



United States Department of the Interior

BUREAU OF LAND MANAGEMENT  
Winnemucca Field Office  
5100 East Winnemucca Boulevard  
Winnemucca, Nevada 89445  
702-623-1500

*M*  
*Black Rock E*  
*HMA*  
11/10/97

In Reply Refer To:  
4000  
(NV-22.13)

NOV 10 1997

Dear Interested Public:

Enclosed is a copy of the draft Pine Forest Allotment Evaluation. This draft document is different from some others you may have read in that it does not yet include technical recommendations. Meetings to discuss this document and develop technical recommendations will be held in December and January. I invite and encourage you to participate. The initial meeting will be **Wednesday, December 3, 1997, at 1:00** at this office.

If you are unable to attend this meeting but wish to participate in subsequent meetings, please call Lynnda Jackson of my staff at 702-623-1500 and let her know so she can keep you informed on meeting dates.

You are also invited and encouraged to provide written comments on the draft allotment evaluation. This is particularly important if you will not be attending meetings and wish to share your ideas. Please provide written comments prior to December 3.

Please feel free to contact Lynnda if you have any questions or concerns.

Sincerely,

Colin P. Christensen  
ADM Renewable

cc: Lawrence Montero, Pine Forest Land & Livestock Co.  
Mike Montero  
Met Life  
Stephen A. Moen  
Dan Heinz, American Wildlands  
Nevada Bighorns Unlimited  
Ms. Johanna H. Wald, Natural Resources Defense Council  
Ms. Rose Strickland, Sierra Club-Toiyabe Chapter  
Mr. Craig C. Downer  
N. Riedy, The Wilderness Society  
Mr. Charles Watson, Nevada Outdoor Recreation  
Mr. William R. Brigham, Desert Bighorn Council  
Mr. Richard Heap, Division of Wildlife, Fallon  
Nevada Cattlemen's Association  
Resource Concepts, Inc.  
Mr. Doug Busselman, Nevada Farm Bureau Federation  
Mr. Chuck Crisman, Sagebrush Chapter, Trout Unlimited  
Mark McGuire, Nevada Humane Society  
Humboldt County Commissioners  
Susan Lynn, Public Resource Associates  
Brad Schultz, Desert Research Institute  
Ms. Dawn Lappin, WHOA  
Ms. Nancy Whitaker, Animal Protection Institute of America  
Ms. Cathy Barcomb, Commission for the Preservation of Wild Horses  
Ms. Karen Sussman, International Society for the Protection of Mustangs and Burros  
American Horse Protection Assn.  
Nevada Division of Wildlife, Winnemucca

I. Introduction

- A. Pine Forest Allotment (00054)
- B. Permittee - Pine Forest Land and Stock Company
- C. Evaluation Period - 10/14/83 to present
- D. Selected Management Category M

II. Initial Stocking Level

A. Grazing Use

1. Permitted Use (AUMs)

- a. Total number of AUMs of specified livestock grazing: 9,700  
(includes 156 AUMs fenced federal land)
- b. Historic Suspended Use: 1,194
- c. Total: 10,894

2. Season of Use - 04/01 to 02/28

3. Kind and Class of Livestock - Cattle (cow/calf)  
Horses

4. Percent Federal Range

Pine Forest Land and Stock Company is currently licensed at 100% federal land. Prior to 12/01/95 grazing was authorized at 97% federal land or 327 AUMs exchange of use.

5. Grazing System

There is no allotment management plan for Pine Forest Allotment. Cattle are turned out throughout the month of April and are scattered throughout the lower elevations of the allotment. Though the spring cattle drift and are pushed to higher elevations. A drift fence was constructed in 1983 following a fire. This fence prevents

most movement of cattle from the Leonard Creek drainage into Chicken Creek and the remainder of Leonard Creek. Cattle are not moved above the drift fence until after May. Winter grazing occurs from alluvial fans to greasewood flats on the south and east portions of the allotment. Ranch horses are grazed with the cattle from late spring into early fall. The horses do not graze in the vicinity of Bartlett Peak, Pearl Canyon or Center Creek to prevent intermingling with wild horse on the adjacent Paiute Meadows Allotment.

B. Wild Horse Use

The Black Rock East Herd Management Area (HMA) intersects the Pine Forest Allotment at the northern tip of the HMA (see Map 1). In February of 1982 the boundary between Paiute Meadows Allotment and Pine Forest Allotment was changed and a portion of the Paiute Meadows Allotment became part of the Pine Forest Allotment. Prior to the allotment boundary change, the HMA was located outside of the Pine Forest Allotment. The portion of Paiute Meadows Allotment that became part of Pine Forest Allotment contains the northern tip of the HMA. The Paradise-Denio Land Use Plan, which was issued in July of 1982, does not identify horse use within the Pine Forest Allotment.

C. Wildlife Use

Mule deer and pronghorn antelope summer, winter and yearlong habitats along with elk and bighorn yearlong habitats have been identified in the Pine Forest allotment.

1. Reasonable numbers developed in conjunction with Nevada Division of Wildlife (NDOW) personnel for the Pine Forest allotment are:

Mule Deer	2,338
Pronghorn	108
Bighorn	72
Elk	96



2. The following Key or Crucial Management Areas have been identified within the allotment.

a. Mule Deer:

summer-	12,276 acres	(DS-5,6 & 7)
winter-	31,133 acres	(DW-7)
yearlong-	23,676 acres	(DY-12,13 & 21)

b. Pronghorn Antelope:

summer-	26,304 acres	(PS-2,3 & 15)
winter-	17,562 acres	(PW-4 & 17)
yearlong-	32,403 acres	(PY-3 & 14)

c. Bighorn Sheep:

yearlong-	52,985 acres	(BY-8)
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d. Elk:

yearlong-	51,435 acres	(EY-1)
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e. Sage Grouse:

General distribution is identified throughout the Pine Forest Allotment.

f. Other Game Species:

Chukar and Hungarian partridge, Valley Quail, and Mountain Lion.

g. Other Non-game Species:

Various species of nongame birds, mammals and reptiles occur in the Pine Forest Allotment.

D. Riparian/Fisheries

There are six perennial streams located within the Pine Forest Allotment; Leonard Creek, Snow Creek, Center Creek, Corral Creek, Chicken Creek and Sage Hen Creek. Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*), a federally listed threatened species, have been found during NDOW fish population sampling in

Leonard Creek. Leonard Creek and Chicken Creek have been identified in the U.S. Fish and Wildlife Service Recovery Plan for the Lahontan Cutthroat Trout as potential recovery sites.

E. Threatened and Endangered Species

Lahontan cutthroat trout (LCT), a Federally listed Threatened species, historically occurred in upper Leonard Creek and possibly in Chicken Creek. Both streams have been identified as potential recovery sites for LCT in the United States Fish and Wildlife Service (FWS) Recovery Plan for the Lahontan Cutthroat Trout, dated January 30, 1995.

According to the Nevada Division of Wildlife (NDOW) 1992 stream survey report, fish (brook trout) were first stocked in Leonard Creek in 1915. Cutthroat trout were first stocked in 1924, and again in 1975. Rainbow and brown trout were also stocked until the last recorded plant in 1978.

During the 1992 NDOW stream survey of Leonard Creek, all eight habitat stations were electroshocked to determine species composition and abundance. Brook, rainbow, brown, and cutthroat (genetic purity unknown) trout were found in the stream, with brook trout being the dominant species.

At the time of the original dam construction for Leonard Lake, brook trout were stocked. The lake failed to fill in late 1974 and the fish were winter-killed during the severe 1974-75 winter. The lake was replanted in 1975 and 1976 with LCT fingerlings.

Chicken Creek was also surveyed by NDOW in 1992. All nine of the habitat stations were electroshocked, but no game or nongame fish were found. NDOW does not possess any records indicating Chicken Creek was ever stocked with game fish.

The following BLM designated state sensitive species and FWS designated species of concern, may occur in the Pine Forest Allotment:

Mammals	Scientific Name
Pygmy rabbit	<i>Brachylagus idahoensis</i>
Spotted bat	<i>Euderma maculatum</i>
Small-footed myotis	<i>Myotis ciliolabrum</i>
Long-eared myotis	<i>Myotis evotis</i>
Fringed myotis	<i>Myotis thysanodes</i>
Long-legged myotis	<i>Myotis volans</i>
Pale Townsend's big-eared bat	<i>Plecotus townsendii pallescens</i>
Pacific Townsend's big-eared bat	<i>Plecotus townsendii townsendii</i>
<b>Birds</b>	
Northern goshawk	<i>Accipiter gentilis</i>
Western burrowing owl	<i>Athene cunicularia hypugea</i>
Ferruginous hawk	<i>Buteo regalis</i>
Black tern	<i>Chlidonias niger</i>
Least bittern	<i>Ixobrychus exilis hesperis</i>
White-face ibis	<i>Plegadis chihi</i>
<b>Plants</b>	
Schoolcraft's cryptantha	<i>Cryptantha schoolcraftii</i>
Crosby's buckwheat	<i>Eriogonum crosbyae</i>
Smooth stickleaf	<i>Mentzelia mollis</i>

Of these species, the pygmy rabbit, spotted bat, northern goshawk, western burrowing owl, and Ferruginous hawk are most likely to occur in the allotment. The pygmy rabbit, northern goshawk, western burrowing owl and Ferruginous hawk are susceptible to impacts associated with ungulate grazing.

### III. Allotment Profile

#### A. Narrative Description

The Pine Forest Allotment is located in the northwest portion of Humboldt County. The allotment is about 30 air miles northwest of Winnemucca. It includes the southern portion of the Pine Forest Mountain Range and extends south into the Black Rock Desert. Elevations range from 3985 feet on the Black Rock Desert to 9397 feet on Duffer Peak. The lower elevations are dominated by greasewood and shadscale. As elevations increase, sagebrush is dominant. Streambank riparian,

meadow, aspen and mountain browse vegetative types are also included within the allotment.

B. Acreage

1. Public land - 124,910 acres
2. Private land - 3,686 acres
3. Allotment total - 128,596 acres

C. Allotment Specific Objectives

1. Land Use Plan Objectives

a. Objective RM-1

Provide forage on a sustained yield basis through natural regeneration. Reverse downward deterioration of public grazing lands by improving 1,000,000 acres in poor condition to fair condition, and 400,000 acres in fair condition to good condition within 30 years.

b. Objective WLA-1

Improve and maintain the condition of all the aquatic habitat of each stream, lake, or reservoir having the potential to support a sport fishery at a level conducive to the establishment and maintenance of healthy fish community.

c. Objective WL-1

Improvement and maintenance of a sufficient quantity, quality, and diversity of habitat for all species of wildlife in the planning area.

d. Objective W-1

Preservation and improvement of quality water necessary to support current and future uses.

e. Objective W-2

Provision of adequate water to support public land uses.

f. Objective W-3

Reduction of soil loss and associated flood and sediment damage from public lands caused by accelerated erosion (man-induced) from wind and water.

2. Rangeland Program Summary Objectives

a. Increase available forage for livestock to sustain an active preference of 9,700 AUMs.

b. Improve range condition from poor to fair on 114,917 acres and fair to good on 9,993 acres by implementing a deferred grazing system, deferring use on the summer range until after seedripeness.

c. Manage rangeland habitat and forage condition to support reasonable numbers of wildlife demand as follows:

Deer	2,338 AUMs
Antelope	108 AUMs
Bighorn Sheep	72 AUMs
(when introduced)	
Elk	96 AUMs
(when introduced)	

d. Protect sage grouse breeding complexes.

e. Protect Caulanthus barnebyi from all man-caused impacts. Note- This species is no longer identified as a sensitive plant in the State of Nevada.

f. Improve water quality and watershed problems along Leonard, Snow and Chicken Creeks.

g. Improve the general condition of specific habitat types (meadow, aspen, and mountain browse).

3. Habitat Management Plan Objectives

The Pine Forest Habitat Management Plan was signed by both the Nevada Department of Wildlife and the BLM in January 1981. The overall objective of this HMP is to reestablish vegetative diversity and vigor, watershed cover, and improve the condition of specialized wildlife habitats such as meadows, aspen, and riparian zones. Specific objectives within the Pine Forest HMP for the allotment are as follows for each habitat type:

a. Big Sagebrush

- 1) Change the current vegetative composition to as close to 20% grass, 20% forbs and 60% shrubs as possible. Reduce cheatgrass to less 10% or less of the grass component.
- 2) Insure that key browse and forb species important to wildlife, such as bitterbrush, become or remain a significant portion of the vegetation.
- 3) If necessary, open up dense brush stands to produce "edge", and reduce the shrub component to allow forbs and grasses to increase.

b. Low Sagebrush

- 1) Increase the forb component of the vegetation to at least 15%, and attain a significant quantity of palatable forb species.
- 2) Insure that big sagebrush "islands" in low sagebrush types are maintained.

c. Shadscale

Change the present average composition to 10% grass, 10% forbs and 80% shrubs, by increasing perennial grasses and palatable forb species.

d. Greasewood

Increase the average composition of grasses and forbs to 10% each, with perennial grasses and palatable forbs making up a significant portion of the composition.

e. Conifer

Insure that the approximately 2,000 acres of conifer habitat does not diminish in quality or quantity.

f. Mountain Brush

Provide for increased reproduction and quality of palatable browse and forbs species, including species important for cover.

g. Aspen

Prevent further degradation of aspen habitat and promote rejuvenation of sucker and sapling growth.

h. Meadows

Provide for the restoration of meadow habitat.

i. Riparian

Provide for the restoration of riparian habitat.

j. Aquatic Habitat

Improve watershed conditions along all streams.

k. Other Objectives

- 1) Provide forage for reasonable numbers of big game animals as agreed to by NDOW and the Winnemucca BLM District.



- 2) Mitigate any present or potential adverse impacts placed upon wildlife habitat within the habitat area.
- 3) Encourage range and other resource developments that will provide benefits to wildlife and wildlife habitat.
- 4) Support the potential reintroduction of California bighorn sheep within the Pine Forest Range.
- 5) Cooperate with NDOW if a feasibility study of the potential to transplant elk into a portion of the Pine Forest Range is initiated.
- 6) Insure that future introductions of exotic wildlife species conform to BLM policy and requirements as outlined in BLM Manual 6820.
- 7) Provide input and coordination to resource activities affecting wildlife habitat in the habitat area, such as Recreation Management Plans, Allotment Management Plans, forage allocation, woodland resources water rights activities, and Fire Management Plans.
- 8) Investigate the possibilities for the introduction of more blue grouse into the Pine Forest Range.

#### 4. Allotment Objectives

The allotment specific objectives tie the Land Use Plan, Rangeland Program Summary and Habitat Management Plan objectives together into quantified objectives for this allotment.

##### a. Short Term Objectives

- 1) Utilization of key streambank riparian plant species in riparian habitats shall not exceed 30% on Center, Corral, Leonard, Chicken and Snow Creeks except

where adjusted by an approved activity plan.

