



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Winnemucca District Office
705 East 4th Street
Winnemucca, Nevada 89445

JAN 12 1993



IN REPLY REFER TO:
4120
(NV-026.1)

Dear Interested Reader:

Enclosed is a draft copy of the Soldier Meadows re-evaluation. An interdisciplinary team analyzed monitoring data and livestock/wild horse actual use to determine if resource objectives were met or not. Based on this analysis the team developed technical and management recommendations to resolve the documented shortcomings.

Please review the document and provide comments by February 5, 1993. After reviewing the comments, if needed, I will arrange a meeting for all interested parties to exchange additional information.

If you have any questions, please contact Ron Pearson or Tom Seley at (702) 623-1500.

Sincerely yours,

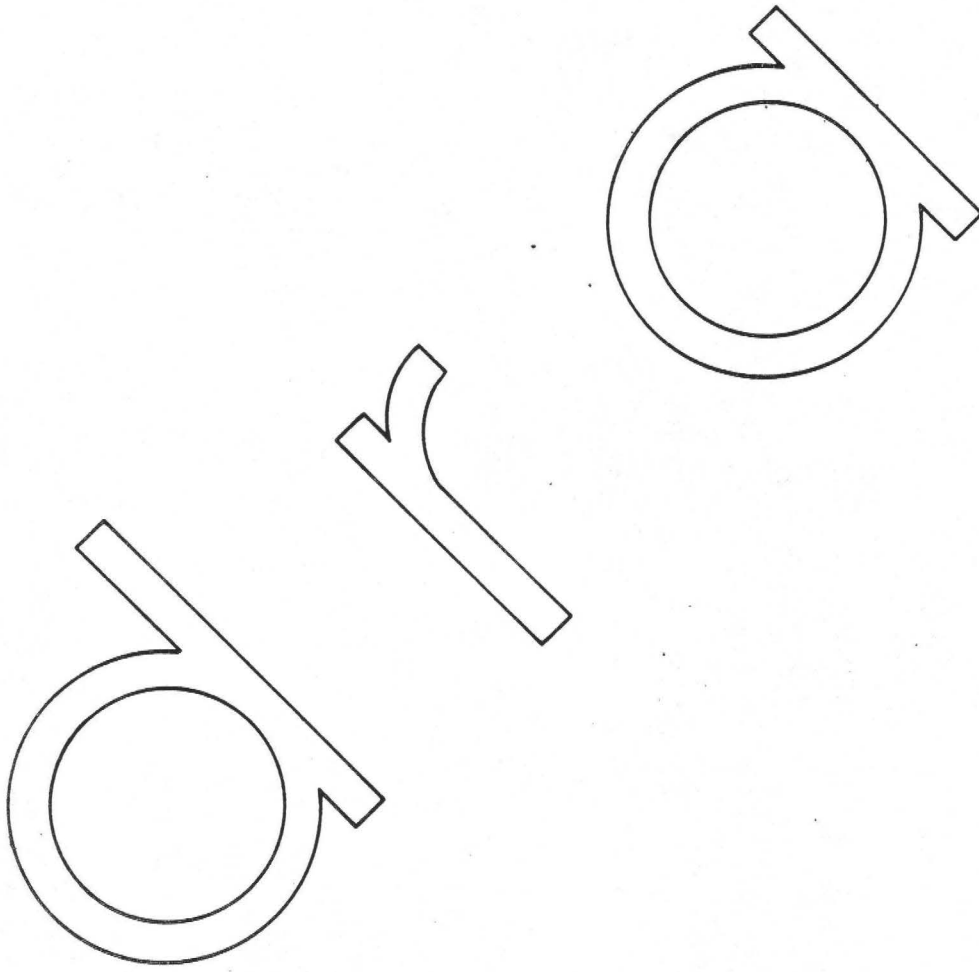
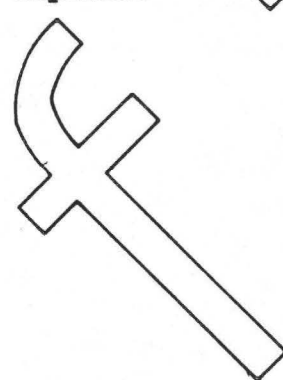
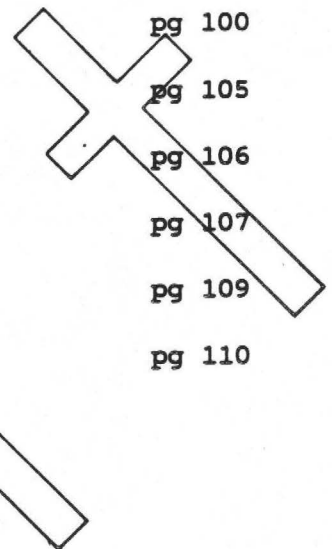
Bud Cribley
Area Manager
Sonoma-Gerlach Resource Area

Enclosure

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SOLDIER MEADOWS ALLOTMENT RE-EVALUATION

I. INTRODUCTION

The Soldier Meadows Allotment Re-evaluation will evaluate the actual use, climate, utilization, ecological site inventory, stream survey, wild horse/ burro distribution and census, and wildlife habitat data to determine the effectiveness of the present management on the Soldier Meadows Allotment. This re-evaluation addresses the 1988 Soldier Meadows evaluation, the 1988 livestock agreement, the Fox Mountain Habitat Management Plan, and the Desert Dace Habitat Management Plan to determine whether the allotment specific objectives have been met or not met and if the objectives are still appropriate. Those objectives that have not been carried forward will be requantified and management actions developed to ensure their achievement. Among the management actions to be developed will be to set the carrying capacity on a pasture by pasture basis and from there establish an Appropriate Management Level for wild horse, burros and the appropriate livestock numbers, the allowable use levels, and a grazing system.

