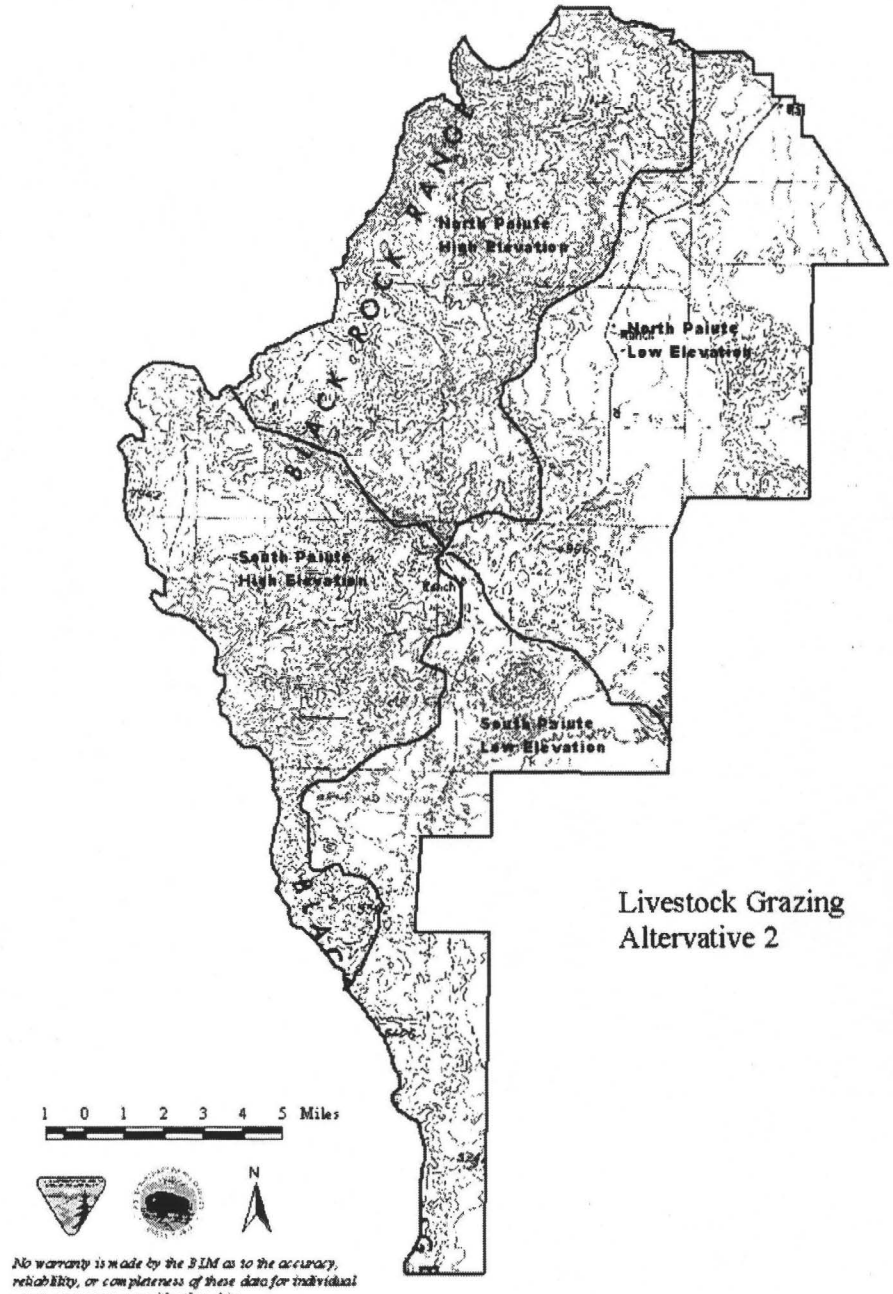
No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