- 2) Utilization of key plant species in wetland riparian habitats shall not exceed 50% except where adjusted by an approved activity plan.
- 3) Utilization of key plant species in upland habitats shall not exceed 50% except where adjusted by an approved activity plan.

b. Long Term Objectives

- 1) Manage, maintain and improve public rangeland conditions to provide forage on a sustained yield basis for big game, with an initial forage demand of 2,338 AUMs for mule deer, 108 AUMs for pronghorn, 72 AUMs for bighorn sheep and 96 AUMs for elk.
  - a) Improve to and maintain 70,342 acres in good to excellent mule deer habitat condition.
  - b) Improve to and maintain 70,396 acres in fair or good pronghorn habitat condition.
  - c) Improve to and maintain 50,985 acres in Pine Forest BY-8 in good to excellent bighorn sheep habitat condition.
  - d) Improve to and maintain 51,435 acres in Pine Forest EY-1 in good to excellent elk habitat condition.
- 2) Manage, maintain and improve public rangeland conditions to provide forage on a sustained yield basis for livestock, with an initial stocking level of 9,700 AUMs.

- 3) Improve range condition from poor to fair on 114,917 acres and from fair to good on 9,993 acres.
- 4) Improve to and maintain 80 acres of ceanothus habitat types in good condition.
- 5) Improve to and maintain 477 acres of mahogany habitat types in good condition.
- 6) Improve to and maintain 688 acres of aspen habitat types in good condition.
- 7) Improve to and maintain 949 acres of riparian and meadow habitat types in good condition.
- 8) Improve to or maintain the following stream habitat conditions from 50% on Center, unknown on Corral, 37% on Leonard, 59% on Chicken and 40% on Snow Creeks to an overall optimum of 60% or above.
  - a) Streambank cover 60% or above.
  - b) Streambank stability 60% or above.
  - c) Maximum summer water temperatures below 70°F.
  - d) Sedimentation below 10%.
- 9) Protect sage grouse strutting grounds and brooding areas. Maintain a minimum of 30% cover of sagebrush for nesting and winter use.
- 10) Improve to and maintain the seeded pasture in good condition (5-10 acres per AUMs).
- 11) Improve to and maintain the water quality of Sagehen, Chicken, Snow, Corral and Center Creeks to the state criteria set for the following beneficial uses: livestock drinking water, cold water aquatic life, wading

and wildlife propagation. Improve or maintain the water quality of Leonard Creek to the Nevada Class A standards.

D. Key Species Monitored

1. Upland Species

<u>Symbol</u>	<u>Scientific Name</u>	<u>Common Name</u>
SIHY	<u>Sitanion hystrix</u>	bottlebrush squirreltail
POSE	<u>Poa secunda</u>	Sandberg bluegrass
ELCI2	<u>Elymus cinereus</u>	Great Basin wildrye
STTH2	<u>Stipa thurberiana</u>	Thurber needlegrass
AGSP	<u>Agropyron spicatum</u>	bluebunch wheatgrass
ORHY	<u>Oryzopsis hymenoides</u>	Indian ricegrass
FEID	<u>Festuca idahoensis</u>	Idaho fescue
BRCA5	<u>Bromus carinatus</u>	mountain brome
CEANO	<u>Ceanothus</u> sp.	ceanothus
CERCO	<u>Cercocarpus</u> sp.	mountain mahogany
RIBES	<u>Ribes</u> spp.	currant
SYMPH	<u>Symphoricarpos</u> sp.	snowberry
ATCO	<u>Atriplex confertifolia</u>	shadscale
PUTR2	<u>Purshia tridentata</u>	bitterbrush
AMAL2	<u>Amelanchia alnifolia</u>	serviceberry
EULA5	<u>Eurotia lanata</u>	winterfat
ARTRW	<u>Artemisia tridentata</u> <u>wyomingensis</u>	Wyoming big sagebrush

2. Riparian Species

<u>Symbols</u>	<u>Scientific Names</u>	<u>Common Names</u>
POPR	<u>Poa pratensis</u>	Kentucky bluegrass
JUNCU	<u>Juncus</u> spp.	rush
CAREX	<u>Carex</u> spp.	sedge
POMO4	<u>Polygono</u> sp.	rabbitfoot grass
AGAL3	<u>Agrostis alba</u>	redtop
SALIX	<u>Salix</u> spp.	willow
ROWO	<u>Rosa woodsii</u>	Wood's rose
POTRT	<u>Populus tremula</u> <u>tremuloides</u>	quaking aspen
SALIX	<u>Salix</u> spp.	willow

E. Wilderness Study Area and Instant Study Area

Portions of the Blue Lakes Wilderness Study Area (NV-020-600) and the Black Rock Desert North Wilderness Study Area (NV-020-620) are located within the Pine Forest Allotment. A portion of the Lahontan Instant Study Area is also located within the allotment (see Map 2).

IV. Management Evaluation

A. Purpose

The purpose of the monitoring evaluation is to determine if current management practices are meeting the allotment specific and Land Use Plan objectives and to identify management changes needed to meet objectives.

B. Summary of Studies Data

1. Actual Use

a. Livestock

Actual Use by Livestock	
Grazing Year 03/01-02/28	AUMs
1983	9250*
1984	9330
1985	9261*
1986	9261*
1987	8523*
1988	6522*
1989	8926
1990	9014
1991	7397
1992	6671
1993	7887
1994	7513
1995	9700
1996	9558

\*Licensed use. Actual use not available.  
Note- Actual use includes 156 AUMs from  
fenced federal land.

b. Wildlife (existing numbers)

*Table 1. Percentage of Reasonable Numbers for Mule Deer and Pronghorn on Spring, Winter, Summer, and Yearlong Habitats in the Pine Forest Allotment as compared to the whole hunt unit in NDOW Hunt Units 032 and 034*

<u>Species</u>	<u>Unit</u>	<u>Spring</u>	<u>Winter</u>	<u>Summer</u>	<u>Yearlong</u>
Mule Deer	032	40.0	32.4	45.4	0
Mule Deer	034	0	9.1	2.4	0
Pronghorn	032	--	14.9	15.4	--
Pronghorn	034	--	0	7.5	--

Using this information, estimates of mule deer and pronghorn numbers were derived by multiplying the above percentages for winter and yearlong habitat by the hunt unit estimate for mule deer and pronghorn populations. The total for each hunt unit is combined to arrive at an allotment estimate of mule deer and pronghorn use in numbers of animals. Next, the number of animals was multiplied by the number of months the animals were expected to be present to arrive at an estimated annual forage demand for the allotment (Table 2).



DRAFT Pine Forest Allotment Evaluation  
without technical recommendations

November 10, 1997

Table 2. Estimated Existing Numbers and Forage Demand for Mule Deer and Pronghorn in the Pine Forest Allotment for Years 1989\* Through 1995.

Mule Deer

Est. Numbers [HU032 (HU034) Allotment Total]

<u>Year</u>	<u>Winter</u>	<u>Summer</u>	<u>Spring</u>
1989	651 (87) 738	367 (23) 390	803 (0) 803
1990	625 (84) 719	877 (22) 899	771 (0) 701
1991	652 (88) 740	915 (23) 938	805 (0) 805
1992	494 (66) 560	693 (17) 710	609 (0) 609
1993	469 (63) 532	658 (17) 675	579 (0) 579
1994	666 (89) 755	934 (23) 957	821 (0) 821
1995	601 (81) 682	843 (21) 864	741 (0) 741

AUMS HU032 (HU034) Allotment Total

<u>Year</u>	<u>Winter</u>	<u>Summer</u>	<u>Spring</u>	<u>Allotment Total AUMS</u>
1989	651 (87) 738	550 (34) 584	401 (0) 401	1725
1990	625 (84) 719	1315 (33) 1348	385 (0) 385	2443
1991	652 (88) 740	1372 (34) 1406	402 (0) 402	2549
1992	494 (66) 560	1038 (26) 1064	304 (0) 304	1930
1993	469 (63) 532	987 (25) 1012	290 (0) 290	1834
1994	666 (89) 755	1401 (35) 1436	411 (0) 411	2603
1995	601 (81) 682	1264 (32) 1296	371 (0) 371	2348

Pronghorn

Est. Numbers [HU032 (HU034) Allotment Total]

<u>Year</u>	<u>Winter</u>	<u>Summer</u>
1989	31 (0) 31	36 (36) 72
1990	39 (0) 39	46 (46) 92
1991	47 (0) 47	55 (55) 110
1992**	44 (0) 44	51 (51) 102
1993	44 (0) 44	51 (51) 102
1994	46 (0) 46	54 (54) 108
1995	44 (0) 44	51 (51) 52

AUMS HU032 (HU034) Allotment Total

<u>Year</u>	<u>Winter</u>	<u>Summer</u>	<u>Allotment AUMS</u>
1989	37 (0) 37	43 (43) 86	123
1990	47 (0) 47	55 (55) 110	157
1991	56 (0) 56	65 (65) 130	186
1992	53 (0) 53	62 (62) 124	177
1993	53 (0) 53	61 (61) 122	175
1994	55 (0) 55	64 (64) 128	183
1995	52 (0) 52	61 (61) 122	174

\* Evaluation methods used by NDOW beginning in 1989 differed from methods employed prior to that, therefore, estimates prior to 1989 were not included.

\*\* Beginning in 1992, pronghorn populations were estimated using a computer model developed by NDOW.

Mule deer populations did not experience the large decline in numbers over the winter of 1992-93 that occurred in other parts of Northern Nevada. The significant change noted between 1993 and 1994 is due, in part, to a modification by NDOW, to previous estimates of 1992/93 winter kill rates. It is now believed, that winter death rates were not as widespread.

These allotment population estimates are not intended to be used as indicators of habitat condition or actual use in an allotment due to the fact that several factors annually influence the actual distribution of mule deer and pronghorn throughout their range. These same factors effect the accuracy of the population estimates calculated by NDOW. This information is, however, adequate to make determinations of long term trend for the area or the hunt unit. By extrapolating the hunt unit population estimates to allotment sized units some accuracy is lost, however, the basic utility of these numbers in determining general trends is retained. Monitoring data is reserved for determination of specific allotment based trends.

c. Wild Horses

The Black Rock Herd Management Area (HMA) intersects the Pine Forest Allotment at the northeast tip of the HMA. In February of 1982 the boundary between Paiute Meadows Allotment and Pine Forest Allotment was changed. Prior to that time the HMA was located outside of the Pine Forest Allotment. Upon changing the boundary, approximately 2880 acres of the HMA became part of the Pine Forest Allotment. In June of 1992 a fence was completed along the new allotment boundary. Except as discussed below, census and distribution flights, as well as on the ground observations do not indicate that wild horses have occupied this

portion of the HMA even prior to fence construction.

Two horses were observed in Pine Forest Allotment approximately one mile southwest of Woodcamp Spring in the fall of 1995. The permittee reports that from 1991 through 1993, he observed four horses in the western arm of the Pine Forest Allotment.

A lone stud has been observed from about 1991 to 1995 in the easternmost portion of the allotment. This is not in the vicinity of the HMA.

2. Climatological Data

Precipitation at the Leonard Creek Ranch Station administered by the National Oceanic and Atmospheric Administration (NOAA) follows:

Leonard Creek Station Precipitation in Inches				
Year	Precipitation		Deviation from Normal	
	March-August	Annual	March-August	Annual
1983	4.99M	15.1M	M	M
1984	3	8.5	-0.69	-0.01
1985	2.48	6.82M	-1.21	M
1986	4.85	9.6	1.16	1.09
1987	5.42	9.3	1.73	0.79
1988	2.94	8.11	-0.75	-0.4
1989	3.98	7.48	0.29	-1.03
1990	4.67	7.19	0.98	-1.32
1991	5.06	9.04	1.37	0.53
1992	2.38	7.82	-1.31	-0.69
1993	4.38	10.02	0.69	1.51
1994	2.15	8.31M	-1.54	M
1995	6.7	11.49	3.01	2.98
1996	5.84M	13.71M	M	M
M: Insufficient data (incomplete or missing data)				

More detailed precipitation data is displayed in Appendices 1, 2, 3 and 4.

3. Utilization Data

Utilization studies were conducted with the following use ratings of the current years' growth:

Use Rating	Percent Utilization
No use	<1%
Slight	1-20%
Light	21-40%
Moderate	41-60%
Heavy	61-80%
Severe	81-100%

1984

Date data collected: 09/06/84  
Actual Use at the time data was collected: 6557 AUMs

The Snow Creek Burn had heavy to severe use on slopes <15. Species documented included bluebunch wheatgrass, bluegrass, Idaho fescue and Great Basin wildrye. The burn occurred 08/25/82.

1988

Date data collected: 10/17/88-10/20/88 and 10/25/88-10/27/88  
Actual Use at the time data was collected: 5898 AUMs

Utilization was documented as moderate or higher on approximately 10% of the allotment. Use was light to slight on the remainder of the areas observed. Little heavy use occurred on upland areas. Use on riparian areas ranged from slight to severe. Use that was over 60% generally occurred on riparian areas or upland areas immediately adjacent to water sources.

Heavy use occurred on meadows associated with Lone Meadow Spring and several other springs in the area. Other springs in the vicinity received moderate or light use. Meadows at Rodeo Flat also received heavy use. The basin at Wheeler Spring received moderate to heavy use on Idaho fescue and bluebunch wheatgrass. Use was

moderate on snowberry and bitterbrush. Use was moderate at Woodcamp Spring and on saddles. Use on the uplands was light to slight. Heavy use was observed at Rock Spring and at associated seeps. Use was heavy at the bottom of the canyon below Horseshoe Bend with moderate and light use on the side slopes. Moderate use was observed in the Cove Camp basin area, with light use extending up the slopes to Willow Spring. Heavy use occurred at the spring with moderate use on the saddles and along the road. Patches of heavy use were found on the Lone Meadow side of the ridge.

The basin above Center Creek received slight use. This area is extensive and productive. The canyon where McCully Spring is located had mostly light use except immediately surrounding the trough where heavy use occurred. Josie Pearl Spring and the low plateau to the east received heavy use extending down the gully almost to the road. Water gaps along Bartlett Creek had heavy use.

Heavy use was found in the streambed of Snow Creek and in the small basins where tributaries enter the creek. Overall upland use in this area was slight to none. North Fork had moderate use in the channel with slight to light use on the side slopes.

The meadows and streambank grasses and grasslike species on Chicken Creek uniform heavy use extending from Corral Meadows down to the road at the east end. The fenced area around Chicken Creek cabin and surrounding uplands received heavy use on grass and browse species.

Heavy use was mapped along upper Leonard Creek and at Cold Springs. Nearly all the saddles and draws at the north end of Bare Pass had heavy use of perennial grasses and mountain browse.

The area west of the private land in Pass Creek received moderate to heavy use. North of Leonard Creek Meadows, lower Leonard Creek had heavy use of grasses and grasslike species and light use on

the uplands. The lower slopes south of the meadow had light use except along the road and just NE of Cappallo Camp.