The Soldier Meadows Allotment is located in the northwest portion of Humboldt County. The allotment is approximately 42 miles long in a north/south direction and 16 miles wide in an east-west direction. The topography within the allotment ranges from the valley floor of the Black Rock Desert to the higher terrain of the Black Rock and Calico Mountain ranges. Vegetative types in the allotment range from Greasewood, Saltbush, Saltgrass sites on the flats at elevations of 4,000' to Sagebrush, Bitterbrush, Mountain Mahogany sites in the higher elevations at 8,600'.

Total acreage of the allotment is as follows:

<u>LAND OWNERSHIP STATUS</u>	<u>PUBLIC</u>	<u>OTHER</u>
Soldier Meadows	327,739	10,518

- A. SOLDIER MEADOWS ALLOTMENT - 00128
- B. PERMITTEE - R.C.ROBERTS
- C. EVALUATION PERIOD - 1988 THROUGH 1992
- D. SELECTIVE MANAGEMENT CATEGORY - I PRIORITY - 1
- E. LIVESTOCK PREFERENCE, WILD HORSE/BURRO, AND WILDLIFE NUMBERS

1. Livestock Preference

Total Preference	Active Preference During Evaluation	Voluntary 25% Reduction	Number of Livestock	Period of Use
16,070	12,053	4,017	1500	1/10 - 5/20
			500	5/21 - 10/30

2. Recommended Wild Horse/ Burro Numbers from the 1988 Evaluation

	Wild Horse/Burro AML*	Wild Horse/Burro AUMs
Warm Springs Canyon	294/10	3528/120
Black Rock Range-West	424/0	5088/0
Calico Mountains	117/0	1404/0

* AML (appropriate management level) refers to the number of wild horse/ burro listed in the Sonoma-Gerlach MFP-III Wild Horse and Burro decision 1:1 to be used as a starting point for monitoring purposes. In accordance with the June 7, 1989 Interior Board of Land Appeals Ruling (IBLA 88-591), adjustments to wild horse/ burro populations and establishment of AML will be based on monitoring data to obtain the optimum number of wild horses and burros which will result in a Thriving Natural Ecological Balance and avoid deterioration of the range.

3. Wildlife Numbers

These are the reasonable numbers established for wildlife in the Sonoma-Gerlach MFP III (WL 1.1) for the Soldier Meadows Allotment and agreed upon by NDOW (Nevada Dept. of Wildlife:

	Number	AUMs
Bighorn Sheep	110	264
Mule Deer	262	786
Pronghorn	179	429

II. SUMMARY OF THE SOLDIER MEADOWS ALLOTMENT EVALUATION OF 1988

A. The 1988 Allotment Evaluation determined that the utilization objectives on the upland sites were being met except for browse species in the Summit Lake Pasture. Riparian utilization objectives and water quality objectives were not being met in the allotment due to over utilization except for the protected areas of the Mahogany Creek Enclosure. Factors contributing to not meeting the objectives were as follows:

1. Poor distribution, livestock movement and horse numbers significantly above Appropriate Management Level (AMLs).
2. The tendency of livestock; wild horses/burros and wild ungulates to concentrate in riparian zones.
3. Wild horse/burro numbers have exceeded the initial numbers from the Land Use Plan by as much as 60% prior to January 1988.
4. Inconsistent and unstable livestock operation which has caused the lack of range improvement maintenance to BLM (Bureau of Land Management) standards.
5. Data indicates that current active preference in combination with AMLs of wild horse/burros will not allow management objectives to be met even when the grazing system is followed regardless of kind of livestock.

B. ALLOTMENT OBJECTIVES FROM THE 1988 EVALUATION:

From the above summaries allotment specific objectives from the 1988 evaluation were developed and are illustrated in Appendix 1. The Fox Mountain HMP and Desert Dace HMP objectives not addressed in the 1988 evaluation are also listed in Appendix 1.

III. MANAGEMENT ACTIONS FROM THE 1988 EVALUATION AGREEMENT

The Soldier Meadows Allotment was evaluated in 1988 shortly R.C. Roberts had purchased the Soldier Meadows Ranch. The Livestock Management Agreement resulted in a voluntary reduction of twenty five percent (25%) or 4017 AUMs from the Active Preference which was 16,070 AUMs making the active preference 12,053 AUMs. A deferred/rest rotation grazing system was initiated. Utilization levels of fifty percent (50%) on the upland sites and thirty percent (30%) on key species in the riparian sites were also agreed upon. Mr. Roberts also agreed to grant easements onto his private lands for the purpose of constructing riparian fences and to enter into negotiations toward a land exchange.

SECRET

IV. MONITORING AND INVENTORY DATA DISPLAY AND ANALYSIS

Summary of Studies Data

1. Actual Use

Actual use means where, how many, what kind or class of animals, and how long the animals graze on an allotment.

a. Livestock

The data is obtained from an actual use report which documents the actual livestock grazing use submitted by the permittee. Actual Use numbers for livestock can be found in APPENDIX 3

During the evaluation period the actual use varied from 5329 to 7963 AUMS which is below the agreed upon voluntary reduction of 25% to 12,053 AUMS.