APPENDIX 12 - ALTERNATIVE 1 LIVESTOCK GRAZING MAP

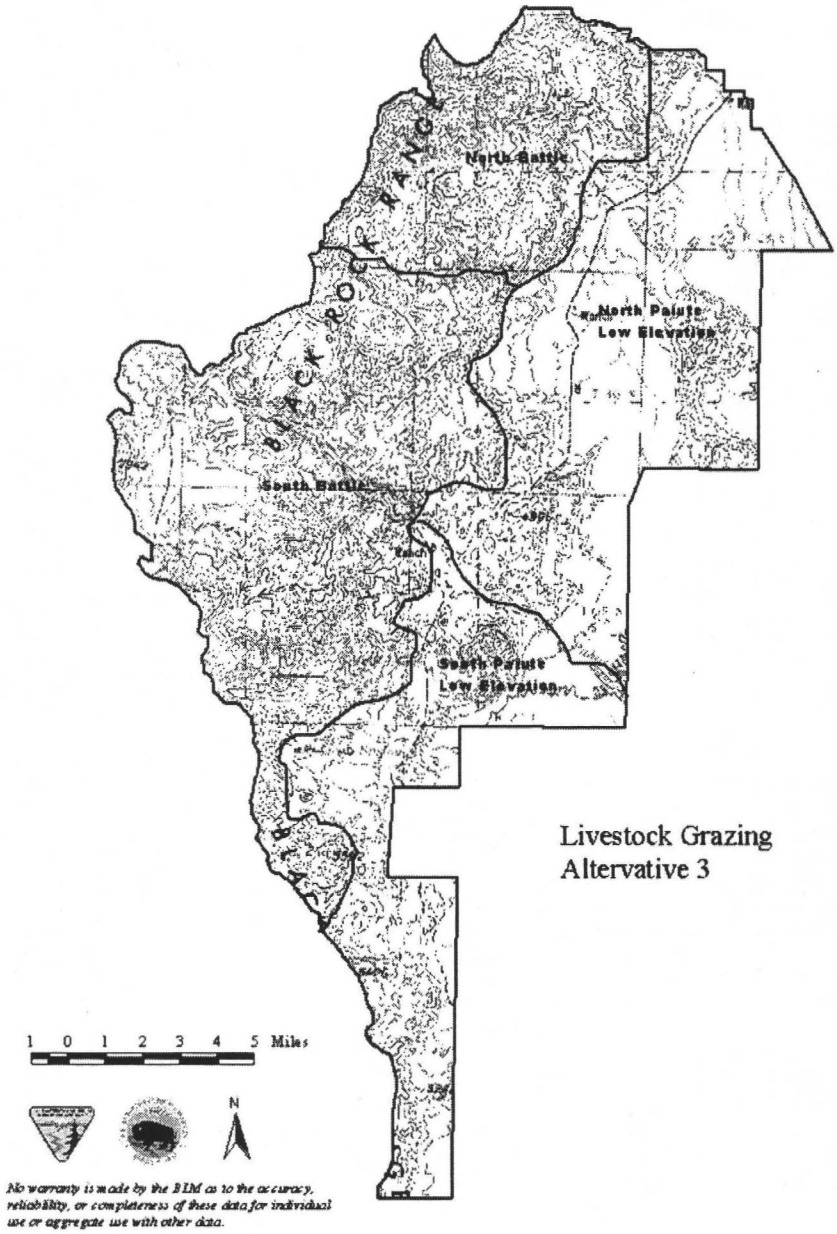


Livestock Grazing
Alternative 1

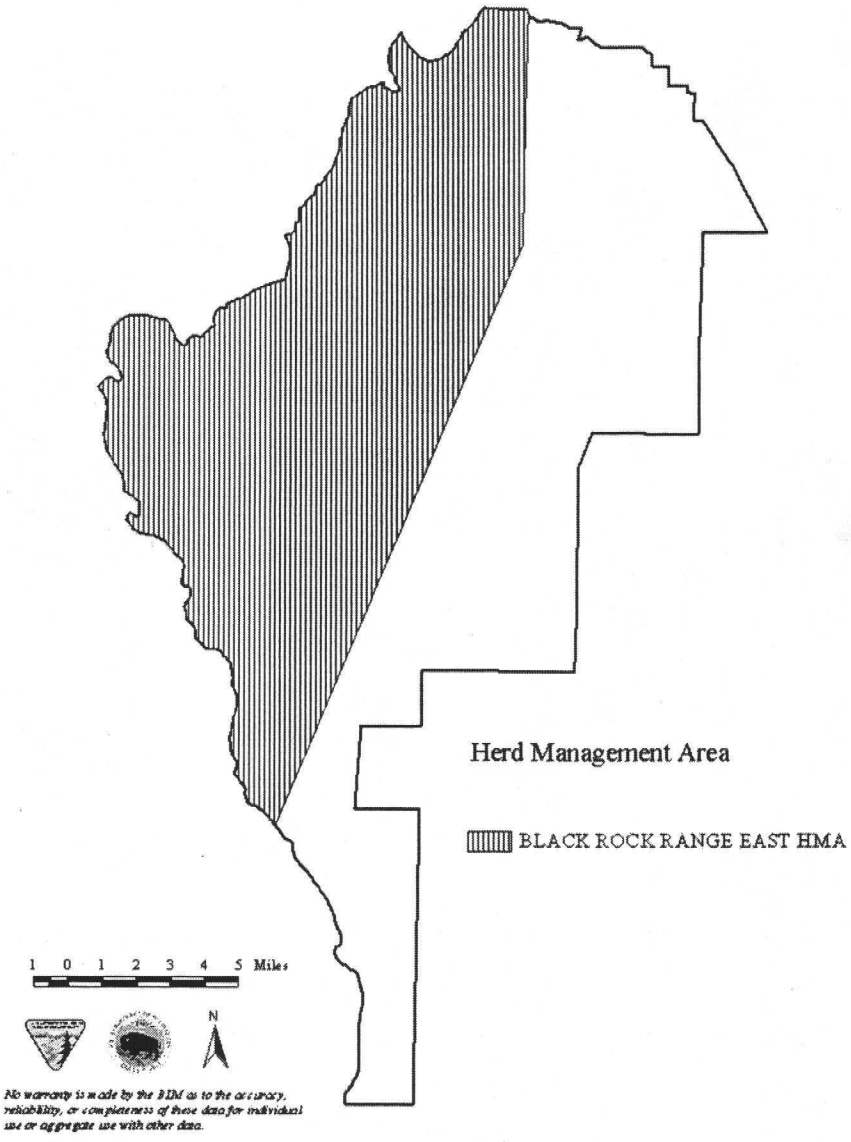
APPENDIX 13 - ALTERNATIVE 2 LIVESTOCK GRAZING MAP



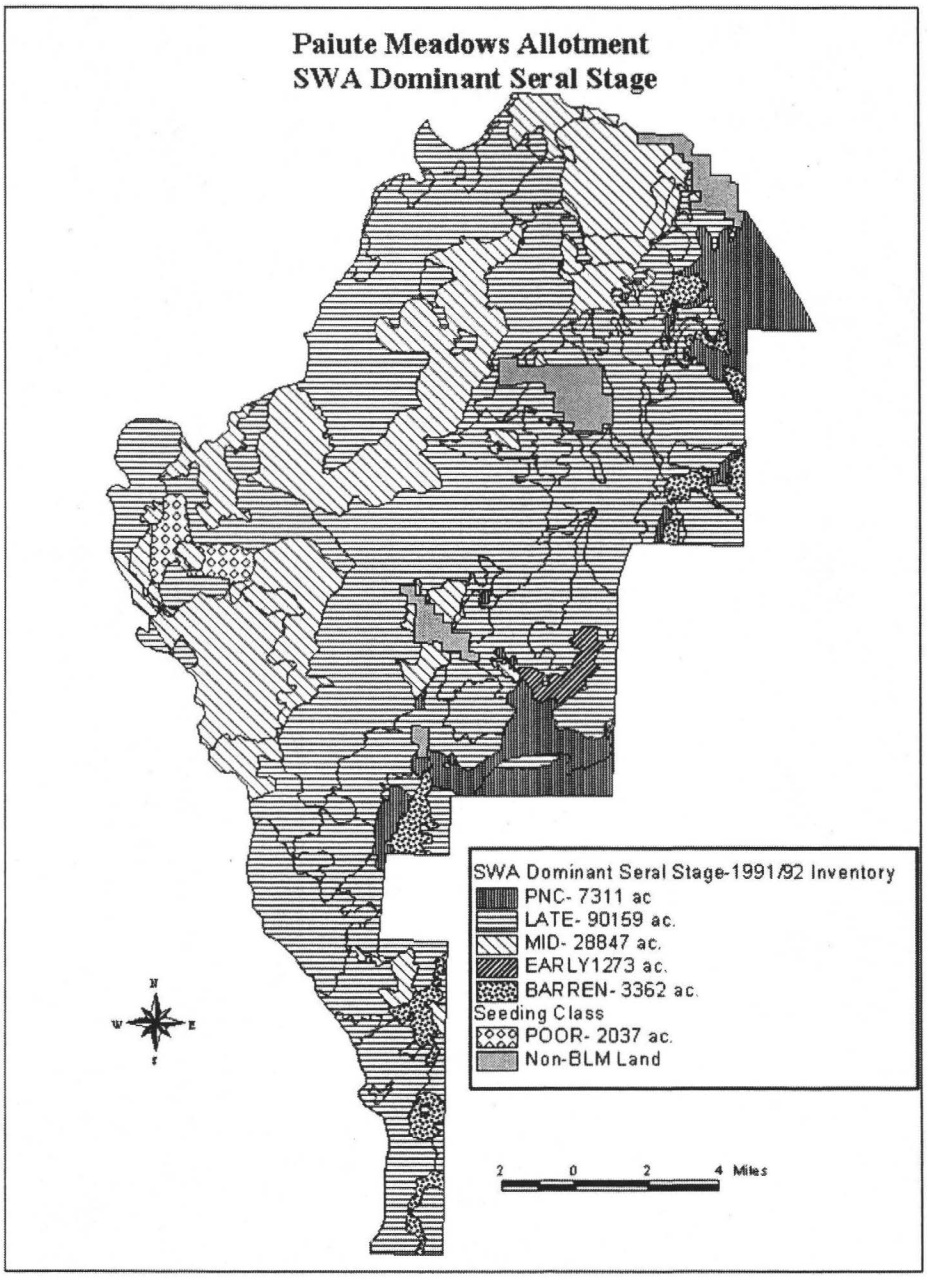
APPENDIX 14 - ALTERNATIVE 3 LIVESTOCK GRAZING MAP