The spring at the headwaters of Sage Hen Creek received heavy use on willow, grasses and grasslike species. The canyon had moderate use on riparian species and light use of upland species.

Upland use around Tepee Creek was light on Thurber needlegrass and bluebunch wheatgrass. Heavy use was found on riparian species above the cabin and in the meadow at the cabin. Slight use was found in the burned area. Use along Sentinel Creek was light except at the mouth where use was moderate. Two springs in the area received heavy use.

Cherry Creek received slight to light use. Lone Tree Reservoir had light use with heavy use in the immediately surrounding area.

Slight to no use overall was observed on the majority of the playa.

#### 1991

Date data collected: 11/16/91-11/17/91

Actual Use at the time data was collected: 6361 AUMs

The area from Leonard Creek Ranch, to Sentinel Creek, to the Mesa, to the head of Tepee Creek and to Chicken Creek cabin was use pattern mapped. Utilization of upland vegetation was slight on Indian ricegrass, Thurber needlegrass and bluebunch wheatgrass, except in the burned area where utilization was moderate on Thurber needlegrass. In addition to receiving cattle use, the burned area is favored by antelope. Heavy utilization of Kentucky bluegrass was observed on Sentinel Creek and at the head of Tepee Creek.

Upper Chicken Creek, including Corral Meadow, and upper Leonard Creek and Snow Creek were also examined. Utilization of upland species ranged from slight to moderate. Species included Great Basin wildrye, bluebunch wheatgrass, Thurber



needlegrass, Idaho fescue and bitterbrush. Use of riparian species ranged from slight to heavy with heavy use in Corral Meadow, the meadow at Chicken Creek cabin and portions of upper Leonard Creek and where the two forks of Snow Creek come together.

### 1992

Date data collected: 09/16/92 and 09/22/92-09/23/92  
Actual Use at the time data was collected: 5506 AUMs

Upper Chicken Creek near Corral Meadow showed heavy use on herbaceous species and severe use woody species. Upper Leonard Creek showed heavy to severe use woody species by livestock. Species documented included rush, sedge, willow, aspen and Kentucky bluegrass

On mid to lower Chicken Creek and on lower Leonard Creek overall utilization was heavy. Species documented included rush, sedges, willow, aspen, alder and Kentucky bluegrass. Alder, willow and aspen received severe use on some areas of the creek. All seeps and springs observed adjacent to Leonard and Chicken Creeks had heavy to severe use.

### 1993

Date data collected: 09/23/93  
Actual Use at the time data was collected: 5581 AUMs

At DW-PF02 key area the average utilization on bitterbrush was 69%. Due to the high use of the current year's leader growth, heavy use on grass species, the poor form class and high utilization of bitterbrush plants is attributed to livestock use and not wildlife winter use.

At DW-PF-05 key area, none of the branches of monitored bitterbrush showed any utilization.

Date data collected: 10/13/93-10/15/93 and 10/21/93-10/22/93  
Actual use at the time data was collected: 6232 AUMs

On the western portion of the allotment use was slight to light on upland species, except on serviceberry and Thurber needlegrass, which had moderate use in a limited area. Use on riparian vegetation ranged from slight to heavy with heavy use at the mouth of Pearl Canyon, at Josie Pearl Spring, at Rock Spring and along Center Creek. Species documented with heavy use included willow, rose, Kentucky bluegrass and rabbit's foot grass.

Throughout the upper elevations use was slight to light on upland species including bluebunch wheatgrass, Idaho fescue, Thurber needlegrass, Great Basin wildrye, ceanothus, snowberry, mountain mahogany, and currant. Moderate use was found on snowberry in limited areas. Use was light along upper Leonard Creek. Heavy use was found immediately adjacent to Leonard Lake. Use along Chicken Creek was heavy just above the fenced area around the cabin and was slight to light above. Use on Corral Meadow adjacent to Chicken Creek was moderate. Use along Snow Creek was slight to heavy. While most of the creek had less than moderate use, heavy use occurred on pockets of herbaceous species on some portions of the creek above where the north and main fork come together. Key riparian species included bluegrass, rush, sedge and willow.

Use along Sentinel Creek was moderate to heavy along the lowest portion with slight to light use above. Use on upland species in the vicinity was slight (shadscale, squirreltail, Sandberg bluegrass, bluebunch wheatgrass, Idaho fescue, Thurber needlegrass, Great Basin wildrye). In the Snow Creek Burn area use was slight on the steeper slopes with use up to moderate on Thurber needlegrass in some portions of the burn. Use was slight to light along Cherry Creek. The meadow adjacent to the cabin on Tepee Creek received heavy use. Steep cut banks limit access to Tepee Creek in the area.

North of the burn fence use on upland species, including bitterbrush in addition to other upland

species, was slight. Heavy use was found on springs.

#### 1994

Date data collected: 06/24/94  
Actual Use at the time data was collected: 2907 AUMs

Utilization was slight to no use in the upper country in the vicinity of Chicken Creek Basin and Leonard Creek Basin. Utilization of bitterbrush was slight to light south of Chicken Creek in the Leonard Creek drainage.

Date data collected: 11/18/94  
Actual Use at the time data was collected: 7243 AUMs

Portions of the Leonard Creek drainage were examined. Use along Chicken Creek above the cabin was moderate on rush and bluegrass, and was heavy on sedge and willow. Along lower Chicken Creek overall use was moderate with heavy use on aspen and alder. Use along lower Leonard Creek was moderate. Use of upland species was light to moderate except where heavy use on Thurber needlegrass and squirreltail north of lower Chicken Creek. Use was moderate on bitterbrush south of Chicken Creek. Use within the seeding was light on crested wheatgrass and intermediate wheatgrass, and moderate on wildrye.

#### 1995

Date data collected: 07/20/95-07/21/95  
Actual Use at the time data was collected: 4223 AUMs

Utilization on Leonard Creek east of Cappallo Cabin was moderate with a stubble height of 3-4 inches. Use was light to moderate at springs between Leonard and Chicken Creeks and between Chicken and Snow Creeks. Use on lower Sage Hen Creek ranged from light to heavy. Use was moderate to low heavy on Leonard Creek below the drift fence. Utilization on public land on Snow Creek was light to low moderate, and slight to none on side drainages. Utilization was light to slight at the confluence between the north and south forks. The large meadow complex just below

the confluence had slight use. Upper Chicken and upper Leonard Creeks had no use.

Date data collected: 10/10/95-10/11/95, 10/18/95-10/19/95, 10/24/95, 10/26/95, 10/31/95

Actual use at the time data was collected: 7717 AUMs

Utilization of upland species ranged from moderate to slight except in on the Mesa where utilization was heavy on Thurber needlegrass, bluebunch wheatgrass and squirreltail. Other perennial upland grass species documented included Sandberg bluegrass, Great Basin wildrye, Idaho fescue, bluebunch wheatgrass and crested wheatgrass.

Species documented in riparian habitat included rush, sedges, redtop, saltgrass, rabbitfoot grass and Kentucky bluegrass. Overall utilization was heavy on Center Creek, tributaries to Bartlett Creek, upper Corral Creek, lower Sagehen Creek and lower Leonard Creek. Use was slight to light on upper Leonard Creek, upper Chicken Creek, Sentinel Creek and Cherry Creek. Use of springs varied. Use was moderate at Josie Pearl Spring. Use was heavy at the head of Tepee Creek, Rock Spring and Corral Spring. Use was moderate at Dyke Spring (warm spring south of Cherry Creek). Use was heavy at Rodeo Flat. Use was slight at Trough Spring.

Date data collected: 03/21/96

Actual Use at the time data was collected: 1158 AUMs  
(includes winter use only)

The winter use area includes the flats on the southernmost portion of the allotment. Use was slight to moderate on all but <1% on the area where heavy use was observed on winter fat. A small patch of winter fat received severe use. Other species documented include Indian ricegrass, Great Basin wildrye, squirreltail, shadscale and budsage.

### 1996

Date data collected: 03/18/97

Actual Use at the time data was collected: 888 AUMs

(includes winter use only)

Utilization was slight to light in the winter use area except in limited areas immediately adjacent to Leonard Creek Ranch fields, where use was heavy. Key species included winter fat, Indian ricegrass, squirreltail, Great Basin wildrye, shadescale, budsage and Sandberg bluegrass. Heavy use occurred on less than 1% of the observed area.

4. Trend

Frequency trend data is not available for the Pine Forest Allotment. The Paradise-Denio Grazing Environmental Impact Statement (1982) indicated an apparent downward trend.

5. Range Survey Data/Range Condition Data

- a. A Phase I Watershed Inventory was conducted between 1971 and 1974. Livestock forage condition was determined based upon data extrapolation and computations from this inventory. This data extrapolation resulted in the following condition classification for the Pine Forest Allotment:

<u>Good</u> <u>Condition</u>	<u>Fair</u> <u>Condition</u>	<u>Poor</u> <u>Condition</u>
0 acres	9,993 acres	114,917 acres

Appendix G, pg 28, of the Paradise-Denio Grazing EIS provides more discussion on livestock forage condition.

- b. In 1978 a range survey was conducted using the Ocular Reconnaissance Method to provide baseline data for analysis in the Paradise-Denio Grazing EIS. This survey, along with suitability criteria, indicated that 2,363 AUMs were available in 1978 for livestock on Pine Forest Allotment.

6. Ecological Status

The soil survey (order 3) has been completed on the Pine Forest Allotment. Ecological Status

Inventory has not been completed on his allotment.

7. Wildlife Habitat Inventory

- a. Priority Species: Mule deer, sage grouse, trout, pronghorn, bighorn sheep, elk.
- b. Other Game Species: Chukar and Hungarian partridge, valley quail, and Mountain Lion.
- c. Special Habitat Features

A special habitat features inventory was conducted in August and October, 1977. This inventory identified the location and acres of special habitats, listed observed plant and wildlife species, and documented ocular observations of the condition and utilization of these habitats.

- 1) Riparian and Meadow habitat-949 acres located predominantly on the Pine Forest Range and the Black Rock Range.
- 2) Aspen-688 acres located in the Pine Forest Range and the Black Rock Range.
- 3) Curleef Mountain Mahogany- 477 acres located in the Pine Forest Range and the Black Rock Range.
- 4) Ceanothus- 80 acres located in the Pine Forest Range and the Black Rock Range.
- 5) Pine- 255 acres located in the Pine Forest Range.
- 6) Mountain Browse- Antelope bitterbrush *Purshia tridentata*, Wyoming sagebrush *Artemisia tridentata wyomingensis*, Serviceberry *Amelanchier sp.*, snowberry *Symphoricarpos sp.*, and currant *Ribes sp.* are identified as components in most of the various ecological sites in the allotment above an elevation of 5500 feet. This results in general



distribution over most of the  
allotment.

This inventory recorded the following in  
1977:

The vast majority of the spring and associated riparian habitat in the allotment was receiving heavy to severe use by livestock and was in poor to fair condition. Meadows fall into this category as well. Springs and wet meadows were trampled, deteriorating, and headcutting was common. Aspen associated with these areas had little reproduction and were being browsed heavily by livestock. Deer also browsed the aspen heavily in a couple of instances. Riparian conditions were somewhat better in the Black Rock Range portion of the allotment, but areas of heavy use still persisted. Part of the reason for this may be the recent addition of a part of the Paiute Meadows allotment to the Pine Forest Allotment which was grazed in common at the time of the inventory.

Aspen on the Pine Forest Range varied in condition. Accessible stands had moderate to heavy utilization by livestock. Overall reproduction of aspen was poor to fair with the exception of scrub stands, which were good. In general, understory diversity was fair, with some stands being very poor. Curlleaf mountain mahogany had fair reproduction but was being browsed heavily. Mountain browse, especially bitterbrush on mule deer winter range, was being heavily utilized by livestock. Current years leader growth was generally unavailable to deer during the winter due to this use.



d. Wildlife Use Areas: (By Nevada Division of  
Wildlife Management "Hunt" Unit)

Hunt Unit 032

Mule deer			Pronghorn			Bighorn Sheep		
Pine Forest	DS-5	6440	Pine Forest	PW-4	10,574	Pine Forest	BY-8	52,985
Pine Forest	DS-5C	6407	Pine Forest	PW-17	3108			
Pine Forest	DW-7	31,133	Pine Forest	PS-2	2763	<b>Elk</b>		
Pine Forest	DW-7C	7,161	Pine Forest	PS-3	17,427	Pine Forest	EY-1	51,435
Pine Forest	DY-12	13,266	Pine Forest	PY-3	24,494			

Hunt Unit 034

Mule deer			Pronghorn		
Black Rock	DS-6	4590	Black Rock	PS-15	6114
Black Rock	DY-13C	1865	Black Rock	PY-14	7496
Black Rock	DY-13	9164	Pine Forest	PY-3	413
Black Rock	DY-13C	1865	Leonard Cr.	PW-17	3880
Pine Forest	DS-7	1246			
Leonard Cr.	DY-21	2359			

e. Sage Grouse

General distribution is identified throughout the allotment. A total of seven strutting, three brooding and two wintering areas have been identified within the Pine Forest Allotment. General distribution covers the entire allotment, with concentrated use around the upper Leonard Creek basin.

8. Habitat Evaluation

Mule Deer

Mule Deer habitat in the Pine Forest Allotment is extensive and varied. Both the Pine Forest, and Black Rock Mountains contain large populations of mule deer. Both of these ranges contain high elevation summer range, mid elevation spring/fall/winter range, and low elevation yearlong range. Habitat in the allotment varies from large dense mahogany woodlands, to more open mahogany pockets, and extensive open sagebrush/grass communities. Mountain browse species are common with bitterbrush, snowberry, and serviceberry available as a component in the vegetation communities throughout many habitat types.

In September of 1993, baseline mule deer habitat condition and trend monitoring data was collected from three key areas in the Pine Forest Allotment. Age class observations were made to determine the condition and trend of the stand with respect to regeneration. Form class is an observation of the availability of a plant relative to current and past use. The form class of a forage plant has a direct impact on the productivity of the plant as well as the availability of its herbage for consumption. Age class is directly related to a stands "staying ability" over time. A healthy age class would be present if there was sufficient reproduction to replace mature and overmature plants as they die out, and to buffer the stand from larger scale losses, such as from insects. Age and form class data is collected by ocularly estimating or directly measuring the degree of current and past utilization made on the plant. Typically, direct measurement of the percent use is utilized if form class conditions are unsatisfactory. In addition a line intercept transect was run and a vertical cover board photo plot was established to determine canopy cover, species composition and diversity and vertical cover on key area DW-PF-04. These key areas sampled key habitat parameters in Pine Forest DY-12. The following mule deer seasonal use areas were studied:

DW-PF-02 key area is a low elevation bitterbrush type and represents approximately 4000 acres of habitat. 19 bitterbrush plants were monitored for age class and utilization. Plants within each age class were 13(68%) decadent, 4(21%) mature and 2(11%) young. Utilization on the 19 plants ranged from 14.3% of the current years leader growth to 90.6%. The average utilization was 69.3% of the current years leader growth. Due to the high use of current years leader growth on bitterbrush plants and heavy use on grass species, the poor form class and high utilization of bitterbrush plants is attributed to livestock use and not wildlife winter use.