During the 1991 grazing season there were three documented incidents of unauthorized use in the Summit Lake Pasture for a total of 18 AUMS. The unauthorized livestock incidents involved cattle that drifted from the Piate Meadows Allotment into the Soldier Meadows Allotment.

Warm Springs pasture was supposed to be used on alternate years and rested while the Summit Lake pasture was used. Warm Springs pasture has been used yearly due to the 30% utilization limit on the creeks in the Summit Lake pasture and that a section 7 consultation must be done with the USFW before the Summit Lake pasture is used again.

b. Wildlife

The Nevada Department of Wildlife (NDOW) does not provide wildlife population data by allotment, however based on density data provided by NDOW, the following population estimates and AUM demands were calculated for Mule Deer, Pronghorn Antelope and Bighorn Sheep in the Soldier Meadows Allotment. The mule deer and antelope estimates were made using a dot grid to calculate the proportion of each hunt unit in each allotment. The bighorn sheep estimates are actual estimates as noted by NDOW. Actual numbers are in Appendix 3.

Mule deer population estimates appear to be steadily declining. The impacts of the drought and high number of wild horses are the major conflicts impacting the mule deer habitat.

The pronghorn antelope population estimates indicate the population may be expanding. However, the ability of pronghorn to move (most fences are not restricting), drought, high number of wild horses/burros and the avoidance or impacts of wild horses/burros at water sources may cause variations in pronghorn populations. Pronghorn may be migrating from other areas outside the Resource Area and District.

Bighorn Sheep were reintroduced to the west side of the Black Rock Range in February of 1992. This area is historic habitat for bighorn sheep. Bighorn sheep and wild horses may compete for use of the water sources.

c. Wild Horse and Burros

Actual use data for wild horses is derived from the total number of horses (adults and foals) inhabiting a Herd Management Area multiplied by 12 months (March 1 through February 28). The number of wild horses is based on the most recent helicopter census of an HMA. For years in which an aerial census was not conducted a population estimate is calculated by multiplying the previous year's census or population estimate by 11% as outlined in the Draft Sonoma-Gerlach Grazing Environmental Impact Statement. The 11% rate of increase is based on an analysis of helicopter census data collected by experienced personnel in the Sonoma-Gerlach Resource area in 1974, 1977, and 1980 and has been verified by data gathered during wild horse removals.

The census population is obtained by utilizing a helicopter to conduct a direct count of all adults and foals found within an HMA. This method assumes complete coverage of the HMA and observation of all animals. However, Cauley (1974) found in his study and literature search that the closest an aerial survey ever came to the actual population size was 89%. Wagner reported that studies conducted in four horse management areas (Nevada - 2, Oregon and Wyoming) showed about 93% accuracy in areas of low vegetation and moderate terrain, while 60% of the animals in wooded and mountainous topography were missed (Forty-eighth North American Wildlife Conference). Actual use is calculated using the total census population to closely approximate the true forage demand made by wild horses recognizing that all animals are not observed during a census.

When conducting a census, an HMA is flown in a modified transect pattern utilizing topography and natural or man-made barriers to ensure complete coverage and that animals are not counted twice.

d. 1988 Recommended Forage (AUMs) Demand Summary

The following table shows a summary of the 1988 recommended initial forage demand for wild horse/ burros and the agreed upon stocking level for livestock:

<u>Pasture</u>	<u>Livestock</u>	<u>Wild Horses/Burros</u>	<u>Pasture Totals</u>
Black Rock	4488	2544	7032
Calico	1972	1404	3376
Soldier Mead	1972	----	1972
Warm Springs	2679	3528/ 120	6327
Summit Lake	2679	2544	5223
Allot. Total	13790 1/	10140	23930

1/ The Calico and Soldier Meadows pastures are the spring pastures. The Calico pasture was to be used 1 year and then rested while the Soldier Meadows pasture was used. The Warm Springs and Summit Lake pastures are the summer pastures. The Warm Springs pasture was supposed to be used one (1) year and then rested while the Summit Lake pasture was used. The AUMs in the rest pastures would not be allocated to any user (livestock, wild horse/burros, or wildlife) in order to maintain a Thriving Natural Ecological Balance in the allotment. Therefore only 9139 AUMs were to be used yearly by livestock.

Actual Use Summary

Pastures		Year			
		1988	1989	1990	1991
	*Livestock	---	1484	3217	3614
Black Rock (winter)	WH/B	2568	1740	2400	2508
	*Livestock	---	---	2050	---
Calico (spring)	WH/B	1724	3132	3480	3864
	*Livestock	---	837	---	1762
Soldier Meadows (spring)	WH/B	---	---	---	---
	*Livestock	---	3008	359	2587
Warm Springs (summer)	WH/B	4152	6552	7272	8064
	*Livestock	---	---	1877	---
Summit Lake (summer)	WH/B	1344	4092	2856	2532
	*Livestock	---	5329	7503	7963
Allotment Yearly Totals	WH/B	9788	15516	16008	16968
	Wildlife	3780	2887	3187	3065
Totals		13568	23732	26698	27996

* The livestock AUMs reflect the AUMs used on a yearly basis rather than on a grazing year basis as the actual use table illustrates on page 7.