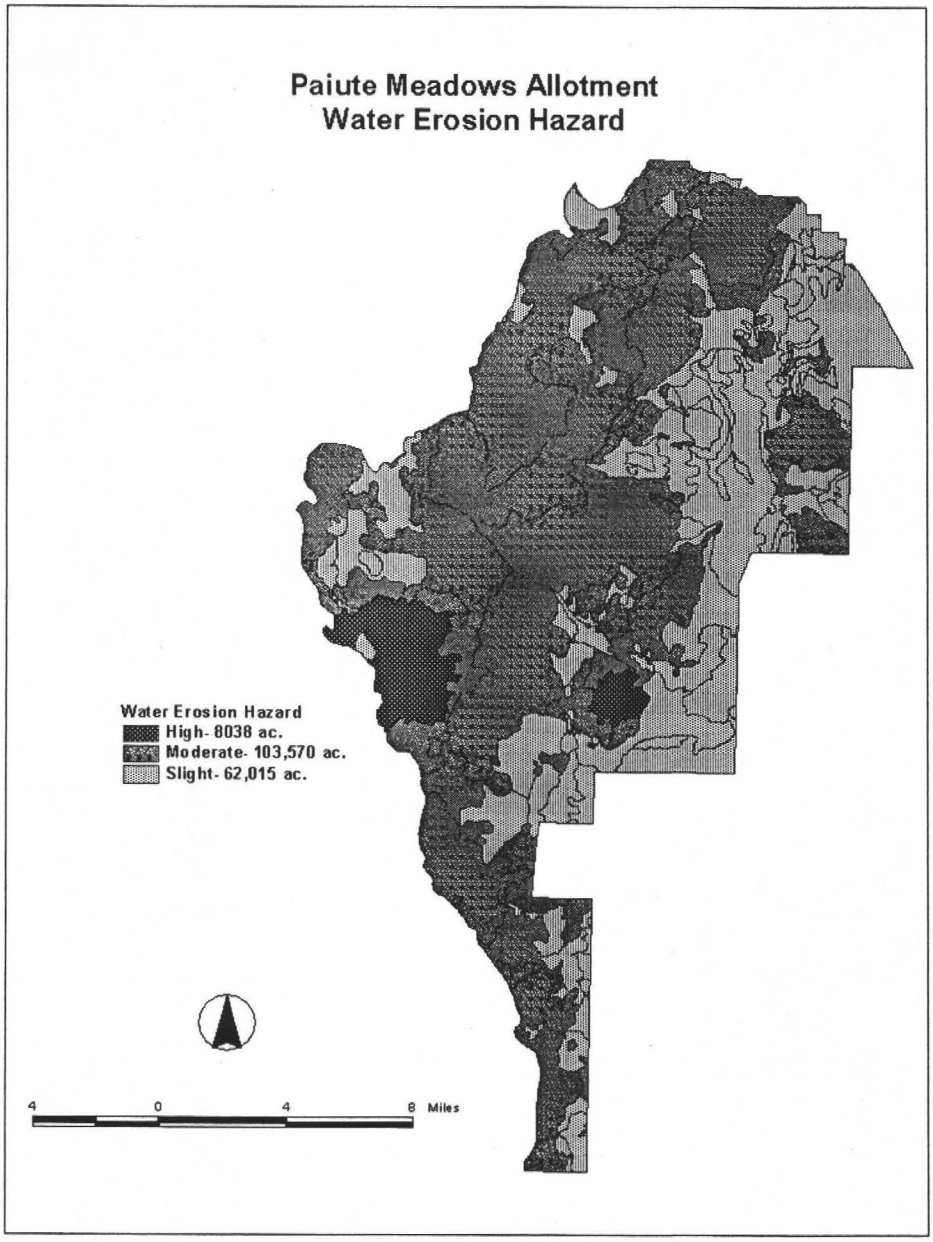
APPENDIX 15 - HERD MANAGEMENT AREA MAP



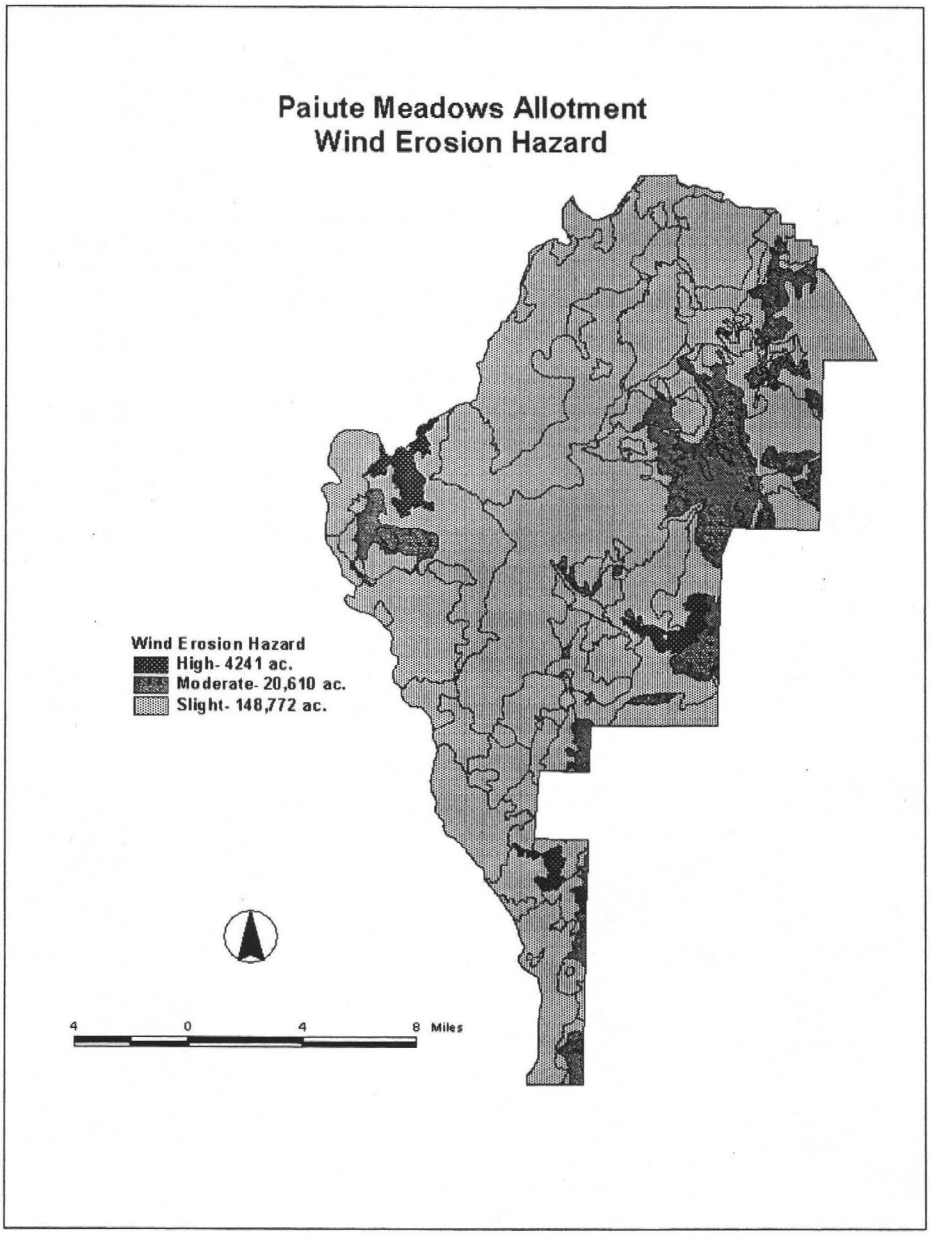
APPENDIX 16 - ALLOTMENT ECOLOGICAL STATUS INVENTORY (ESI) MAP



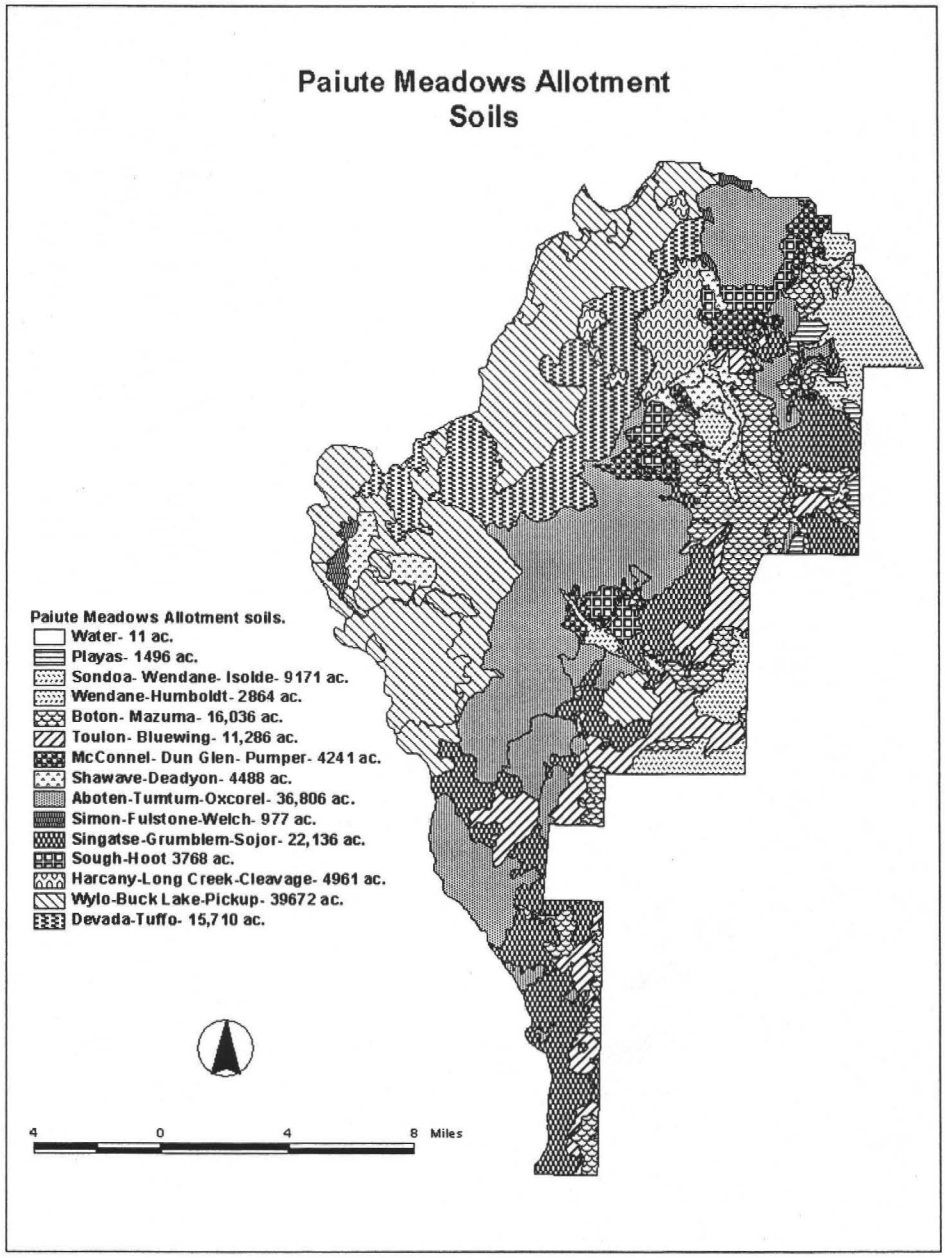
APPENDIX 17 - SOIL EROSION HAZARDS (WATER) MAP