DW-PF-04 key area is a Wyoming big sage/Sandburg bluegrass habitat type within the lower Leonard Cr. basin, maximum elevation is 5500' and represents approximately 7000 acres of habitat. The area is characterized by low species diversity and sparse cover. A seeding and a large burn are within the area. Species composition, vertical cover, canopy cover and bitterbrush age class studies were monitored. Line intercept was used to determine species composition.

DW-PF-05 key area is a mid elevation (5600-6400') Mountain sage/bitterbrush/Bluebunch wheatgrass community and represents approximately 1000 acres of habitat. 21 bitterbrush plants were monitored for age class and 12 for utilization. Plants within each age class were 10(47.6%) mature and 11(52.4%) young. Age class for bitterbrush was good. None of the branches monitored showed any utilization. This site has good grass composition and a fairly open canopy. It is a dry site due to exposure. Part of the area burned and has returned to a Mountain sage/grass/lupine site with no bitterbrush reproduction.

Summary of Data Collected in the Pine Forest DY-12 use area in the Pine Forest Allotment in 1993.

Key area Season of Use area	Mule Deer Forage Preference Value	%Composition Line Intercept Method	#Species Encountered (Sp.Richness)	Canopy Cover (Artem/Total)	Cover Height (in.) Average value	Age class (Putr)	Avg. Utilization (Putr)
DW-PF-02 Winter						(Putr) Young 11% Mature 21% Decadent 68%	69%
DW-PF-04 Winter	0.5 1.0 0.5 0.5 0.1	fair good fair fair poor	ARTRW 81.5 POSE 46.5 SIHY 3.5 BRTE 0.6 CRYPT 0.2	5	18.6/22.9	33 (Artrw) Seedling 5% Young 10% Mature 60% Decadent 25%	
Habitat Condition Rating = 88.8 Excellent							
DW-PF-05 Winter						(Putr) Young 52% Mature 48%	0

### Pronghorn

Pronghorn habitat in the Pine Forest Allotment is fairly extensive over the lower elevation valley bottom areas in the allotment. Three antelope key area condition and trend study sites were

monitored in the Pine Forest Allotment. The studies consisted of measurement of total vegetative production and cover height.

AW-PF-01 is located in a salt desert shrub community at elevations between 4700-5200 feet. The area is dominated by low sage in the mid elevations with Wyoming sage in the drainages. A large portion of this habitat burned and there are few perennial grasses except on slopes. Total vegetative production was at 513 pounds/acre and was of overall low quality with respect to antelope winter forage value. Water was within 2 miles of almost any part of the area. As a result of these findings, the overall habitat rating was fair. The primary limiting factors were distribution and abundance of quality winter forage species and forage diversity.

AS-PF-03 is located in habitat with low sagebrush on hillsides and Wyoming sagebrush at the higher elevations. The area falls within elevations of approximately 4700-5600 feet. A large portion of this habitat area burned in two large fires. The burn areas are primarily cheatgrass monocultures. Low concentrations of perennial grasses are also found throughout the remainder of the habitat type. Approximately 30-40% of the area is represented by the key area. Total vegetative production was at 299 pounds/acre, but was of overall fair quality with respect to antelope summer forage preference values. There was water within 2-4 miles of almost any part of the area. As a result of these findings, the overall habitat rating was fair. The primary limiting factor was forage diversity.

AW-PF-06 is located in habitat with typical salt desert species and some big sage along the drainages. The area falls within elevations of approximately 3800-4600 feet. Total vegetative production was at 1208 pounds/acre, but was of overall of poor quality with respect to antelope winter forage value. There was water within 2-4 miles of almost any part of the area. As a result of these findings, the overall habitat

rating was poor. The primary limiting factors were forage diversity, and quality.

#### California Bighorn Sheep

Bighorn sheep have been established in the Pine Forest Allotment. The first transplant occurred in 1988 in Buckaroo Canyon. This release was in conformance with the Pine Forest Habitat Management Plan. From the initial transplant population of 18 the population has increased to over 60 animals. Most of this herd is found in the adjoining Dyke Hot Allotment for most of the year. Individuals move back and forth between the Pine Forest Allotment and the Dyke Hot Allotment. Sightings of sheep have been reported in head of Leonard Creek and up to 25 head of bighorns use the area around Bartlett Peak during parts of the year. Some fall use by ewes has also been observed in the New York Peak area.

Specific bighorn sheep habitat condition studies have not been established, however, population growth rates are an excellent indicator of habitat conditions. Since populations were established in the Buckaroo Canyon area, they have expanded over three-fold.

#### Elk

Elk are infrequent visitors to the Pine Forest Allotment, primarily in the northern end. In recent years, reports of Elk have been more frequent as populations in Oregon reach carrying capacity and overflow populations begin pioneering into new suitable habitats. Habitat conditions in the Pine Forest Allotment are good to excellent.

#### Sage Grouse

Sage grouse habitat in the Pine Forest Allotment is extensive. The Pine Forest habitat areas have not been drastically effected by fire. Livestock impacts to crucial late summer forage and habitat quality at riparian areas, due to heavy grazing, have reduced overall habitat condition and

overall habitat condition is estimated to be fair to good.

#### 8. Riparian and Fisheries

The following perennial streams in the Pine Forest Allotment have been surveyed for quality of instream habitat quality for trout and riparian condition.

<u>Stream</u>	<u>Length (total)</u>	<u>Length (public)</u>	<u>Surveyed By</u>
Center Cr.	7.0 miles	5.5 miles	1987, 1994 (BLM)
Chicken Cr.	2.5 miles	2.4 miles	1987 (BLM), 1992 (NDOW)
Corral Cr.	3.4 miles	3.4 miles	1988, 1995 (BLM)
Leonard Cr.	28.6 miles	18.7 miles	1987 (BLM), 1992 (NDOW)
Snow Cr.	5.5 miles	3.8 miles	1987 (BLM),

1990, 1994 (NDOW)

NDOW uses the General Aquatic Wildlife Survey (GAWS) to survey methodology to survey instream habitat and riparian condition. Winnemucca BLM surveys were done using protocols developed by the Elko and Winnemucca BLM Districts. These methods were modified from the 6671 and 6720-1 manuals for stream and riparian habitat analysis.

These methodologies measure instream habitat and riparian condition in relation to optimum trout habitat conditions for a stream in the intermountain region. These are not methods that measures condition of a stream in relation to the habitat potential for that stream, so it is possible and probable that a stream could be at the best possible potential for that stream but be in poor condition in relation to the optimal conditions for trout habitat.

Both of these techniques measure pool to riffle ratio, pool quality, desirable bottom material, bank cover and bank stability. Pool to riffle ratio is the measure of the streams deviation from a 1:1 pool to riffle ratio which is the standard for optimum trout habitat. Pool quality is a measure of the percentage of quality pool



habitat in the stream. Quality pool habitat is determined by the presence of adequate pool size, depth and instream cover. Desirable bottom material is a measure of the percentage of gravel (.25-3") and rubble (3-12") that make up the stream bottom. Bank cover is measure of the predominant type of vegetation on stream banks. Bank stability (BLM) and bank soil stability (NDOW GAWS) is a measure of the resistance of the bank to erosion based on type and density of bank vegetation and bank substrate material. In addition the GAWS technique also measures bank vegetation stability which measures stability generated by vegetative cover. The major differences between the NDOW GAWS protocols and the protocols used by the BLM are as follows:

- a. BLM uses a 100 ft. interval between survey transects, NDOW uses a 50 ft. interval.
- b. The value for shrubs in the NDOW protocol is 100% of bank cover optimum. In the BLM protocol the value is 75%.
- c. The value for trees in the NDOW protocol is 75% of bank cover optimum. In the BLM protocol the value is 100%.
- d. To determine the cumulative condition of the stream habitat BLM uses Percent of Optimum Habitat and NDOW uses Habitat Condition Index (HCI). These differ in that the average of the values for pool/riffle ratio, pool quality, desirable bottom materials, bank cover and bank stability determines the Percent of Optimum Habitat and HCI is determined by the average of the same habitat factors plus bank vegetation stability.
- e. Riparian Condition Class (RCC) is determined in the BLM technique by averaging the values for bank cover and bank stability and in the NDOW GAWS technique by averaging the values for bank cover, bank soil stability and bank vegetative stability.



### Center Creek

Center Creek is a perennial tributary to Craine Creek flowing approximately 6.5 miles through the allotment. Of this total, 6.1 miles occur on public lands. Based on habitat conditions, the creek can be divided into two major sections.

Section 1 encompasses the lower 1/3 to 1/2 of the drainage in the allotment. The defining feature of this section is a deeply incised moderately confined channel. The channel is incised in 12-15 foot vertical banks. The channel has widened, however, heavy livestock impacts have hindered the development of a suitable streambank. Heavy utilization of herbaceous riparian vegetation has also limited the stability of the channel both vertically and horizontally. Upland vegetation such as sagebrush and rabbitbrush often extends directly to the waters edge. In comparison to the same conditions on the same creek in a neighboring allotment, the potential of this site seems to be much more with respect to channel formation, streambank conditions, and floodplain development. The only variable between the two sites is the livestock season of use, and in recent years, the class of livestock.

Section 2 encompasses the upper 1/2 to 2/3 of the drainage in the allotment. This section is incised approximately 1 foot. The incised condition is a result of sloughing of the streambank due to heavy livestock grazing pressure. Active headcutting was observed in one location.

The heavy use of the riparian vegetation along the creek weakens the streams ability to dissipate energy, maintain a vigorous vegetative community, and trap sediment. Woody riparian vegetation is not a major component in this system.

Instream habitat surveys for Center Creek were conducted in 1987 and 1994. Both were conducted using BLM methods. The results of those surveys are as follows:

<u>Factor</u>	<u>1987</u>	<u>1994</u>
Pool/Riffle Ratio	88	12
Pool Quality	0	0
Desirable Bottom Material	98	49
Bank Cover	31	25
Bank Stability	35	34
%HO	50	24
Riparian Condition Class	33	30

Center Creek has shown a decrease in all habitat quality factors between 1987 and 1994. The vegetation along the stream has been heavily utilized by livestock and livestock mechanical damage is also heavy leading to increased sediment loading in the stream. There is a lack of shading along the creek and riparian species of vegetation are almost nonexistent. These conditions can lead to an increase in water temperatures, decrease in aquatic invertebrate and the availability of terrestrial invertebrates as a food source, a lack of instream hiding and over wintering cover for juvenile and adult fish and a lack of suitable spawning habitat.

#### Chicken Creek

Chicken Creek is a tributary to Leonard Creek and flows a total of 3.6 miles, all of which occurs on public lands. For discussion purposes, Chicken creek was divided into sections based on habitat type and/or habitat condition.

Section 1 is approximately 0.5 miles in length. It begins at the upper end of the private property and extends upstream to the road crossing. This section of stream contains a significant aspen component with lesser amounts of other woody riparian species including alder

and willow. The aspen community throughout this reach is declining due to the lack of successful regeneration. There is abundant vegetative reproduction, however livestock conflicts are prohibiting successful recruitment. Herbaceous vegetation is present along the many open sections of stream, but provides little protection to the streambank during runoff due to high livestock use. The stream maintains a functional flood plain which does seem to be allowing for limited bank storage.

Section 2 is approximately 0.8 miles in length. It begins at the road crossing and extends upstream to the fenced field at the Chicken Creek cabin site. This reach of stream contains a significant woody riparian community including aspen, willow, alder, and rose. Woody riparian species are represented by a diverse age class suggesting recruitment is not a concern in this section. Herbaceous riparian species are somewhat limited due to the narrow canyon and thick woody riparian cover. Streambanks do not bear evidence of recent impacts associated with livestock grazing.

Section 3 is approximately 0.7 miles in length. It encompasses the portion of stream contained within the fenced area surrounding the cabin. This section of stream is defined by a low gradient sinuous reach containing significant amounts of both herbaceous and woody riparian species. Woody species are dominated by large willow and a diverse age class of aspen. Herbaceous communities are also diverse offering excellent stability to the stream channel, and supporting a functioning flood plain. Livestock utilization of this portion of creek has been limited to short duration use in the fall as a holding facility, therefore livestock impacts are not readily apparent. A recurring open scar area at the downstream end of the section resulting from livestock trailing along the fence edge offers a degree of risk to the stream through this section. This effect could be mitigated or eliminated with better livestock distribution

which does not result in season long livestock grazing in the lower areas of the allotment.

Section 4 is approximately 0.2 miles in length. It begins at the upstream end of the cabin field, and extends approximately 1/3 mile to the foot of the mountain where stream gradient becomes decidedly steeper. This portion of stream is defined by its incised channel, poorly developed floodplain, and low gradient.

Vegetation is somewhat sparse in terms of both diversity and distribution. Riparian vegetation is limited to the narrow strip along the creek and is dominated by herbaceous species, with a few scattered woody species. The majority of the sides lopes of the gully through this section are composed of highly erodible granitic sand and decomposed granite rubble and boulders. The stream bottom is dominated by the same materials. Livestock access to this section has historically been high as a quasi-watertap between the fenced field and steep mountain slope, as well as a movement corridor across the creek. Poor riparian conditions demonstrated by poor floodplain development, poor woody species distribution, and lack of a discernable streambank are related to the high degree of accessibility of this area throughout the growing season. These conditions are compounded by the position of this section as an outwash area at the end of a high gradient cascade off of the mountain.

Section 5 is approximately 0.5 miles in length. It consists of the exceedingly steep cascade area between the upper bench of the creek and the upstream end of section 5. The steepness of the terrain in this section has limited the accessibility of the stream to livestock. As a result, this section of stream supports a closed canopy of woody riparian species.

Section 6 is approximately 0.9 miles in length. It begins at the upstream end of section 6 where the gradient levels out. This section of stream flows through several small habitat areas

dominated by aspen covered galleries. The majority of the reach has been effected by past downcutting to a level of approximately 3-4 feet below the original stream elevation. The cuts have healed to varying degrees with some herbaceous vegetation reestablishing along the stream. Floodplain development has responded in a limited fashion as well. The majority of the aspen woodlands associated with the creek are single age class/mature to overmature trees, though there are areas of healthy aspen regeneration and recruitment. Close inspection of impacted areas does reveal some regeneration efforts, but only limited recruitment was observed. Of the observed recruitment, most of it is closely associated with thick cover (deadfall, tall thick sagebrush, etc.) indicating a conflict with recruitment, and utilization. Several aspen clones in this area are in a downward trend with steady loss of overmature and decadent trees and little to no recruitment. Habitat conditions do not appear to have changed, and vegetative regeneration is not limiting.