LVT & WH/B ANNUAL ACTUAL USE SUMMARY

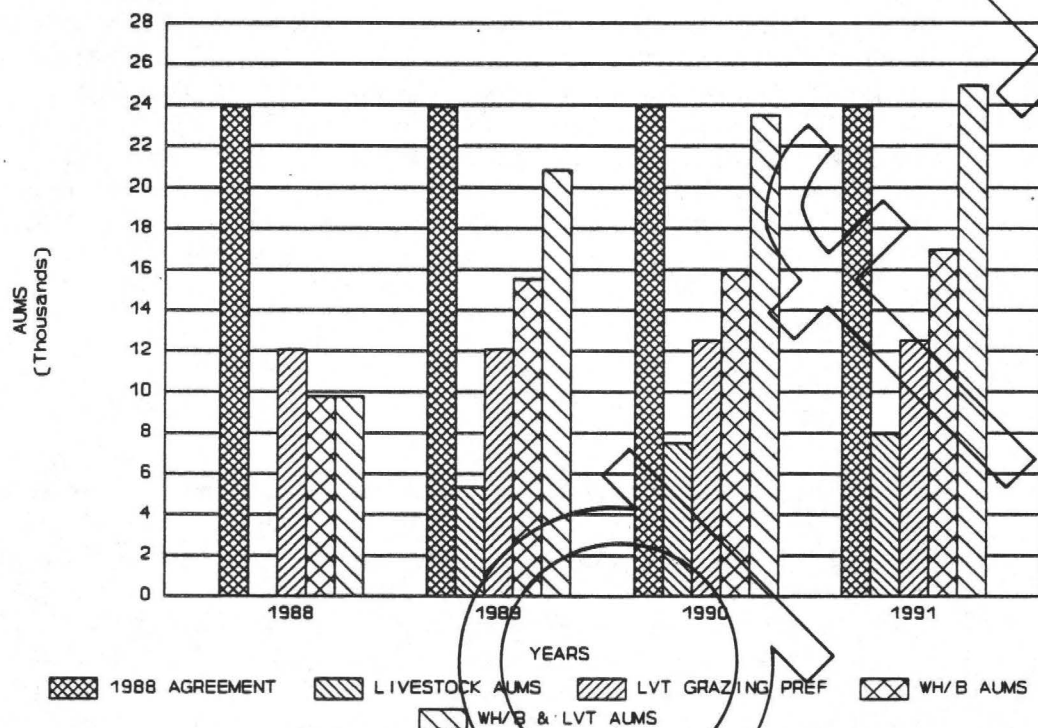


Figure 1

2. Climate

There are Five weather stations that collect climatological data that are relatively close to the Soldier Meadows Allotment. Four of the stations are well established National Oceanic and Atmospheric Administrative (NOAA) sites and one is a BLM Remote Automated Weather System (RAWS) site. Based on the data collected at these stations we were able to draw some conclusions about how this allotment has been influenced by precipitation patterns since the last evaluation. At the NOAA stations the growing season

precipitation has averaged from 2.89" (75% of normal) to 5.36" (138% of normal) from 1988 to 1991. The annual average precipitation has average from 6.14" (77% of normal) to 8.10" (102% of normal) during this period. Although this data does not indicate that the allotment has been hit hard by drought, some of the springs have dried up and areas that usually have an abundant supply of water are extremely low. Timing, form, and amount of precipitation in each event, along with spring time temperatures are all factors which could contribute to lack of recharge. Although the stations are fairly close to the allotment and can be used as a relative indicator of precipitation, storm events in this area tend to be highly localized and variable so actual precipitation on the allotment is not available.

The data can be found in APPENDIX 3.

3. Utilization

Use Pattern Maps (UPM) were used to determine utilization zones and levels within each pasture. Key Forage Plant Utilization transects were completed on upland and riparian sites to supplement use pattern maps and to differentiate and ascertain use zones and their levels. The data is used to document the effectiveness of management and forage demand. The procedures used to collect this data can be found in the Nevada Rangeland Monitoring Handbook and BLM Handbook 4400-3. Pre-livestock monitoring measures the amount of horse and wildlife use occurring before livestock are turned out. Post-livestock and total use monitoring measure combined utilization levels of all users. Monitoring data collected during rest years reveals wild horse and wildlife use. Regardless of when data was collected, use pattern mapping tends to show that the water sources, meadows, and certain upland areas are consistently receiving heavy use. The high levels of use occurring before livestock turnout and during rest years indicate that uncontrolled wild horse numbers are a major contributor to heavy use areas. Post-livestock use patterns indicate that poor livestock distribution is also a factor. If high livestock utilization levels are mapped after AML is reached (and wild horses and wildlife utilization objectives are met), that will indicate too many cattle. The analysis of the data is below and the data itself can be found in Appendix 4.