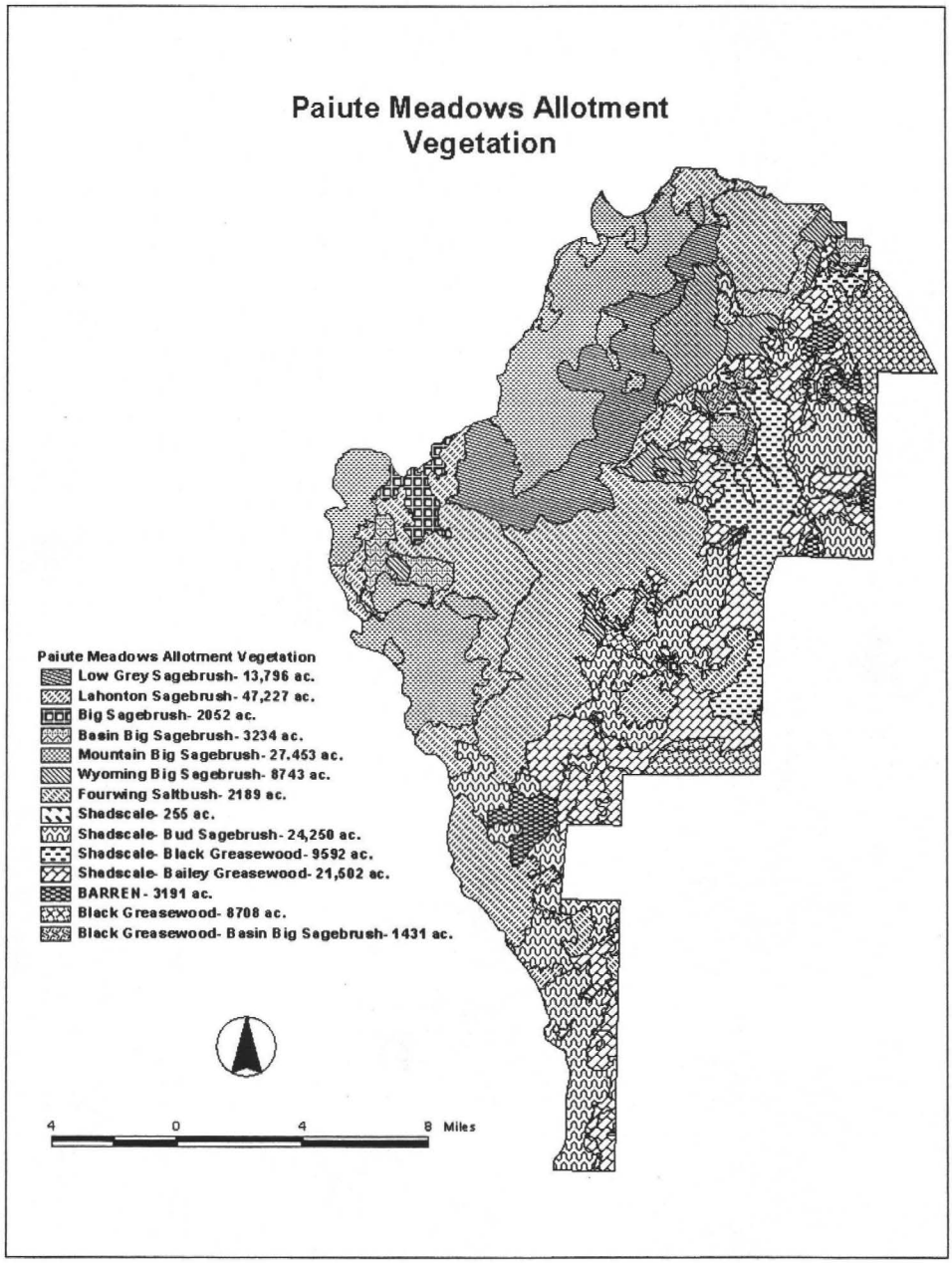
APPENDIX 18 - SOIL EROSION HAZARDS (WIND) MAP