Spring/seep areas are all punched to some degree. Several of these areas are disturbed to the point of being open mud bogs or Helbore (Veratrum sp.) dominated sites. This condition is typical of only a small percentage of the spring/seep habitats, with the majority of the sites impacted to a lesser extent by punching.

Instream habitat surveys for Chicken Creek were conducted in 1987 and 1992. The 1987 survey was conducted using BLM methods and the 1992 survey was conducted by NDOW using GAWS. Fish population

sampling was also conducted in the 1992 survey.  
The results of those surveys are as follows:

<u>Factor</u>	<u>1987</u>	<u>1992</u>
Pool/Riffle Ratio	82	54
Pool Quality	19	12
Desirable Bottom Material	64	40
Bank Cover	58	70
Bank Stability/Bank Soil Stability*	60	67
Bank Vegetation Stability*	NA	68
%HO/HCI*	59	51
Riparian Condition Class	59	68

\* These parameters of stream habitat are collected and calculated in NDOW's GAWS surveys, but not in BLM surveys.

The principal limiting factors for this stream are pool/riffle ratio, pool quality and desirable bottom material. Most pools in the system were also heavily silted. Both pool/riffle ratio and pool quality had been affected by prolonged drought. Overall this stream has shown an improvement in riparian conditions that could lead to a decrease in water temperatures, an increase in food provided by terrestrial insects and a decrease in sediment introduced to the stream.

No fish, game or non-game, were observed when NDOW surveyed this stream in 1992.

#### Corral Creek

Corral Creek is a perennial stream which flows a total of 2.8 miles in the Pine Forest Allotment. The entire length of Corral Creek in the allotment occurs on public land. Starting from the allotment boundary fence, the creek can be divided into three sections based on habitat condition.

Section 1 is approximately 0.4 miles in length. It begins at the allotment boundary fence and



proceeds upstream to the point where the gradient changes dramatically. The gradient in this section is exceedingly steep and the stream consists mainly of a long cascade over bedrock and boulder substrate. Livestock access is impossible. Vegetation is dominated by willow and alder with some Chokecherry and Rose. Herbaceous vegetation is limited in frequency, but vigorous where it occurs.

Section 2 is approximately 0.7 miles in length. It starts at the upstream end of section 1 and proceeds upstream until the stream becomes deeply incised. The major defining features of this section are the declining aspen community and the fairly sinuous stream.

The stream is set in a 1-2 foot eroded gully the sides of which have broken down and been revegetated. There are several large willow spaced throughout the section at fairly close intervals with limited occurrences of young willow which bear evidence of past heavy use. The aspen community in this section is limited to a few remaining overmature and decadent trees which are vigorously producing replacement sucker trees. Due to heavy impacts of livestock grazing, there was no observed successful recruitment.

Streambanks are limited to areas adjacent to the large willows and the stream channel is wide and shallow. The majority of the streambanks in the section are punched and eroded such as to offer little in terms of bank storage, energy dissipation, or fish cover. Sinuosity is maintained by the willow.

Section 3 is approximately 0.9 miles in length. It begins where the creek exits the large incised channel at the upstream end of section 2 and proceeds upstream. The dominant features of this section is the deeply incised channel, poor streambank development, and poor vegetation diversity. The channel is incised approximately 8-10 feet with the creek having widened the cut to a point where a semi functional floodplain is



present. The channel is still actively eroding both vertically and horizontally as a result of insufficient vegetation to stabilize the banks due to livestock use. Sediment loads in the stream as a result of this instability are extremely high. There are a few isolated small willow in the section, however, they are prevented from serving as either stream anchors, or energy dissipators due to heavy livestock use which occurs. Large boulders provide the only real structure to the creek to dissipate energy, and provide sinuosity.

Old, fallen trees outside of the current channel indicate a large aspen gallery in past years. This component is completely gone from the section at this time.

Section 4 is approximately 0.8 miles in length. It contains the uppermost section of perennial stream beginning at the downstream end of the large meadow and proceeding upstream to the headwaters spring at the top of the meadow. A defined channel flows throughout the entire meadow area. This channel is incised approximately two feet but the banks have been broken down and are somewhat revegetated. The streambottom is extremely impacted by livestock hoof action with water quality being extremely poor with high sedimentation. The sinuosity of the stream is a remnant of the original meadow habitat and remained in place due to the low gradient of the stream section.

The headwaters spring is severely impacted by livestock. The drier portions of the spring around the perimeter are primarily bare soil due to hoof action. The spring is perched in the center around the inaccessible section. Water quality and flows are poor due to the heavy livestock influence.

Instream habitat surveys for Corral Cr. were conducted in 1988 and 1995. Both surveys were conducted using BLM methods. Stations 2 and 3 of the survey are within the Pine Forest Allotment

and the results of the combination of those  
station in 1988 and 1995 surveys are as follows:

<u>Factor</u>	<u>1988</u>	<u>1995</u>
Pool/Riffle Ratio	80	46
Pool Quality	0	0
Desirable Bottom Material	18	53
Bank Cover	33	46
Bank Stability	51	64
%HO	33	42
Riparian Condition Class	42	55

Limiting factors for this stream are pool/riffle ratio, pool quality, desirable bottom material and bank cover. These factors can lead to increases in water temperature, reduction suitable spawning gravel, lack of instream cover, increases in sediment delivery to the creek, decrease in aquatic invertebrates and a decrease in food provided by terrestrial invertebrates. This stream has shown an upward trend since the last stream survey in 1988.

No fish, game or non-game, were observed during either the 1988 or 1995 surveys and there are no records of this creek ever being planted.

#### Leonard Creek

Leonard Creek is approximately 20 miles in length, with just over 5.0 miles under public ownership. Publicly owned portions of the creek are divided up into several detached sections divided by unfenced private lands. From a habitat standpoint, and for discussion purposes, Leonard creek was divided into five discreet sections.

Section 1 is approximately 3.3 miles in length. It is the largest reach along the creek. Section 1 consists of the unfenced private and intermingled public reaches of creek at the lower elevations from the downstream end of the fenced holding field to the diversion point above the

ranch. This section is grazed year around by livestock and is at the bottom of the Leonard Creek watershed.

A large flood event significantly downcut this section of creek to depths of 10-12 feet at some point in the past. Since this event, the creek has widened the cut significantly, thereby reestablishing a floodplain. Streambank stability, streambanks in general, willow distribution and abundance, and vegetation diversity have not improved however.

Streambanks are low and outsloping. Tremendous amounts of sediment move through this section annually, however the lack of residual vegetation due to season long livestock use prohibits beneficial use of this resource for streambank building.

The stream is unconfined in terms of lateral movement, however, stream sinuosity is basically nonexistent. Streambank and floodplain vegetation is conspicuously lacking willows, though suitable habitat in the form of barren gravel areas is abundant. The stream profile is wide and shallow, a further indication of the poor habitat condition.

Section 2 is approximately 0.2 miles in length. It begins at the upstream end of the private field and continues upstream to the base of the steep cascade portion of the creek approximately above the uppermost diversion point. This section of creek is in a constant state of change due to the presence of at least two diversion structures along its course. It is unclear whether the necessary rights of way have been obtained by the permittee to divert water over public land.

The diversion structures effectively remove the majority of the stream water from the channel directing flows to various points in the fenced holding field. The diverted water crosses several highly erodible soil types, and deep active headcuts were observed at three locations.

The original channel does not appear to contain sustained flows as evidenced by the vegetation. Immediately below the uppermost diversion, seepage through the coarse unconsolidated base material results in a short stretch of perennial stream flow. This portion of stream contains a few scattered willow but is dominated by herbaceous riparian species. Punching of the streambanks is common along this stretch.

Section 3 is approximately 0.6 miles in length. It includes the steep gradient cascade off the mountain to the top of section 2. This section is inaccessible to livestock due to the steep slopes lack of established trails, and thick vegetation. The dominant vegetation along this section of creek is willows with some aspen. Herbaceous riparian vegetation is lacking due to a lack of suitable habitat as a result of the steep gradient.

Section 4 is approximately 0.5 miles in length. It begins at the top of section 3 and proceeds upstream to the foot of the hill leading to Leonard lake. This section of creek begins with a spring/meadow where the drainage water perches before dropping off the mountain to section 2. This meadow has been impacted by livestock in the form of punching in past years, but not to the detriment of the vegetation. Aspen surround three sides of the meadow and are characterized by a healthy community of varying age classes on the uphill sides away from the creek/meadow, and poor age class diversity near the meadow. Reproduction is not limiting, however recruitment is being hindered by livestock use.

The creek is incised approximately 2 feet into a sloping gully the slopes of which are mostly revegetated. Herbaceous vegetation dominates the stream channel throughout the remainder of the section with large boulders serving as the principle structure in the stream to dissipate runoff energy. During 1994, this section of creek dried to a trickle sustained mostly by subsurface flows.

One large spring/meadow complex off the left bank of the creek approximately 2/3 the way up the section has been heavily impacted by livestock activity in the past. The downhill edge of the complex is cut two to three feet with open exposed banks along the majority of its course. The watertable appears to have lowered somewhat as a result of these cuts. Aspen communities surrounding this basin vary with respect to condition, with those nearest water sources bearing significant evidence of livestock impacts in the form of soil compaction, reduced recruitment, and poor understory community condition. The majority of other aspen communities away from water sources are in good condition with vigorous regeneration and successful recruitment.

Section 5 is approximately 0.5 miles in length. It includes the last steep climb upstream of section 4 to and including Leonard Lake. This section is a steep gradient segment of the creek dominated by large granitic substrates. Streambanks are fairly consistent throughout the section possibly due to the armoring by the coarse substrate. Woody riparian species are not present, and based on site conditions, suitable habitat is not present. Herbaceous riparian vegetation is the dominant vegetation and seems to be anchoring the fine sediment well.

At the foot of the boulder dam forming the lake, a fairly large meadow complex is present due to the seepage by the dam. Livestock utilization has been heavy here in past years, and the effects of punching are apparent. In addition, a small eroded channel at the foot of the meadow similar to that in association with the spring/meadow in section 4 is present.

Leonard Lake is a shallow natural lake that was deepened by construction of a weir by the BLM in the past. The lake does not always sustain water year around, but it does in most years. The lake is surrounded on all sides by encroaching sagebrush with the exception of the upstream end which is a small meadow.

From the lake through the remainder of the headwaters, no data has been collected.

Instream habitat surveys for Leonard Creek were conducted in 1987 and 1992. The 1987 survey was conducted using BLM methods and the 1992 survey was conducted by NDOW using GAWS. Fish population sampling was also conducted in the 1992 survey. The results of those surveys are as follows:

<u>Factor</u>	<u>1987</u>	<u>1992</u>
Pool/Riffle Ratio	50	45
Pool Quality	5	10
Desirable Bottom Material	68	20
Bank Cover	25	57
Bank Stability/Bank Soil Stability*	38	46
Bank Vegetation Stability*	NA	52
%HO/HCI*	37	37
Riparian Condition Class	32	52

\* These parameters of stream habitat are collected and calculated in NDOW's GAWS surveys, but not in BLM surveys.

All factors surveyed are limiting for Leonard Creek in relation to trout habitat potential. Pool/riffle ratio and pool quality had been affected by prolonged drought conditions. Most pools had been heavily silted and lacked shading. Embedding of larger substrates was found throughout most of the creek. Bank trampling in addition to low flows appear to be the major contributors too the high sediment loads in the creek. Bank stability is also decreased by trampling of livestock. Very little shrub type vegetation is found along banks. This could be attributed to low potential for this type of vegetation on these sites or over utilization by livestock.

This stream has shown improvement in pool quality, bank cover and bank stability between the 1987 BLM survey and the 1992 NDOW survey. However pool/riffle ratio and desirable bottom materials have declined and overall stream habitat condition has been static during the same



time frame.

Fish sampling in 1992 showed this stream to be inhabited by no native non-game species. Brook trout (*Salvelinus fontinalis*), rainbow trout (*Oncorhynchus mykiss*), brown trout (*Salmo trutta*), and Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*), were found in Leonard Creek with brook trout being the most abundant. Fish plant records show that the stream was planted with all four species and the last planting was with rainbow trout in 1978.

#### Snow Creek

Snow Creek is a major tributary flowing into Leonard Creek. Snow Creek consists of a main stem and a North Fork. Surveys were done for the stream as a whole, but habitat values were also determined for the North Fork individually. Snow Creek flows through 3.6 miles of public lands and 1.8 miles of private land. All 3.0 miles of the North Fork flows through public lands.

Instream habitat surveys for Snow Creek were conducted in 1987, 1990 and 1994. The 1987 survey was conducted using BLM methods. The 1990 and 1994 surveys were conducted by NDOW using GAWS. Fish population sampling was also conducted in the 1990 and 1994 surveys. The results of those surveys are as follows (Values for the North Fork are in parenthesis):



<u>Factor</u>	<u>1990</u>	<u>1994</u>
Pool/Riffle Ratio	53(53)	73(83)
Pool Quality	9(0)	58(41)
Desirable Bottom Material	75(68)	55(52)
Bank Cover	78(72)	68(61)
Bank Stability/Bank Soil Stability*	79(83)	59(79)
Bank Vegetation Stability*	79(85)	63(81)
%HO/HCI*	60(64)	61(65)
Riparian Condition Class	79(80)	63(74)

\* These parameters of stream habitat are collected and calculated in NDOW's GAWS surveys, but not in BLM surveys.

Overall both the main stem and the North Fork of Snow Creek provide good habitat for trout according to both the 1990 and 1994 stream surveys. The major limiting factor for all parts of the stream at the time of both surveys was a lack of quality pools. Overall the trend for the stream condition has been static. Pool/riffle ratio and pool quality rating have been upward but desirable bottom material, bank cover, bank soil stability and bank vegetation stability have declined.

In 1990 brook trout were found in both the main stem and North Fork of Snow Creek. In the 1994 survey both rainbow trout and brook trout were found in the main stem and no trout were found in the North Fork.

#### Sage Hen Creek

Sage Hen Creek is a perennial tributary to Leonard Creek. Sage hen creek flows approximately 3.1 miles, 2.5 miles of which occurs on public lands. For the purposes of this discussion, the creek was divided into five specific sections based on stream conditions beginning at the confluence with Leonard creek.

Section 1 is approximately 0.3 miles in length. It includes the lower public stretch of creek. The channel is deeply incised to a depth of five

to six feet. Riparian vegetation is limited to scattered coyote willow (*Salix exigua*) and Wood's rose (*Rosa woodsii*). Flood plain development is marginal due to the incised nature of the channel. The poor condition of this section of stream is reflective of the continuing effects of the downcutting event, and conditions are not expected to improve until the gully widens.

Section 2 is approximately 0.1 miles in length. It is located immediately above section 1 and is characterized by a short ephemeral stretch protected at the downstream end by a bedrock outcropping which has prevented the headcut in section 1 from moving through. This section is dominated by sagebrush with some herbaceous riparian vegetation immediately adjacent to the channel. Some rose and willow are also present but bear evidence of past heavy use.