a. Black Rock Pasture

Livestock use the Black Rock pasture during the winter from January through March. Wild horses and pronghorn use the area yearlong. Heavy use areas were usually

associated with water and are along Mud Meadow Creek, the springs in the Black Rock Range south of Slumgullion, and in Copper Canyon. Livestock made substantial use along Mud Meadow Creek while using the pasture because this is where the most abundant feed is. In the Black Rock Pasture the flats are low productive sites and the use is mainly on shrub species: greasewood (SAVE4), EPHEDRA (EPHEDRA), shadscale (ATCO), and spiny hopsage (GRSP). The grass species are naturally very sparse in this area which is why the cows use the Mud Meadow Creek area. Monitoring indicates that the spring areas are receiving heavy horse use before the cows are turned out. Wild horses tend to linger in the Mustang Spring area, evident by places used to roll in silt. Major horse trails between Copper Canyon and Mud Meadow Reservoir indicates that wild horses make the use between these two areas, but that it is a combination of livestock and wild horses at the reservoirs.

b. Calico Pasture

Livestock only used the Calico pasture in the spring for one month (April) every other year. The livestock use in this pasture did not seem to significantly change the amount of use occurring. Wild horse use is year round and part of the pasture is identified as a pronghorn winter range. Livestock usually do not use the higher elevations in the Calicos but primarily remain in the flats and foothills where the vegetation consists of shadscale (ATCO), spiny hopsage (GRSP), budsage (ARSP5), bottlebrush squirreltail (SIHY), and sandberg bluegrass (POSE). The budsage (ARSP5) greens up while the cows are out, keeping the cows on the flats as opposed to the upper elevations. At Jackass Flat mechanical damage occurred on the shrubs by wild horses pawing at the them to get to the grasses underneath. In the fall of 1989 Donnelly Creek had light use, but in the spring of 1990 Donnelly Creek had moderate to heavy use before the cows were turned out onto the pasture. The use along Donnelly Creek has been moderate to heavy on the willows (SALIX) less than 6' tall along the lower reaches during the spring before the cows are turned out. This supports that cows are not making substantial use on the riparian vegetation. The lower reaches of the creek are open so animals can access the creek for water. The use in this part of the creek is from deer who have found a niche for themselves. Heavy concentrations of deer scat as well as deer sightings indicate that deer are making the use. Utilization on the upper reaches of Donnelly Creek within the Soldier Meadows Allotment

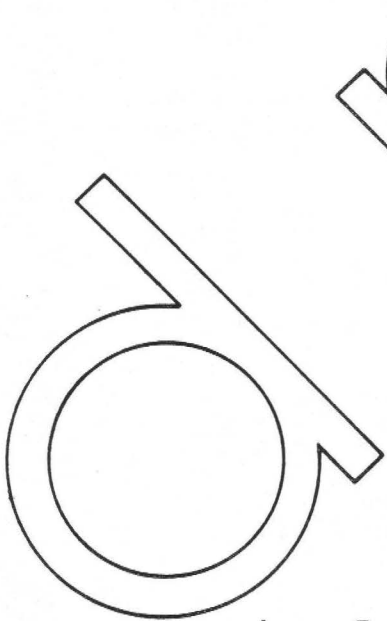
has been minimal due to the dense willow cover. The north fork of Donnelly Creek had very heavy use by wild horses, which the distribution flight maps and on the ground wild horse observations confirm. Distribution flight maps, on the ground observations, and stud piles dispersed throughout the upper elevations of the pasture exhibit that the heavy use found throughout the upper elevations of the pasture was by wild horses.

c. Warm Spring Pasture

Livestock could use the Warm Spring pasture from June through October but have been using it July through October. Wild horse/ burros use the pasture yearlong. Wildlife use areas include: pronghorn yearlong and summer range, mule deer yearlong and winter, and as a sage grouse brooding area. Generally the use before the cows turn out is light with areas of moderate to heavy use at the reservoir north of Bear Butte, the Five Mile Flat area, and the dry meadows in the northern portion of the pasture. Slight use to no apparent use was found in the southern portion of the pasture. After the livestock come off the southern portion of the pasture the area was mapped as slight to no apparent use while the northern part has light to heavy use. The heavy use occurs predominately at the dry meadows and the areas associated with water: Summit Lake Well and Five Mile Flat area, Sand Creek, Jacob Spring, Rock Spring, Trough Mountain Spring, and Buck Spring. However, the use pattern remained the same when the pasture was rested. The southern part had slight use and the northern portion had heavy use on the dry meadows and developed spring areas. The southern part of the pasture is not used during the summer because all of the current available water is early spring water. Reservoirs were fixed during the 1991 summer, but until the area receives sufficient moisture to fill them, this area will not have significant use and the pasture will continue to have a distribution problem.

d. Summit Lake Pasture

Authorized livestock used the Summit Lake pasture only once since the 1988 evaluation. Wild horse/ burros use the pasture yearlong. Wildlife use areas include: yearlong bighorn sheep, mule deer summer range, and sage grouse strutting and brood use areas. The year that livestock used the pasture, the pre-livestock use showed 0-10% use on willow (SALIX) and quaking aspen