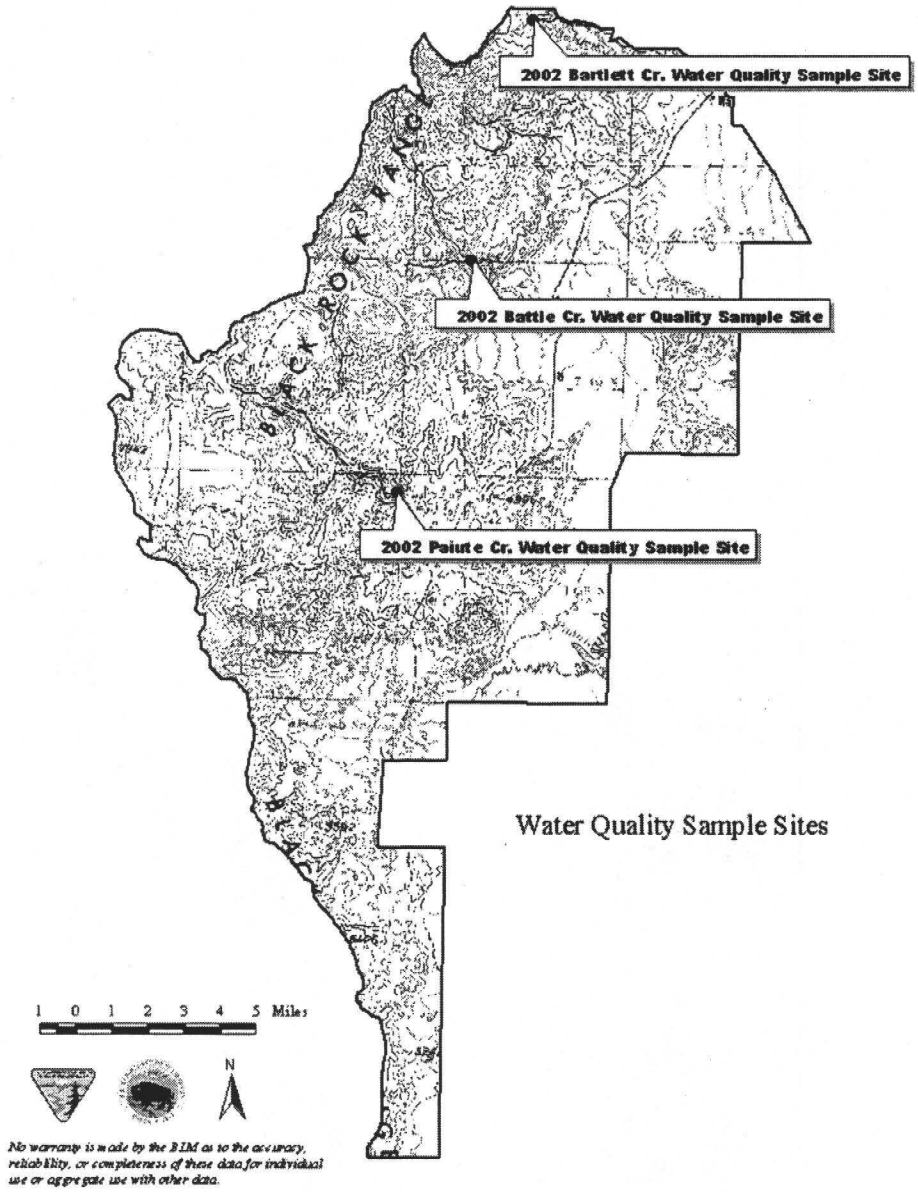
APPENDIX 19 - SOIL SURVEY MAP



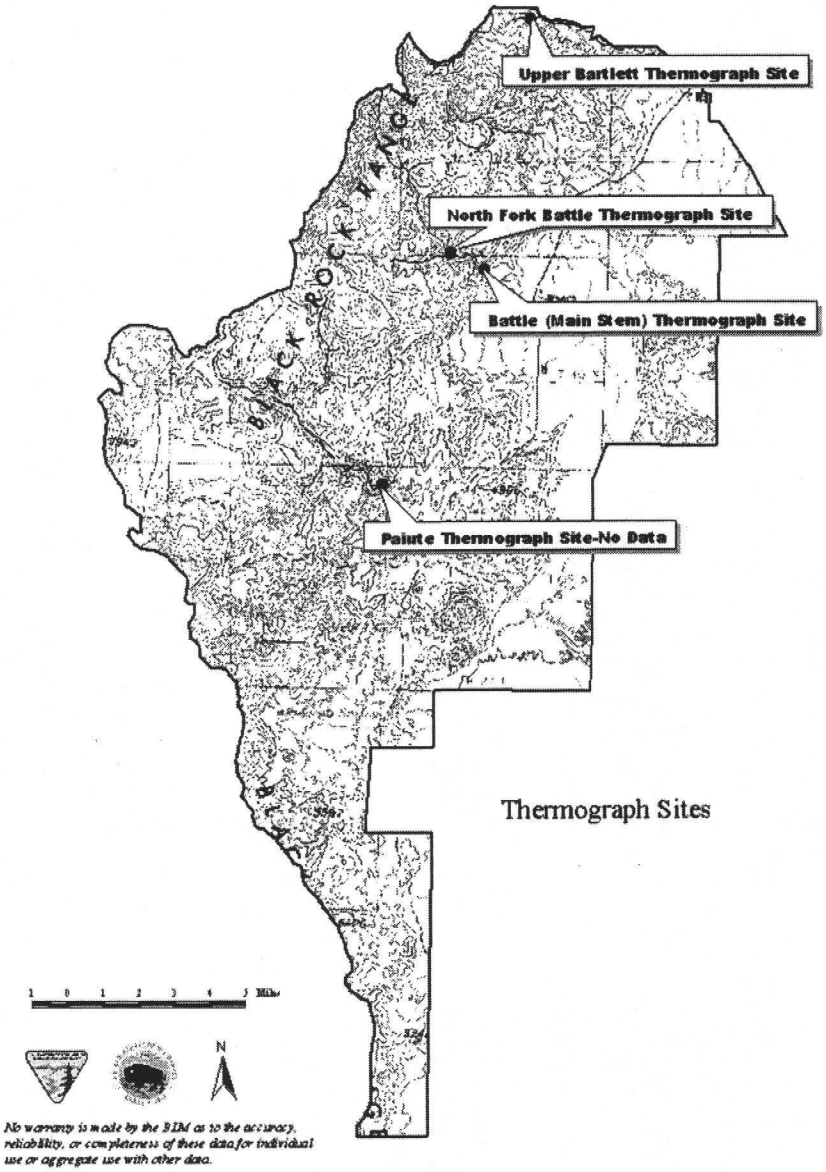
APPENDIX 20 - VEGETATION COMMUNITIES MAP