Section 3 is approximately 0.4 miles in length. It is located upstream of section 2 and above the private stretch. This section is characterized by a large spring/meadow complex which contributes significant flow to the stream. This complex also contains a small willow/aspen component which is declining due to lack of successful regeneration due to heavy use of young plants. The portion of the complex near the channel is actively eroding resulting in sections of exposed soil which could be effecting the height of the water table.

Section 4 is approximately 0.6 miles in length. It is located upstream of section 3 and includes the stretch between the road crossing and the canyon mouth. This stretch of creek is characterized by a narrow stringer of riparian vegetation dominated by herbaceous species with few woody species.

Section 5 is approximately 1.1 miles in length. It includes portions of the creek from the mouth of the canyon to the headwaters spring. This stretch contains a declining aspen community at the lower end and a healthy aspen community at the upper end. The middle stretch of this

section is dominated by herbaceous riparian vegetation with some willow and rose dogwood and alder. this stretch of stream occurs over highly erodible granitic soils and is maintained by a high rock content in the stream channel.

10. Riparian Assesment: Functionality

Functionality is a term used to describe the process for assessing the functional condition of a riparian area. As defined in TR 1737-9, a stream is in proper functioning condition when:

"Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to:

- 1) dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality.
- 2) filter sediment, capture bedload, and aid floodplain development.
- 3) improve flood-water retention and ground-water recharge.
- 4) develop root masses that stabilize streambanks against cutting action.
- 5) develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration and temperature necessary for fish production, water fowl breeding, and other uses.
- 6) and support greater biodiversity.

Riparian areas are functioning properly when there is adequate structure present to provide the listed benefits applicable to a particular area."

The process for determining stream functionality includes the use of an interdisciplinary team completing a worksheet through on-the-ground observation, with a final determination being made through concensus of the team. Proper functioning condition does not necessarily mean that the stream is providing optimum terrestrial and aquaitic habitat for wildlife, nor does it

mean that the stream is meeting all management objectives. It does mean that all attributes necessary for these uses to occur are present. Functionality was conducted for Sage Hen Creek and Snow Creek, during the month of August 1995.

#### Sage Hen Creek

For the purposes of determining functionality Sage Hen Creek was divided into three reaches, based on stream gradient. Reach one, which is over one mile in length, begins at the headwater spring, which provides the majority of the late season base flow. The reach extends downstream to the mouth of the canyon. The reach can be characterized as very steep, with granitic soils that contain a large cobble/boulder component. Large woody species observed include willow, dogwood, alder, and aspen. Stream energy was attenuated, to a large degree, through the rock component. This reach was determined to be in properly functioning condition.

Reach two, approximately 1/2 mile in length, begins at the mouth of the canyon and continues downstream to where the stream crosses the road. This reach is much lower in gradient and contains a stable channel. This stability is due to a large boulder component and a thick herbaceous component. Woody species were very scarce, but there was adequate land form to provide for desirable conditions. This reach was determined to be in properly functioning condition.

Reach three, approximately one mile in length, runs from the road crossing to the private land boundary in section 13, but does not include the short corner crossing of private land in section 12. This reach includes three different landforms: 5-6 foot deep erosional gully, bedrock outcrop, and spring/wet meadow complex. The gully is present in the lower end of the reach and is truncated by bed rock. Upstream from the bedrock exists a spring complex that is experiencing some effects from erosion. Throughout this reach, the previously observed

stability is lacking. This reach was determined to be functioning at risk with a static trend.

#### Snow Creek

The main stem of Snow Creek was broken into three reaches based on changes in gradient. The first reach, approximately 1/2 mile in length, begins at the headwaters and extends downstream to the upper end of the thick aspen stand (see map). This reach is characterized as being of moderate gradient with an incised channel. The site is located on granitic soils which adds to the lateral instability that is occurring. Herbaceous vegetation, known to bind streambanks together (i.e. Carex and Juncus spp.), was not present in sufficient density to stabilize the streambanks. Woody riparian species were noted to be lacking throughout this reach. A few isolated willows were encountered. This reach was determined to be functioning at risk with a static trend. The lack of woody riparian vegetation and lateral instability were the primary reasons for this determination.

Reach two, approximately 1 3/4 mile in length, begins with the thick aspen stand and ends at the point where the canyon opens up, approximately .5 miles above the confluence with the North Fork of Snow Creek. This reach could be subdivided into three smaller components: 1) the thick aspen stand above the McCully cabin site 2) the lower gradient area at McCully cabin and the area immediately downstream of the cabin site, and 3) that portion of the stream which is confined to the narrow, steep canyon at the lower end of the reach. Overall, the first and third sub reaches are in good condition and are functioning properly. The middle portion is negatively affected by two separate issues:

1. The area has received a large deposition of geologic material from an event in the past. It is not known if this was a glacial type event or a landside. The net result is that the gradient of the canyon bottom was lessened. Over time the stream has downcut,



through the deposit, and re-established it's original slope. This downcut has restricted the stream to the gully and continual sloughing occurs. This area remains in a state of flux and is subject to further erosional events.

2. The area downstream of the deposit is accessible to livestock and as such it receives heavy use. Stream banks and riparian vegetation in this area bear the signs of this accesability.

Given these circumstances, the entire reach was determined to be functioning at risk with a static trend. The reach is functioning properly yet it is at risk for sedimentation downstream and to headcutting upstream.

The final reach evaluated, number 3, is over one mile in length. It starts at the end of number two and proceeds downstream to the private land boundary. This reach is typified by a lesser gradient and a canyon bottom which has widened. This area was determined to be functioning at risk with a downward trend. Lack of regeneration and age structure of woody species were contributing factors to the downward trend.

#### 10. Water Quality

##### Thermograph Information

Continuous recording data loggers were installed to monitor stream temperatures on Chicken Creek and Leonard Creek. The loggers were installed on June 23, 1995. The data loggers were StowAway temperature model #Steb02 -05+37 C, and were manufactured by Onset Instruments. Each of the instrument's calibration was checked, in the District office, prior to deployment. The stowAways were deployed with a sampling interval of 2 hours with a maximum deployment of 150 days.

One unit was deployed on Chicken Creek. It was located at T43N R29E Sec. 30 SW SE. The site was approximately 100 feet upstream of the lower road



crossing. The results are depicted in the attached graph.

Two units were deployed on Leonard Creek, the upper unit was located at T43N R29E Sec. 19 SE NW. The site was located at the canyon mouth, above the first point of diversion.

The lower unit on Leonard Creek was located at T42N R29E sec. 6 SE NW. The site was located about 180 feet downstream of the road crossing.

Stream temperature monitoring serves the purpose of evaluating habitat conditions. Stream temperature is a critical element of the water quality requirements of nearly all salmonid species. Regulatory authority for water quality is under the management of the Nevada Division of Environmental Protection. This authority was delegated to the states through the Clean Water Act. Specific requirements for temperature are not established for all waters.

The State of Nevada has adopted a system of classifying waters and then assigning quality standards to each classification. Under the Nevada system there are four classes, A, B, C, and D. As described in NAC 445A.124 "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." The standard for temperature in class A waters is "Must not exceed 20 C. Allowable temperature increase above natural receiving water temperature: none." The only water in the Pine Forest allotment which has been classified is Leonard Creek. It is a class A water from its origin to the first point of diversion.

V. Conclusions

A. Short Term Objectives

1. OBJECTIVE

Utilization of key streambank riparian plant species in riparian habitats shall not exceed 30% on Center, Corral, Leonard, Chicken and Snow Creeks except where adjusted by an approved activity plan.

CONCLUSION

The objective was not met on Center Creek and on the headwaters of Corral Creek. The objective has generally been met on upper Chicken Creek except at Corral Meadows. The objective has not been met on the portions of lower Chicken Creek. Except in localized areas, the objective has generally been met on upper Leonard Creek and not met on portions of lower Leonard Creek. The objective has been met on Snow Creek except on herbaceous vegetation in the vicinity of, and above, where the north fork comes together with the main fork.

2. OBJECTIVE

Utilization of key plant species in wetland riparian habitats shall not exceed 50% except where adjusted by an approved activity plan.

CONCLUSION

While utilization has been slight to moderate at many springs, The objective was not met at Rodeo Flat and Corral Spring; at the cabin on Tepee Creek; Rock Spring; and at other springs in the vicinity of those listed.

3. OBJECTIVE

Utilization of key plant species in upland habitats shall not exceed 50% except where adjusted by an approved activity plan.

CONCLUSION

This objective has consistently been met on all but small areas of the allotment. The exception is heavy use that occurred on the Mesa in 1995. Localized heavy use of bitterbrush is also of concern as discussed below.

B. Long Term Objectives

1. OBJECTIVE

Manage, maintain and improve public rangeland conditions to provide forage on a sustained yield basis for big game, with an initial forage demand of 2,338 AUMs for mule deer, 108 AUMs for pronghorn, 72 AUMs for bighorn sheep and 96 AUMs for elk.

- a. Improve to and maintain 70,342 acres in good to excellent mule deer habitat condition.
- b. Improve to and maintain 70,396 acres in fair or good pronghorn habitat condition.
- c. Improve to and maintain 50,985 acres in Pine Forest BY-8 in good to excellent bighorn sheep habitat condition.
- d. Improve to and maintain 51,435 acres in Pine Forest EY-1 in good to excellent elk habitat condition.

CONCLUSION

Mule Deer Habitat:

DW-PF-02 key area is a low elevation bitterbrush type and represents approximately 4000 acres of habitat. Utilization ranged from 14.3% of the current years leader growth to 90.6%. The average utilization was 69.3% of the current years leader growth. Due to the high use of current years leader growth on bitterbrush plants and heavy use on grass species, the poor form class and high utilization of bitterbrush plants is attributed to livestock use and not wildlife winter use.

DW-PF-04 key area is a Wyoming big sage/Sandburg bluegrass habitat type within the lower Leonard Cr. basin, maximum elevation is 5500' and represents approximately 7000 acres of habitat. Habitat suitability rated out as excellent with a 89% of optimum.

DW-PF-05 key area is a mid elevation (5600-6400') Mountain sage/bitterbrush/Bluebunch wheatgrass community and represents approximately 1000 acres of habitat. Age class for bitterbrush was good. None of the branches monitored showed any utilization.

Based on this data this objective has been met.

Pronghorn Habitat:

AW-PF-01 is located in a salt desert shrub community at elevations between 4700-5200 feet. The area is dominated by low sage in the mid elevations with Wyoming sage in the drainages. A large portion of this habitat burned and there are few perennial grasses except on slopes. The overall habitat rating was fair. The primary limiting factors were distribution and abundance of quality winter forage species and forage diversity.

AS-PF-03 is located in habitat with low sagebrush on hillsides and Wyoming sagebrush at the higher elevations. The area falls within elevations of approximately 4700-5600 feet. A large portion of this habitat area burned in two large fires. The burn areas are primarily cheatgrass monocultures. Low concentrations of perennial grasses are also found throughout the remainder of the habitat type. Approximately 30-40% of the area is represented by the key area. Total vegetative production was at 299 pounds/acre, but was of overall fair quality with respect to antelope summer forage preference values. There was water within 2-4 miles of almost any part of the area. As a result of these findings, the overall habitat rating was fair. The primary limiting factor was forage diversity.

AW-PF-06 is located in habitat with typical salt desert species and some big sage along the drainages. The area falls within elevations of approximately 3800-4600 feet. Total vegetative production was at 1208 pounds/acre, but was of overall of poor quality with respect to antelope winter forage value. There was water within 2-4 miles of almost any part of the area. As a result of these findings, the overall habitat rating was poor. The primary limiting factors were forage diversity, and quality.

Overall this objective has been met but winter range is limiting factor for this allotment.

#### Bighorn Sheep Habitat:

Specific monitoring for bighorn sheep habitat was not conducted so this objective can not be evaluated. However the bighorn herd in the allotment has increased in size.

Elk Habitat:

Specific studies to monitor elk habitat were not conducted and at this time elk only frequent the allotment as an accidental occurrence, so there is no way to evaluate this objective.

2. OBJECTIVE

Manage, maintain and improve public rangeland conditions to provide forage on a sustained yield basis for livestock, with an initial stocking level of 9,700 AUMs.

CONCLUSION

Utilization data shows slight to light utilization throughout most of the allotment indicating forage is present to support 9,700 AUMs. However, under current management that forage cannot be harvested without high levels of utilization on riparian areas. Therefore, under current management, this objective is not being met.

3. OBJECTIVE

Improve range condition from poor to fair on 114,917 acres and from fair to good on 9,993 acres.

CONCLUSION

Ecological Site Inventory has not been conducted on Pine Forest Allotment. This objective will be redefined/quantified utilizing desired plant communities as information becomes available.



4. OBJECTIVE

Improve to and maintain 80 acres of ceanothus habitat types in good condition.

CONCLUSION

Baseline data has not been gathered to evaluate this objective. Utilization data showed slight use on ceanothus suggesting that the habitat is not being negatively impacted by browsing animals.

5. OBJECTIVE

Improve to and maintain 477 acres of mahogany habitat types in good condition.

CONCLUSION

Baseline data has not been gathered to evaluate this objective. Utilization data showed slight use on mountain mahogany suggesting that the habitat is not being negatively impacted by browsing animals.

6. OBJECTIVE

Improve to and maintain 688 acres of aspen habitat types in good condition.

CONCLUSION

Chicken Cr.

Section 2 contains a significant aspen component. The aspen community throughout this reach is declining due to the lack of successful regeneration. There is abundant vegetative reproduction, however livestock conflicts are prohibiting successful recruitment.

Section 3 contains a significant woody riparian community including aspen, willow, alder, and rose. Woody riparian species are represented by a diverse age class suggesting recruitment is not a concern in this section.

Section 4 is dominated by large willow and a diverse age class of aspen.

Section 7 flows through several small habitat areas dominated by aspen covered galleries. The majority of the aspen woodlands associated with the creek are single age class/mature to overmature trees, though there are areas of healthy aspen regeneration and recruitment. Close inspection of impacted areas does reveal some regeneration efforts, but only limited recruitment was observed. Of the observed recruitment, most of it is closely associated with thick cover (deadfall, tall thick sagebrush, etc.) indicating a conflict with recruitment, and utilization. Several aspen clones in this area are in a downward trend with steady loss of overmature and decadent trees and little to no recruitment. Habitat conditions do not appear to have changed, and vegetative regeneration is not limiting.

#### Corral Cr.

The aspen community in Section 2 is limited to a few remaining overmature and decadent trees which are vigorously producing replacement sucker trees. Due to heavy impacts of livestock grazing, there was no observed successful recruitment.

Abundant evidence is present outside of the current channel of Section 3, to indicate a large aspen gallery in past years. This component is completely gone from the section at this time.

#### Leonard Cr.

Section 3 is inaccessible to livestock due to the steep slopes lack of established trails, and

thick vegetation. The dominant vegetation along this section of creek is willows with some aspen.