(POTRT) along Summer Camp with adjoining uplands having 20% use on the perennial grasses. Heavy use was found in the drainage north of Coleman Creek (Soldiers Creek). The post livestock monitoring showed light use on the northern portion of the pasture and moderate use on the southern portion of the pasture except for the following heavy use areas: springs associated with Snow Creek, the Summit Lake Mountain area (especially along the boundary fence), and between the Summit Lake Indian Reservation and the Sheldon Antelope Range where use was made on antelope bitterbrush (PUTR2). A lot of deer scat was seen in this area and the use made on antelope bitterbrush (PUTR2) was made by wildlife. Use on the pasture during the rest from livestock years was generally no apparent use in the northern portion of the pasture, moderate use in the Summit Lake Mountain area and between the Summit Lake Indian Reservation and the Sheldon Antelope Range, and heavy use on the north side of Coleman Creek and the springs associated with Snow Creek. The northern portion of the pasture has early water with the existing maintained range improvements. There are some existing range improvements that need reconstruction and new projects are needed to distribute livestock in the northern part of the pasture to keep them out of the riparian areas. On the bench north of Coleman Creek use has been made by wild horses and unauthorized livestock drifting over from an adjacent allotments. The snowberry (SYMPH) growing on the adjacent uplands to the upper reaches of Coleman Creek had moderate to heavy use by deer evident by deer scat and sightings. In the same area as the snowberry (SYMPH), the grass species which were still green had only slight use and the horses and livestock would select the grasses before the browse species. The use along the Summer Camp Creek when the livestock used the pasture on willow (SALIX) and quaking aspen (POTRT) was light to heavy with most of the use falling into the moderate category. The grass species and grass likes did however receive heavy to severe use at certain points along the creek, but these species were not included as key species to be used to regulate the movement of the livestock. The use on the grasses and grass likes remained below 20% while the herder was still working. Once the herder left the utilization increased significantly.

4. Trend

The Frequency and Trend data collected during the evaluation period (1988 - 1991) is not adequate to determine an upward, downward or static trend. During this evaluation period

Trend Study Sites were established and monitored to collect initial baseline data.

5. Ecological Status

An Ecological site is a distinctive kind of rangeland that differs from other kinds of rangeland in its ability to produce a characteristic natural plant community. An ecological site is the product of all environmental factors responsible for its development. It is capable of supporting a native plant community typified by an association of species that differ from that of other range sites in the kind or proportion of species or in total production.

Ecological sites are a basic component of rangeland inventories. They are ecological subdivisions into which rangeland is divided for study, evaluation, and management. The ecological site map provides the basic ecological data for planning the use, development, rehabilitation, and management of the rangeland.

Ecological site information can be interpreted as to suitability of a site for a single use as grazing or for many other uses such as: wildlife habitat, recreation, natural beauty, watershed, and open space. Ecological Site Inventory (ESI) data was used to develop Desired Plant Communities (DPC). Desired Plant Communities are the plant communities that produce the kind, proportion, and amount of the vegetation necessary for meeting or exceeding the Land Use Plan goals and activity plan objectives established for the site.

An ecological status inventory was completed during the 1991 field season. The following lists the acres and percentage by seral stage for the allotment.

<u>Seral Stage</u>	<u>Acres</u>	<u>Percent</u>
Potential Natural Community	51429	16
Late	179656	55
Mid	54414	17
Early	1440	<1
Barren	38076	11
Aspen Woodland	<u>2139</u>	<u><1</u>
Total	327154	100

NOTE: Refer to Appendix 8 for Seral Stage definition.

6. Wild Horse and Burro Distribution and Census

Data on the distribution of wild horses has been collected from the ground and by aircraft (helicopter and fixed-wing)

since 1988. Distribution of horses in the allotment appears to be primarily affected by weather conditions and forage availability. During the period covered by this evaluation there was very little snow pack on the mountains, which allowed the horses to occupy all habitats from the lower to higher elevations yearlong.

When collecting distribution data by fixed-wing aircraft the objective is to identify those areas that wild horses are utilizing at that point in time, not to obtain a count as accurate as a helicopter census. The entire HMA is flown in a transect pattern with the flight lines ranging from 1/2 mile to 2 miles apart depending on visibility and flight conditions. In steep mountainous country the straight line transects are modified to follow the topography of the area to ensure complete coverage. Aircraft altitude ranged from approximately 300 to 600 feet above ground level, depending on visibility and local flight conditions.

During the evaluation period data was collected from two different fixed-wing aircraft: Maule M-5 and Cessna 210. In addition to the fixed wing distribution data, each helicopter census provides distribution information on wild horses. When utilizing the Cessna there were two observers on board, one individual recorded flight lines, animal locations, and the number of animals (adults and foals) seen at each location while the other individual did the counting. In areas of high concentrations a total count of all bands was recorded on the map rather than each individual band.

When conducting a flight using the Maule there were two observers on board; an observer and pilot. Distribution data collected by the Maule is stored in an on-board computer system. As horses were seen, the observers would call out the number of adults and foals to the pilot who would enter the data into the on-board computer system. The computer records the number of horses seen, the location of the animals by latitude and longitude using a global positioning system, and any remarks the observer may want to record for a specific sighting. Once the flight is completed, the results are printed and transferred by hand to a HMA map. This system does not record the general flight path as is done with the Cessna. Again, in areas of high concentrations a total count of all bands is recorded in the computer system.