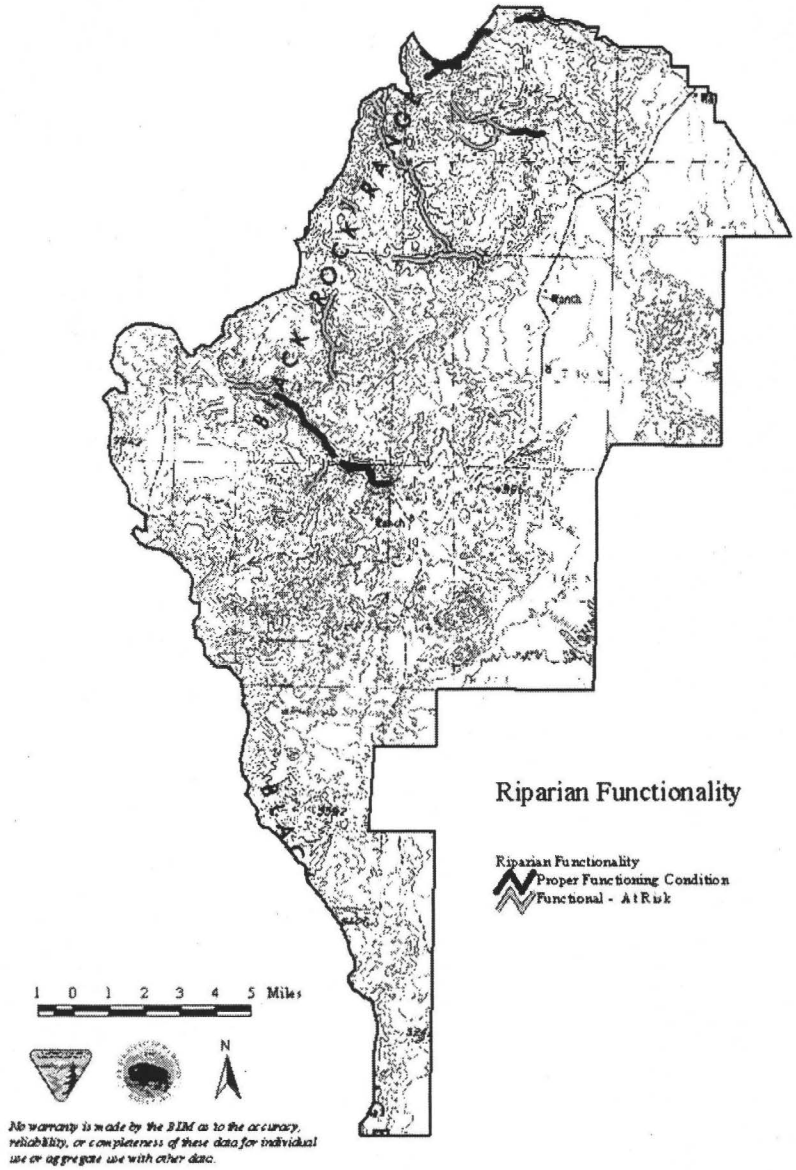
APPENDIX 21 - WATER QUALITY SITES MAP



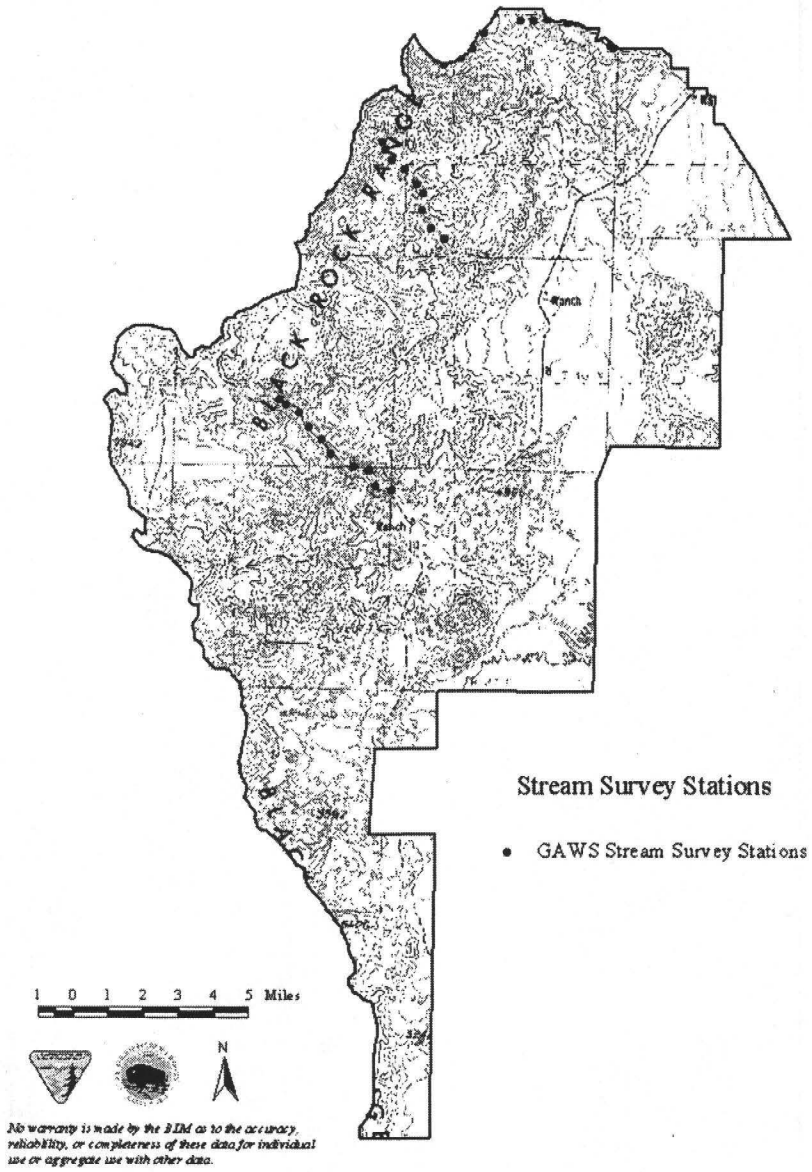
APPENDIX 22 - THERMOGRAPH LOCATIONS MAP



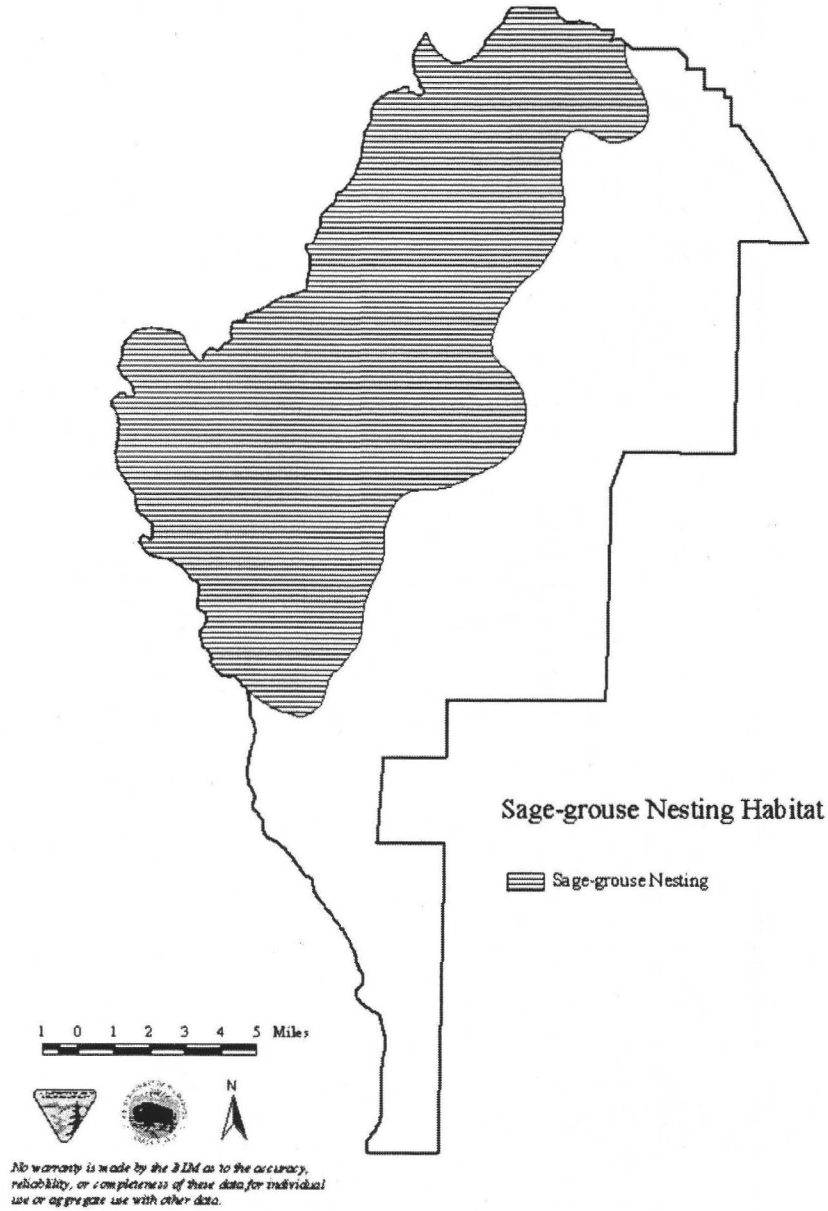
APPENDIX 23 - RIPARIAN FUNCTIONALITY MAP



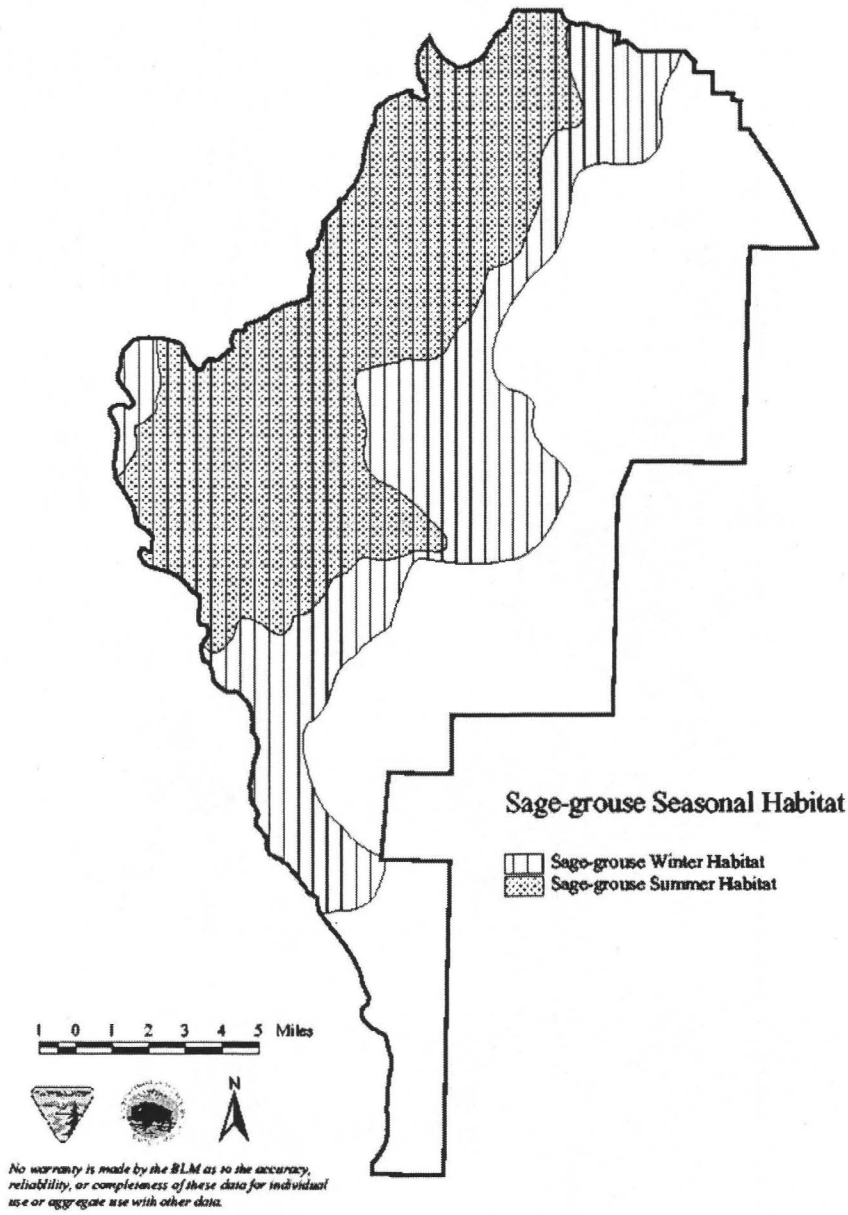
APPENDIX 24 - STREAM SURVEY STATIONS MAP