Section 4 begins with a spring/meadow. Aspen surround three sides of the meadow and are characterized by a healthy community of varying age classes on the uphill sides away from the creek/meadow, and poor age class diversity near the meadow. Reproduction is not limiting, however recruitment is being hindered by livestock use.

One large spring/meadow complex off the left bank of the creek approximately 2/3 the way up the section has been heavily impacted by livestock activity in the past. Aspen communities surrounding this basin vary with respect to condition, with those nearest water sources bearing significant evidence of livestock impacts in the form of soil compaction, reduced recruitment, and poor understory community condition. The majority of other aspen communities away from water sources are in good condition with vigorous regeneration and successful recruitment.

#### Sage Hen Cr.

Section 4 contains a small willow/aspen component which is declining due to lack of successful regeneration due to heavy use of young plants.

Section 5 contains a declining aspen community at the lower end and a healthy aspen community at the upper end.

Based on the above data the aspen stands that are accessible to livestock grazing are being negatively impacted. While there are aspen stands that are healthy and are reproducing and maintaining vigor most stands inventoried are in a state of decline and the aspen objective for this allotment as a whole has not been met.

7. OBJECTIVE

Improve to and maintain 949 acres of riparian and meadow habitat types in good condition.

CONCLUSION

While this objective has been met on some riparian areas, it has not been met on others.

It was not met on Center Creek. Heavy livestock impacts have hindered the development of a suitable streambank. Heavy utilization of herbaceous riparian vegetation has limited the stability of the channel both vertically and horizontally. From 1987 to 1994 the creek has shown a decrease in all habitat features measured for stream survey.

The lower portion of Chicken Creek has been significantly affected by livestock trampling. Riparian vegetation is heavily used and provides very little cover to the stream to protect it from temperature extremes. The lack of vegetative cover is also hindering the recovery of the streambank through reduced sediment trapping ability. The aspen community is declining due to the lack of successful regeneration. There is abundant vegetative reproduction, however, livestock conflicts are prohibiting successful recruitment. Herbaceous vegetation is present along the many open sections of stream, but provides little protection to the streambank during runoff due to high livestock use.

Creek Name	Riparian Condition Class		Objective Met?	Trend
	1987	1994		
Center Creek	33 (1987)	30 (1994)	Not met	Static
Chicken Cr.	59 (1987)	68 (1992)	Met	Upward
Leonard Cr.	32 (1987)	52 (1992)	Not met	Upward
Corral Cr.	42 (1988)	55 (1995)	Not met	Upward
Main Fork of Snow Cr.	79 (1990)	63 (1994)	Met	Downward
North Fork of Snow Cr.	80 (1990)	74 (1994)	Met	Downward

8. OBJECTIVE

Improve to or maintain the following stream habitat conditions from 50% on Center, unknown on Corral, 37% on Leonard, 59% on Chicken and 40% on Snow Creeks to an overall optimum of 60% or above.

- a. Streambank cover 60% or above.
- b. Streambank stability 60% or above.
- c. Maximum summer water temperatures below 70°F.
- d. Sedimentation below 10%.

CONCLUSION

Center Creek

<u>Factor</u>	<u>1987</u>	<u>1994</u>
Pool/Riffle Ratio	88	12
Pool Quality	0	0
Desirable Bottom Material	98	49
Bank Cover	31	25
Bank Stability	35	34
%HO	50	24
Riparian Condition Class	33	30

Center Creek has shown a decrease in all habitat quality factors between 1987 and 1994. The vegetation along the stream has been heavily utilized by livestock and livestock mechanical damage is also heavy leading to increased sediment loading in the stream. There is a lack of shading along the creek and riparian species of vegetation are almost nonexistent.

Center Cr. did not meet the objectives for bank cover, bank stability and based on lack of thermal cover on this stream, temperature was also probably in excess of the objective.

Chicken Creek

<u>Factor</u>	<u>1987</u>	<u>1992</u>
Pool/Riffle Ratio	82	54
Pool Quality	19	12
Desirable Bottom Material	64	40
Bank Cover	58	70
Bank Stability/Bank Soil Stability*	60	67
Bank Vegetation Stability*	NA	68
%HO/HCI*	59	51
Riparian Condition Class	59	68

\* These parameters of stream habitat are collected and calculated in NDOW's GAWS surveys, but not in BLM surveys.

The principal limiting factors for this stream are pool/riffle ratio, pool quality and desirable bottom material. Most pools in the system were also heavily silted. Both pool/riffle ratio and pool quality had been affected by prolonged drought. Overall this stream has shown an improvement in riparian conditions that could lead to a decrease in water temperatures, an increase in food provided by terrestrial insects and a decrease in sediment introduced to the stream.

While the overall habitat condition objective for this creek was close to being met the objectives for bank cover and stability were met.



Corral Creek

<u>Factor</u>	<u>1988</u>	<u>1995</u>
Pool/Riffle Ratio	80	46
Pool Quality	0	0
Desirable Bottom Material	18	53
Bank Cover	33	46
Bank Stability	51	64
%HO	33	42
Riparian Condition Class	42	55

\* These parameters of stream habitat are collected and calculated in NDOW's GAWS surveys, but not in BLM surveys.

Limiting factors for this stream are pool/riffle ratio, pool quality, desirable bottom material and bank cover. These factors can lead to increases in water temperature, reduction suitable spawning gravel, lack of instream cover, increases in sediment delivery to the creek, decrease in aquatic invertebrates and a decrease in food provided by terrestrial invertebrates. This stream has shown an upward trend since the last stream survey in 1988 but only the objective for bank stability in 1995 was met.

Leonard Creek

<u>Factor</u>	<u>1987</u>	<u>1992</u>
Pool/Riffle Ratio	50	45
Pool Quality	5	10
Desirable Bottom Material	68	20
Bank Cover	25	57
Bank Stability/Bank Soil Stability*	38	46
Bank Vegetation Stability*	NA	52
%HO/HCI*	37	37
Riparian Condition Class	32	52

\* These parameters of stream habitat are collected and calculated in NDOW's GAWS surveys, but not in BLM surveys.

All factors surveyed are limiting for Leonard Creek in relation to trout habitat potential. Pool/riffle ratio and pool quality had been affected by prolonged drought conditions. Most pools had been heavily silted and lacked shading. Embedding of larger substrates was found throughout most of the creek. Bank trampling in addition to low flows appear to be the major contributors to the high sediment loads in the creek. Bank stability is also decreased by trampling of livestock. Very little shrub type vegetation is found along banks. This could be attributed to low potential for this type of vegetation on these sites or over utilization by livestock.

This stream has shown improvement in pool quality, bank cover and bank stability between the 1987 BLM survey and the 1992 NDOW survey. However pool/riffle ratio and desirable bottom materials have declined and overall stream habitat condition has been static during the same time frame. This stream still does not meet the long term objectives.

Snow Creek

<u>Factor</u>	<u>1990</u>	<u>1994</u>
Pool/Riffle Ratio	53(53)	73(83)
Pool Quality	9(0)	58(41)
Desirable Bottom Material	75(68)	55(52)
Bank Cover	78(72)	68(61)
Bank Stability/ Bank Soil Stability*	79(83)	59(79)
Bank Vegetation Stability*	79(85)	63(81)
%HO/HCI*	60(64)	61(65)
Riparian Condition Class	79(80)	63(74)

\* These parameters of stream habitat are collected and calculated in NDOW's GAWS surveys, but not in BLM surveys.

Overall both the main stem and the North Fork of Snow Creek provide good habitat for trout according to both the 1990 and 1994 stream surveys. The major limiting factor for all parts of the stream at the time of both surveys was a lack of quality pools. Overall the trend for the stream condition has been static. Pool/riffle ratio and pool quality rating have been upward but desirable bottom material, bank cover, bank soil stability and bank vegetation stability have declined. This stream has met objectives but there is some concern that there is a downward trend on this stream in bank stability and bank cover ratings which could be attributed to present management actions

9. OBJECTIVE

Protect sage grouse strutting grounds and brooding areas. Maintain a minimum of 30% cover of sagebrush for nesting and winter use.

CONCLUSION

Sage grouse habitat in the Pine Forest Allotment is extensive. The Pine Forest habitat areas have not been drastically effected by fire. Livestock

impacts to crucial late summer forage and habitat quality at riparian areas, due to heavy grazing, have reduced overall habitat condition and overall habitat condition is estimated to be fair to good.

10. OBJECTIVE

Improve to and maintain the seeded pasture in good condition (5-10 acres per AUMs).

CONCLUSION

Data has not been collected to evaluate this objective.

11. OBJECTIVE

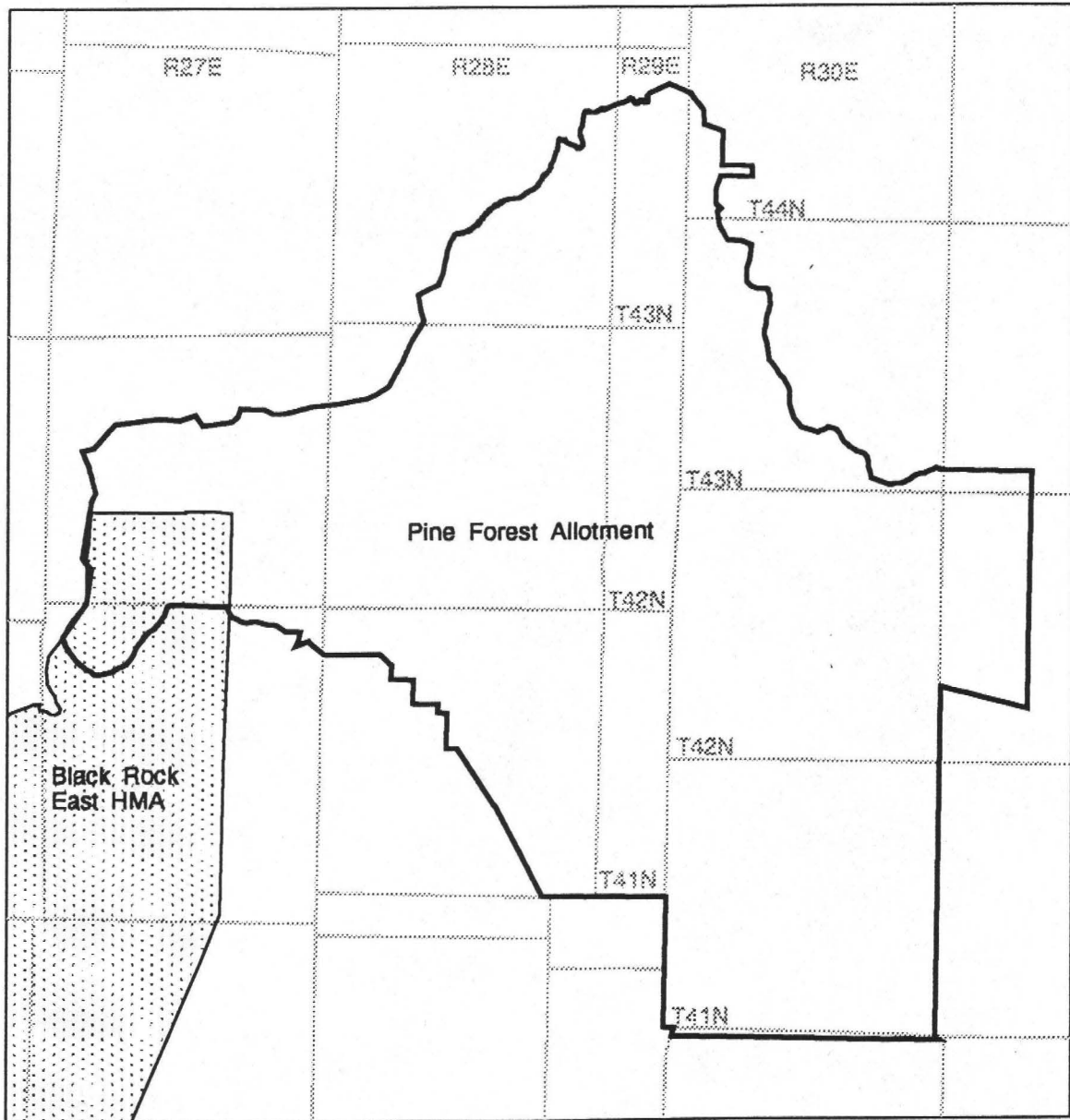
Improve to and maintain the water quality of Sagehen, Chicken, Snow, Corral and Center Creeks to the state criteria set for the following beneficial uses: livestock drinking water, cold water aquatic life, wading and wildlife propagation. Improve or maintain the water quality of Leonard Creek to the Nevada Class A standards.

CONCLUSION

Data is not available to evaluate this objective.

Map 1

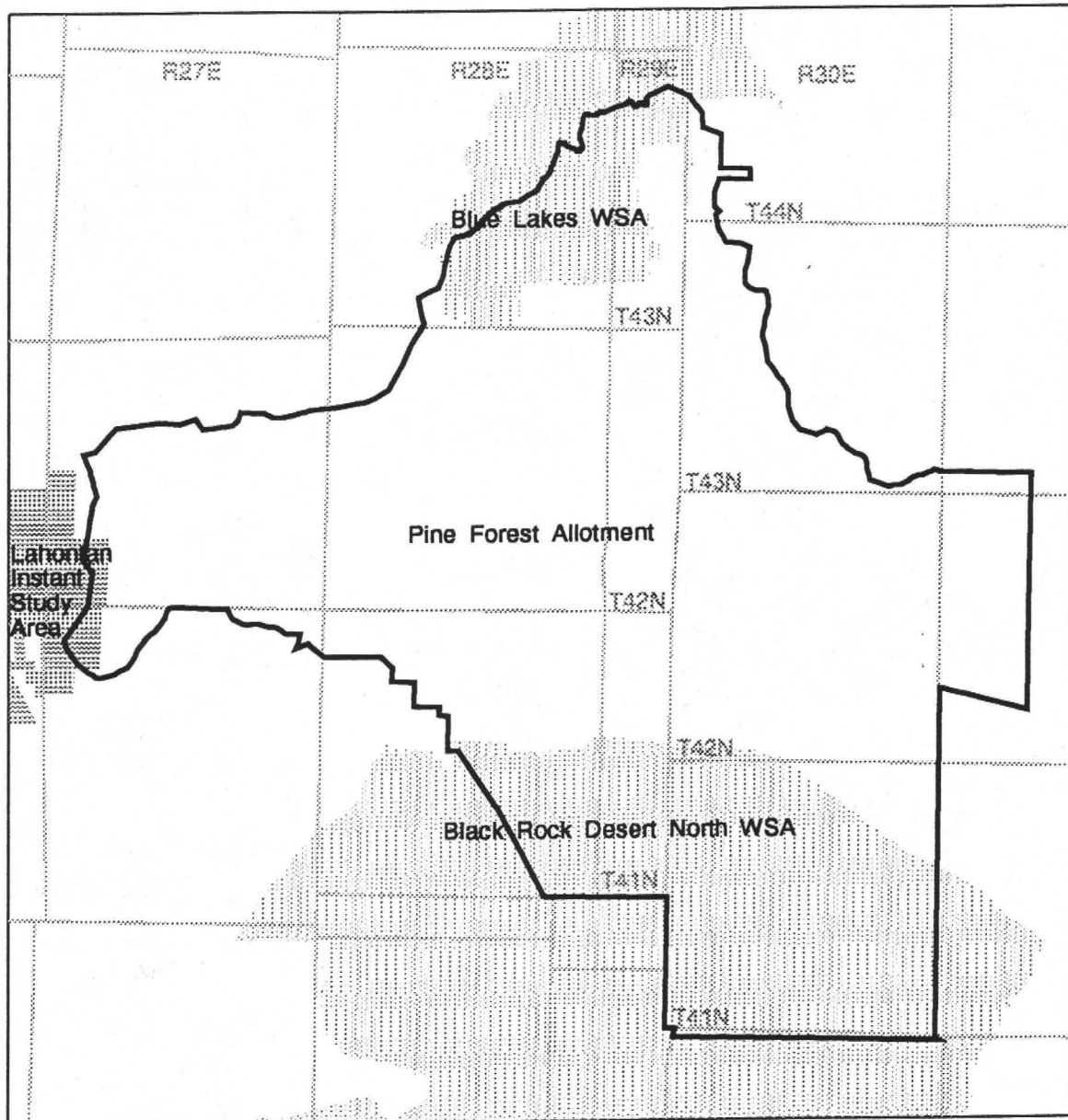
Portion of the Black Rock East HMA Within the Pine Forest Allotment