Aerial distribution maps are on file in the District Office. Appendix 5 shows the results of each distribution flight, the date flown, and the number of horses observed. An analysis of the distribution data collected during the evaluation period was conducted by pasture.

a. Black Rock Range- West HMA

In the Black Rock Range- West HMA, the distribution has been fairly even, both north and south of Slumgullion with localized areas of heavy concentration. In July, north of Slumgullion the horses are fairly evenly distributed from Red Mountain to Wood Canyon with high concentrations around Summit Lake Mountain area and Summer Camp Canyon, as well as a small concentration at Red Mountain. Horses water at springs on the east and south sides of Red Mountain. During the winter months north of Slumgullion the wild horses are also fairly evenly distributed with concentrations between Coleman Creek and Snow Creek, Summit Lake Mountain, and Wood Canyon. In July, South of Slumgullion wild horses were fairly evenly distributed from Clapper Creek north to Slumgullion with a high concentration west of Big Mountain and at Mustang Spring. During the winter months, distribution has been fairly even from Big Mountain north to Slumgullion with wild horses also in the Clapper Creek area.

b. Warm Springs Canyon HMA

During the winter months, in the Warm Springs Canyon HMA the wild horses use the southern end and the northeast corner. The northwest corner had no wild horses. The heavy concentration areas were Chukar Gulch and Dry Canyon. In 1992 the distribution flight occurred in March and the wild horses were still using the south end of the HMA with the high concentration areas being Chukar Gulch, Warm Springs Canyon, Dry Canyon, and northwest of Clear Springs. During the summer the wild horses move to the northern portion of the HMA with high concentration areas at Trough Mountain, north of Rock Springs, Bear Buttes going north, and the Five Mile Flat area. This is because the water in the reservoirs on the south end is only available in the early spring. When the reservoirs become dry wild horses move northward once the reservoirs dry up. The use is moderate to heavy in the north end during the summer. The use is slight to no apparent use during the summer months in the southern portion of the allotment and the wild horses move south for the winter where the feed still exists and availability of water is not as crucial as during the summer months. The burros stay south of Black Buttes throughout the year.

c. Calico Mountain HMA

In the Calico Mountains HMA the wild horses stay fairly evenly distributed throughout the year. In the spring the horses are fairly evenly distributed with the major concentrations in Willow Creek and north of Box Canyon. During the summer the wild horses were evenly distributed throughout the northern part of the HMA with the heavy concentrations between Willow and Donnelly Creeks, Harry Spring, and Jackass Flat. During the fall the wild horses were evenly distributed throughout the higher elevations with very few wild horses in the foothills. The wild horses were evenly distributed between Cherry Creek and Jackass Flat with very few between Willow Creek and Box Canyon during February.

7. Wild Horse and Burro Removal Data

December 1988 62 Head Calico HMA

8. Wildlife Habitat

Habitat Suitability Rating

BIGHORN SHEEP

<u>Habitat Areas</u>	<u>1988</u>	<u>1992</u>
Black Rock BY-1	0.65	0.59
BY-2	0.79	0.67
BY-3	0.73	0.67
BY-4	0.69	0.66
Calico Mtn BY-6	0.70	0.60

MULE DEER

<u>Habitat Areas</u>	<u>1988</u>	<u>1992</u>
Bear Buttes DS-1	83	80
Paiute DS-2	58	53
Mahogany Creek DS-2	66	66
Black Rock Range DS-2	75	78
Mahogany Creek DS-2	65	61
Black Mountain DS-3	40	36
Soldier Creek DW-7	64	60
Warm Springs Canyon DW-8	58	55
Box Canyon DY-1	60	55

PRONGHORN

<u>Habitat Areas</u>	<u>1988</u>	<u>1992</u>
Mahogany Creek PS-1	75	63
Bear Buttes PS-2	76	50
High Rock Lake PW-1	34	51
Box Canyon PW-1	59	41
Box Canyon PW-1	57	45
Wagner Springs PW-1	46	48
Warm Springs PW-2	66	68

9. Stream Survey and Water Quality

a. Stream Surveys

Stream/Riparian Habitat Condition Classification

% OF HABITAT OPTIMUM

70-100% = EXCELLENT

60-69% = GOOD

50-59% = FAIR

0 -49% = POOR

The Stream Condition rating (expressed as % habitat optimum) is based on the evaluation of factors considered limiting to trout. These include pool-riffle ratio, pool quality, percent gravel and rubble on the stream bottom, bank cover, and bank stability.

Riparian Condition Class is determined in conjunction with percent habitat optimum and represents the average of bank cover and bank stability. See APPENDIX 8 for further explanation of Riparian Condition Class.

(1)

Mahogany Creek

Mahogany Creek was first surveyed in 1976 by BLM, then resurveyed by the BLM in 1977 - 1990. Studies were also initiated by the Summit Lake Paiute Tribe (SLPT) in 1987 and every year thereafter until 1991. Data on both fish population and habitat parameters were collected.

Lahontan cutthroat trout (Oncorhynchus clarki henshawi), endemic to the Summit Lake drainage system, were the only fish species found in 1976 and are present in the system today. BLM aquatic habitat studies were established to monitor

habitat changes related to livestock utilization on the Mahogany Creek watershed (including Summer Camp Creek).

Surveys conducted by SLPT personnel showed a mean estimated number of salmonids per kilometer of stream in 1990 was 2,169 compared to 4,173 in 1989 and 560 in 1988. According to Cowen (1991) the distribution and abundance of LCT in the Mahogany-Summer Camp Creek drainage from 1988-1990 was primarily affected by water flow and fish habitat conditions rather than escapement of lacustrine trout spawners.

Stream Habitat Conditions

A comparison of changes in percent habitat optimum and the riparian condition class (average of % bank cover and % bank stability) between 1976, 1986 - 1990 show improvements over the past 14 years.