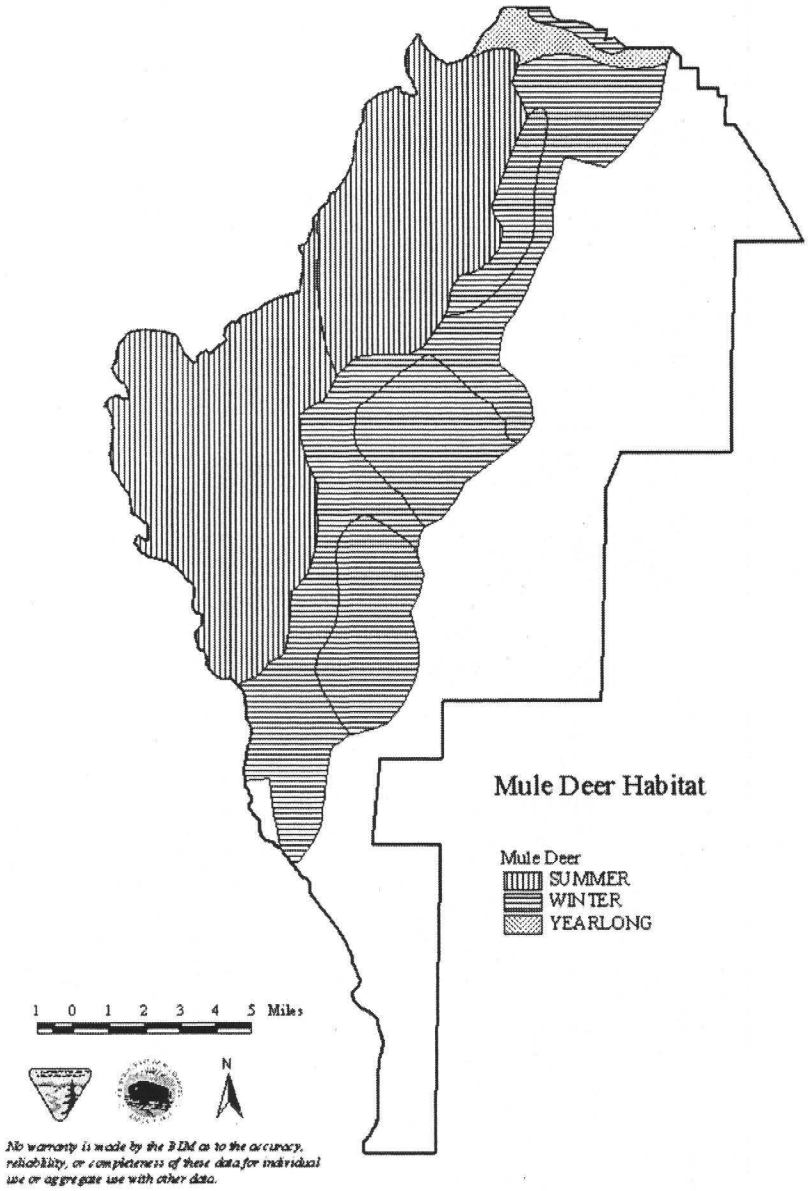
APPENDIX 25 - SAGE GROUSE NESTING HABITAT MAP



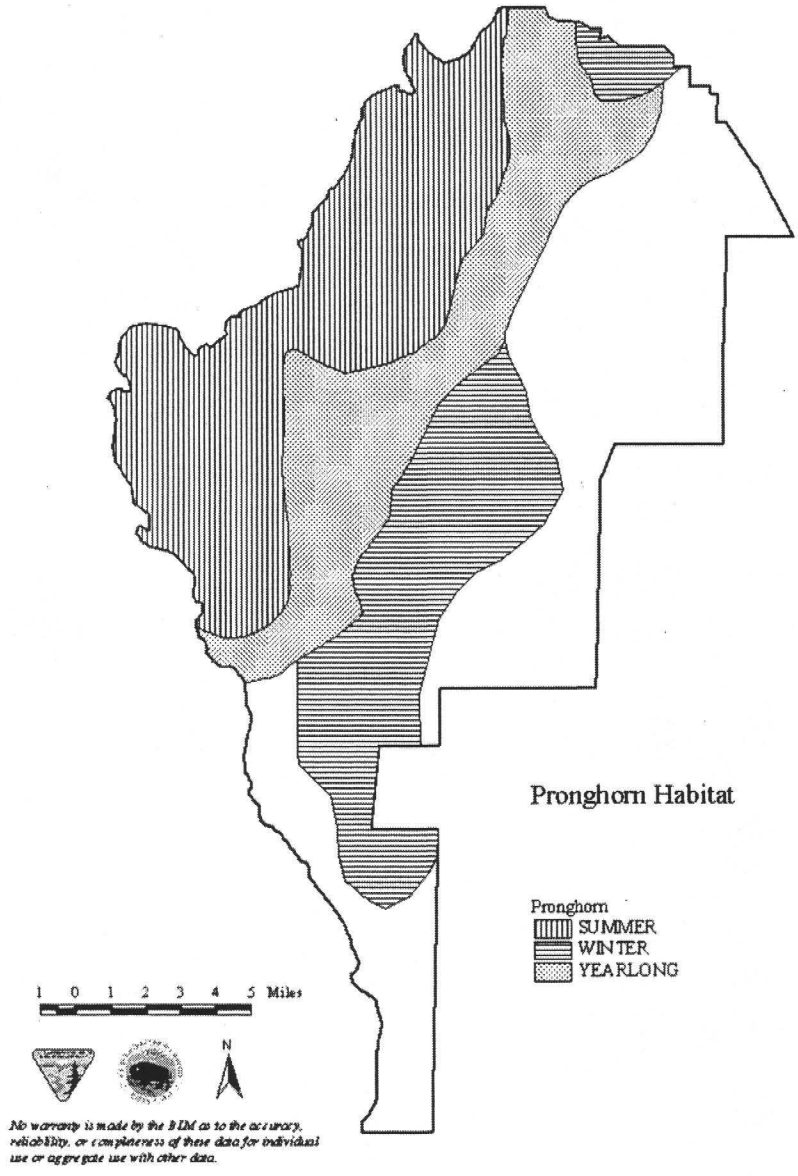
APPENDIX 26 - SAGE GROUSE SEASONAL HABITAT MAP



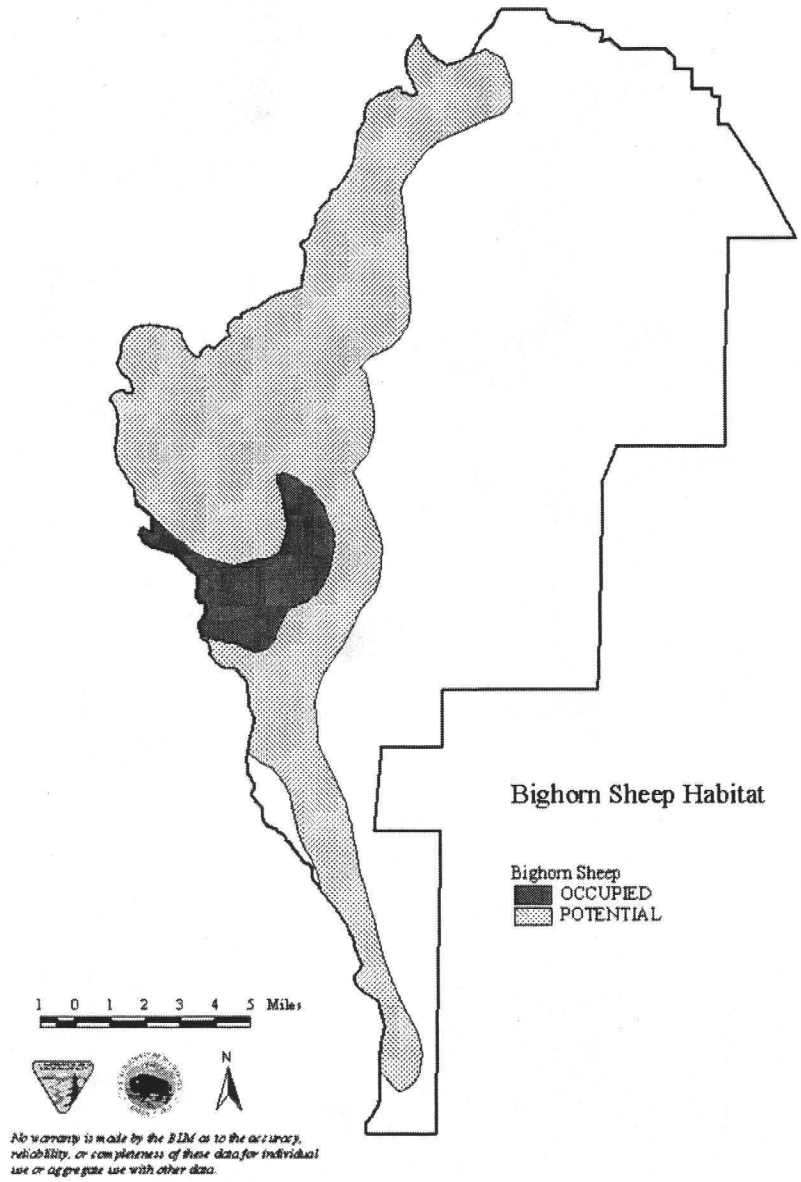
APPENDIX 27 - MULE DEER HABITAT RANGE MAP