Map Scale  
1:250000

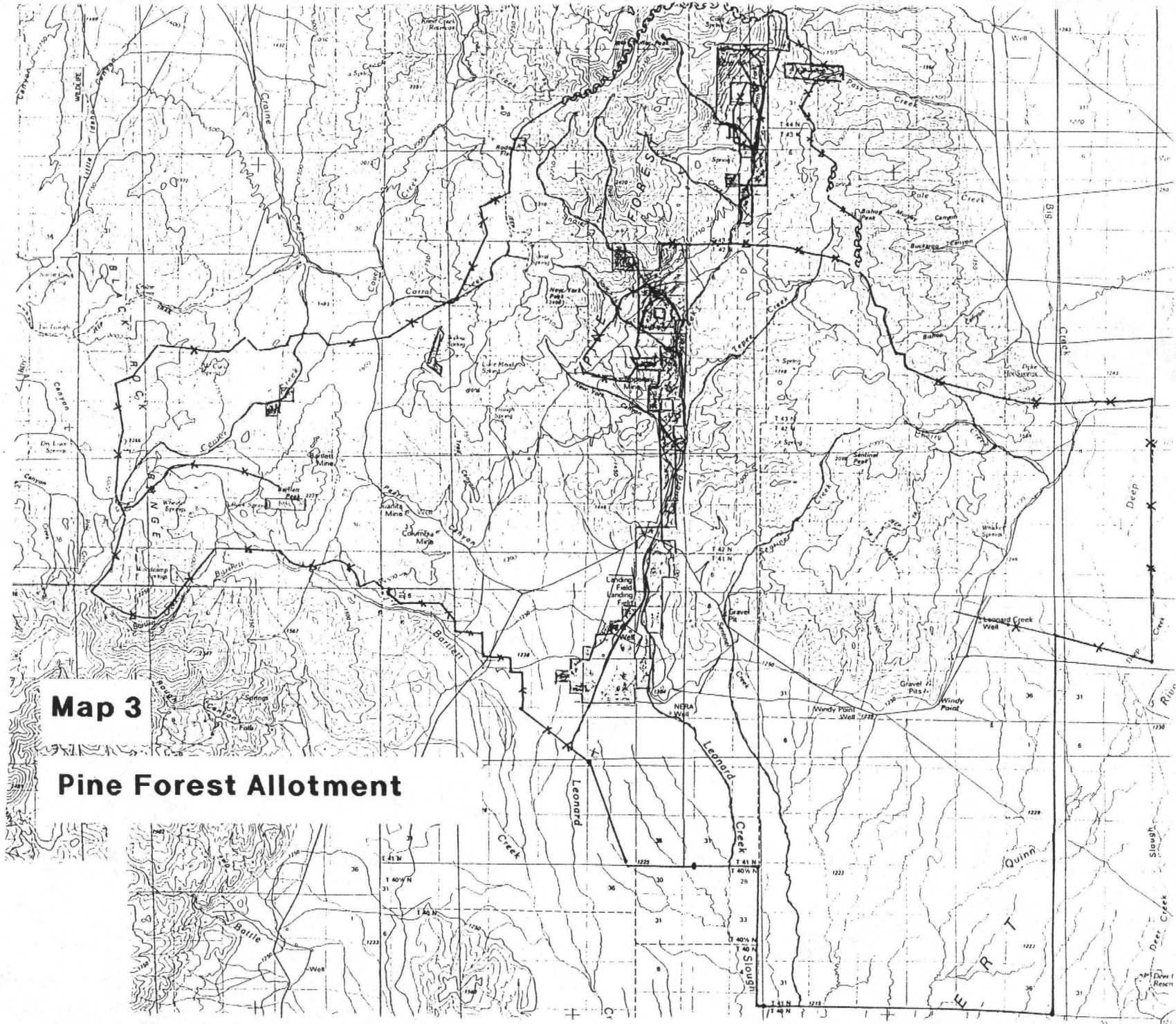
## Map 2

Portions of the Lahontan Instant Study Area, Blue Lakes WSA and Black Rock Desert North WSA Within the Pine Forest Allotment



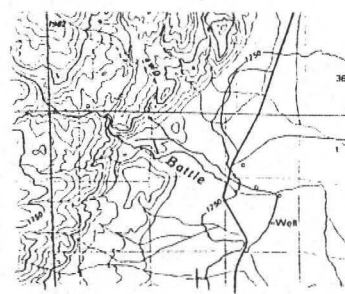
Map Scale  
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**Map 3**

**Pine Forest Allotment**



## Appendix 1

Leonard Creek Ranch Station  
Monthly and Annual (Jan-Dec) Precipitation in Inches

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1982										1.04	2.08	0.94	N/A
1983	1.3	1.48	2.64M	0.71	0.2	1.44	0.01	1.94	1.49	0.49	1.91	4.13	15.1M
1984	0.32	0.79	0.89	0.62	0.25	0.29	0.32	0.63	0.27	1.51	2.11	0.5	8.5
1985	0.39	0.73	1.2	0.04	0.05	0	1.09	0.1	1.13	M	1.59	0.5	6.82M
1986	0.49	2.8	1.35	0.83	0.72	0.47	0.48	1	0.93	0	0.15	0.38	9.6
1987	0.91	0.81	1.32	1.09	1.59	1.2	0.07	0.15	0	0.56	0.83	0.77	9.3
1988	1.52	0.26	0.3	1.67	0.09	0.56	0.14	0.18	0.33	0	1.53	1.53	8.11
1989	0.73	0.81	1.09	0.34	1.69	0.65	0	0.21	0.85	0.42	0.58	0.11	7.48
1990	0.28	1.15	0.47	1.86	1.55	0.02	0.21	0.56	0.53	0	0.12	0.44	7.19
1991	0.61	0.61	1.87	0.8	1.69	0.23	0.2	0.27	1.06	1.04	0.26	0.4	9.04
1992	0.07	0.81	1	0.26	0	0.7	0.4	0.02	0.03	2	0.76	1.77	7.82
1993	3.07	0.89	1.35	0.49	0.56	1.87	0.11	T	0.12	0.85	0.28	0.43	10.02
1994	0.12	1.71M	0.67	0.52	0.95	0	0.01	0	0.25	0.18	1.81	2.09	8.31M
1995	2.32	0.07	2.34	1.66	1.33	1	0.32	0.05	0.08	0	0.14	2.18	11.49
1996	2.75	1.12	0.8	0.96	1.04	2.19	0.85M	0	0.22	1.01	0.92	1.85M	13.71M
Normal Precip.	1.02	0.83	0.8	0.69	0.69	0.71	0.3	0.5	0.46	0.46	1.05	1	8.51
T: Trace Precipitation													
M: Insufficient Data													

## Appendix 2

## Leonard Creek Ranch Station

## Monthly and Annual (Jan-Dec) Deviation from Normal Precipitaion in Inches

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
	1.02	0.83	0.8	0.69	0.69	0.71	0.3	0.5	0.46	0.46	1.05	1	8.51
1982	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.58	1.03	-0.06	1.55
1983	0.28	0.65	M	0.02	M	0.73	-0.29	1.44	1.03	0.03	0.86	3.13	M
1984	-0.7	-0.04	0.09	-0.07	-0.44	-0.42	0.02	0.13	-0.19	1.05	1.06	-0.5	-0.01
1985	-0.63	-0.1	0.4	-0.65	-0.64	-0.71	0.79	-0.4	0.67	M	0.54	-0.5	M
1986	-0.53	1.97	0.55	0.14	0.03	-0.24	0.18	0.5	0.47	-0.46	-0.9	-0.62	1.09
1987	-0.11	-0.02	0.52	0.4	0.9	0.49	-0.23	-0.35	-0.46	0.1	-0.22	-0.23	0.79
1988	0.5	-0.57	-0.5	0.98	-0.6	-0.15	-0.16	-0.32	-0.13	-0.46	0.48	0.53	-0.4
1989	-0.29	-0.02	0.29	-0.35	1	-0.06	-0.3	-0.29	0.39	-0.04	-0.47	-0.89	-1.03
1990	-0.74	0.32	-0.33	1.17	0.86	-0.69	-0.09	0.06	0.07	-0.46	-0.93	-0.56	-1.32
1991	-0.41	-0.22	1.07	0.11	1	-0.48	-0.1	-0.23	0.6	0.58	-0.79	-0.6	0.53
1992	-0.95	-0.02	0.2	-0.43	-0.69	-0.01	0.1	-0.48	-0.43	1.54	-0.29	0.77	-0.69
1993	2.05	0.06	0.55	-0.2	-0.13	1.16	-0.19	-0.5	-0.34	0.39	-0.77	-0.57	1.51
1994	-0.9	M	-0.13	-0.17	0.26	-0.71	-0.29	-0.5	-0.21	-0.28	0.76	1.09	M
1995	1.3	-0.76	1.54	0.97	0.64	0.29	0.02	-0.45	-0.38	-0.46	-0.91	1.18	2.98
1996	1.73	0.29	0	0.27	0.35	1.48	M	-0.5	-0.24	0.55	-0.13	M	M
Normal Precip.	1.02	0.83	0.8	0.69	0.69	0.71	0.3	0.5	0.46	0.46	1.05	1	8.51
M: Insufficient Data													



## Appendix 3

Leonard Creek Ranch Station  
Precipitation in Inches by Water Year (Oct-Sep)  
and for Mar-Jun and Mar-Aug

<u>Oct-Sep</u>		<u>Mar-June</u>	<u>March-Aug</u>
10/82-09/83	15.27M	4.99M	6.94M
10/83-09/84	10.91	2.05	3
10/84-09/85	8.85	1.29	2.48
10/85-09/86	11.16M	3.37	4.85
10/86-09/87	7.67	5.2	5.42
10/87-09/88	7.21	2.62	2.94
10/88-09/89	9.43	3.77	3.98
10/89-09/90	7.74	3.9	4.67
10/90-09/91	7.9	4.59	5.06
10/91-09/92	4.99	1.96	2.38
10/92-09/93	12.99	4.27	4.38
10/93-09/94	5.79M	2.14	2.15
10/94-09/95	13.25	6.33	6.7
10/95-09/96	12.25M	4.99	5.84M
Normal Precipitation	8.51	2.89	3.69
M: Insufficient Data			

Appendix 4			
Leonard Creek Ranch Station			
Deviation from Normal Precipitation			
in Inches by Water Year (Oct-Sep)			
and for Mar-Jun and Mar-Aug			
<u>Oct-Sep</u>		<u>Mar-June</u>	<u>March-Aug</u>
10/82-09/83	M	M	M
10/83-09/84	2.4	-0.84	-0.69
10/84-09/85	0.34	-1.6	-1.21
10/85-09/86	M	0.48	1.16
10/86-09/87	-0.84	2.31	1.73
10/87-09/88	-1.3	-0.27	-0.75
10/88-09/89	0.92	0.88	0.29
10/89-09/90	-0.77	1.01	0.98
10/90-09/91	-0.61	1.7	1.37
10/91-09/92	-3.52	-0.93	-1.31
10/92-09/93	4.48	1.38	0.69
10/93-09/94	M	-0.75	-1.54
10/94-09/95	4.74	3.44	3.01
10/95-09/96	M	2.1	M
Normal Precipitation	8.51	2.89	3.69
M: Insufficient Data			

12-2-97

BOB MILLER  
Governor

STATE OF NEVADA

CATHERINE BARCOMB  
Executive Director



COMMISSION FOR THE  
PRESERVATION OF WILD HORSES

1105 Terminal Way

Suite 209

Reno, Nevada 89502

(702) 688-2626

December 2, 1997

Colin P. Christensen, ADM Renewable  
Bureau of Land Management  
Winnemucca District  
5100 East Winnemucca Blvd.  
Winnemucca, NV 89445

Re: Comments to the Draft Pine Forest Allotment Evaluation

Dear Mr. Christensen:

The Nevada Commission For The Preservation Of Wild Horses (CPWH) appreciates the opportunity to review and provide written comments to the above captioned document dated November 10, 1997.

No mention is made of an appropriate management level (AML) or forage allocation for wild horses known to be residing in the northern portion of the Black Rock East Horse Management Area (HMA) within the Pine Forest Allotment. On page 19 of this document four known wild horses are reported as residing in this area from 1991 through 1993. The allotment boundary change in February 1982, (including boundary fencing) between the Paiute and Pine Forest Allotments placed the northern portion of the HMA in the Pine Forest Allotment. Was the Paradise-Denio Land Use Plan amended to reflect this change, if not, why not? Was there public input sought by BLM regarding this change? Has the boundary fence changes been evaluated to determine if there are impacts to wild horse movements in this area?

It is very difficult to understand how the current downward deterioration of allotment grazing lands will be reversed with the proposed stocking rate of 9,700 livestock AUM's when the 1983-1996 licensed AUM's averaged 8,487 AUM's. Irregardless of whatever grazing plan is proposed, it appears from your own data that a decrease in the stocking rates from the 1983-1996 levels are in order to reverse the deteriorating range conditions to come in line with actual range carrying capacity for all ungulates.



Colin Christensen, ADM  
December 2, 1997  
Page 2

We request to remain on your mailing list to provide comments to all future documents pertinent to the Pine Forest Allotment.

Sincerely,

A handwritten signature in cursive script that reads "Catherine Barcomb". The signature is written in dark ink and is positioned above the typed name.

CATHERINE BARCOMB  
Administrator