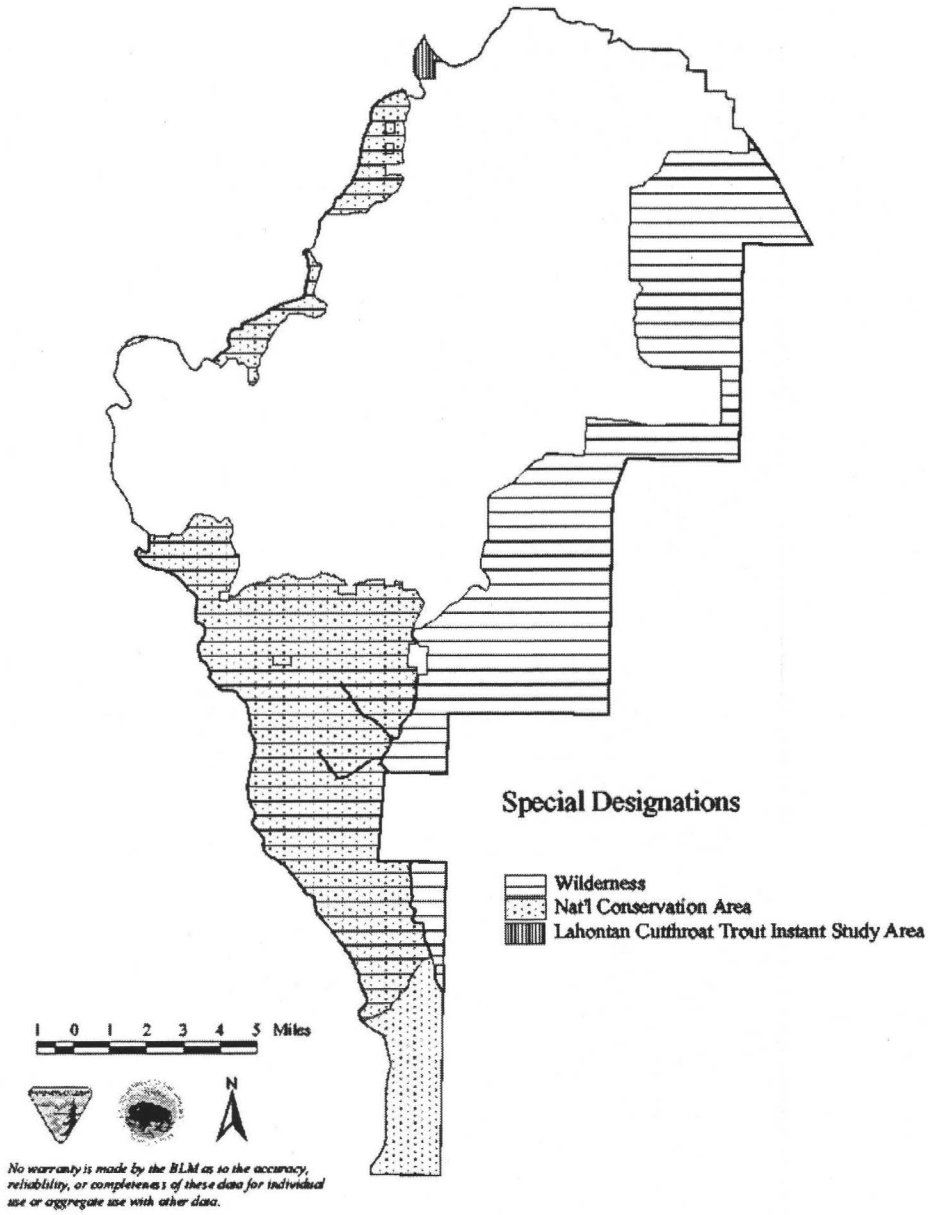
APPENDIX 28 - PRONGHORN ANTELOPE HABITAT RANGE MAP



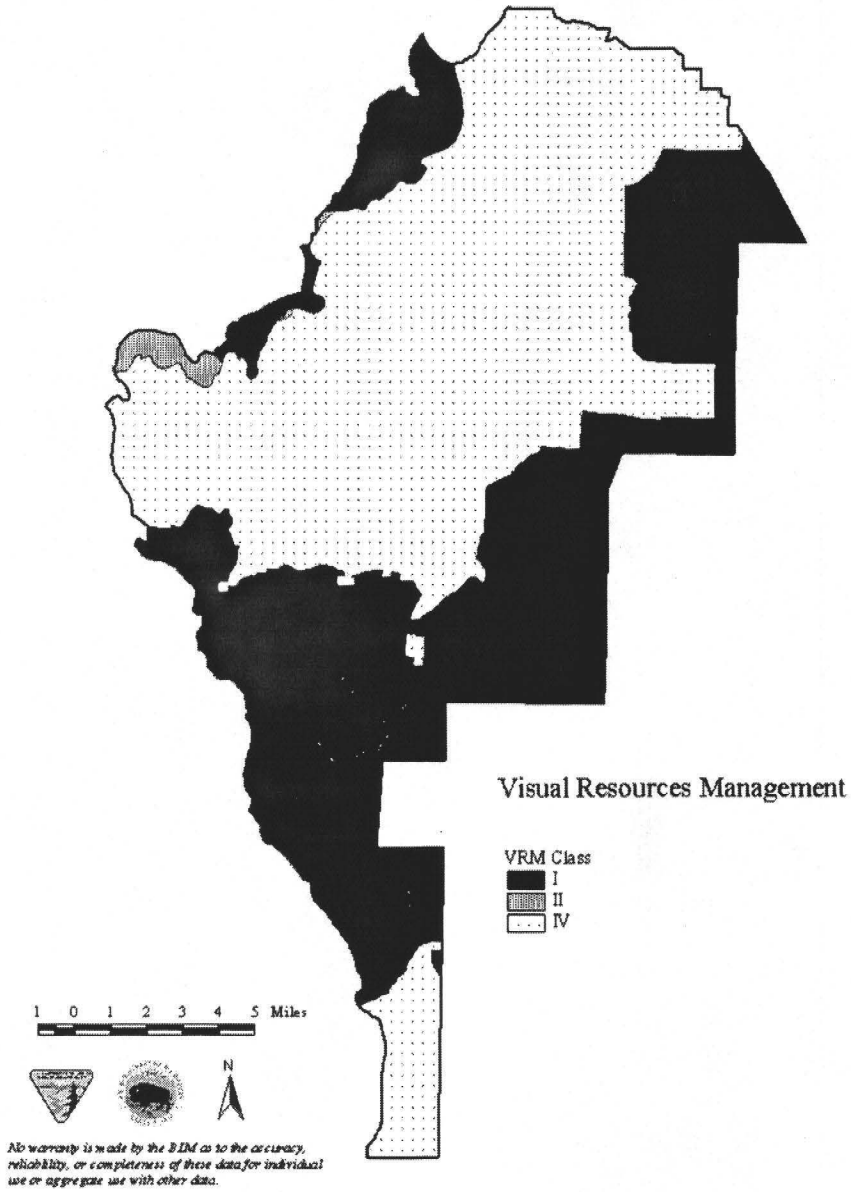
APPENDIX 29 - BIGHORN SHEEP HABITAT RANGE MAP



APPENDIX 30 - SPECIAL DESIGNATIONS MAP



APPENDIX 31 - VISUAL RESOURCE MANAGEMENT CLASS MAP



APPENDIX 32 - CUMULATIVE IMPACTS ANALYSIS AREA MAP