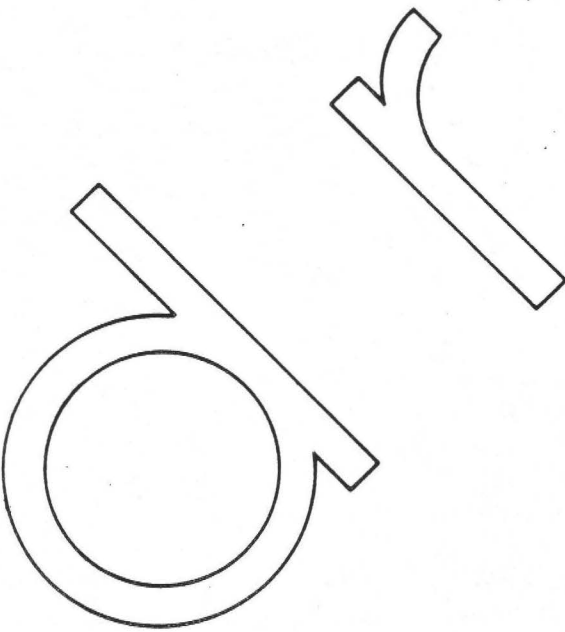
Changes in stream and riparian habitat condition ratings for Mahogany Creek between 1976, 1986 - 1990.

Percent of
Habitat Optimum

<u>YEAR OF SURVEY</u>	<u>STREAM HABITAT CONDITION</u>	<u>RIPARIAN CONDITION CLASS</u>
1976	64	74
1986	61	88
1987	63	91
1988	62	91
1989	64	95
1990	68	93
1992	41	

Stream habitat condition ratings of "good" have remained about the same from 1977 through 1990. However, riparian condition class has improved since 1976 from 74% to 93%, or excellent condition.

In August of 1992 NDOW did a GAWS stream survey on the entire length of Mahogany Creek, including the sections of stream on the Summit Lake Paiute Reservation and those inside and outside of the enclosure on public lands. The GAWS survey showed that the stream had a poor rating at 47%



of optimum on public lands outside of the enclosure. The same data values were analyzed using the BLM stream survey analysis, the method that was used on previous surveys, and showed that the stream had a poor rating at 39% of optimum habitat. Pool/Riffle ratio and Pool Quality seem to be limiting optimum habitat. The low Pool/Riffle and Pool Quality factors are related to extremely low flows this year. There were stretches of Mahogany Creek where the only stream flow was subsurface. Stream bank cover and bank stability ratings were at 57% and 74% for those sections of the stream outside of the enclosure. Inside the enclosure the rating was fair at 52% of optimum with GAWS analysis and poor at 41% of optimum based upon BLM survey analysis. Again the limiting factor for this stream appeared to be pool quality and pool/riffle ratio. Bank cover and bank stability ratings were 57% and 74% outside of the enclosure and 51% and 85% inside the enclosure.

(2). Summer Camp Creek

Summer Camp Creek has been surveyed simultaneously with Mahogany Creek. Data on both fish population and habitat parameters were collected. With Summer Camp Creek being tributary to Mahogany Creek, LCT was the only fish species found in 1976 and are currently in this system today.

Stream Habitat Conditions

A comparison of changes in percent habitat optimum and the riparian condition class between 1976, 1986 - 1990 show that stream habitat condition has remained nearly static, however, the riparian condition class has improved from 79 to 88% (excellent).

In August of 1992 NDOW did a GAWS stream survey on the entire length of Summer Camp Creek. The GAWS survey showed that the

stream was in good condition at 65% of optimum habitat. The same data values were analyzed using the BLM stream survey analysis, the method that was used on previous surveys, and showed that the stream was at 61% of optimum habitat, giving it a good condition rating. Pool Quality seems to be limiting optimum habitat. The low Pool Quality factors have been magnified by extremely low flows this year. Stream bank cover and bank stability ratings were at 50% and 75%.

Changes in stream and riparian habitat condition ratings for Summer Camp Creek between 1976, 1986 - 1992.

YEAR OF SURVEY	% OPTIMUM	
	STREAM HABITAT CONDITION	RIPARIAN CONDITION CLASS
1976	62	79
1986	72	90
1987	59	92
1988	49	92
1989	52	88
1990	60	88
1992	61	

Cowen (1991) conducted GAWS inventories on Mahogany and Summer Camp Creek in 1989 and 1990. Cowen's 1990 inventory was conducted in October following a period of use by livestock (whereas the BLM stream survey was conducted prior to livestock use in June). Cowen stated that "The Mahogany Creek drainage system in the fall of 1990 exhibited degraded aquatic and riparian habitat conditions when compared to 1989, due to two prominent factors: 1) livestock grazing riparian areas, and 2) decreased water discharge. These degraded conditions resulted in decreased trout production. However, the amount of habitat degradation related to effects of livestock grazing riparian areas, and natural variation, could not be evaluated since stations designated to serve as experimental controls within the Mahogany Creek grazing enclosure were impacted by trespass cattle."

(3). Snow Creek

Snow Creek was first surveyed in 1977 by BLM then resurveyed by BLM in 1987 and 1988. NDOW inventoried this system in 1990 and 1991 and 1992. Data on habitat conditions and fish distribution were collected for the surveys in 1990 but not in 1992 due to low water conditions and the subsequent negative effect on the fisheries population.

Following a landslide that occurred in Snow Creek during the early 1910's, there is no lacustrine population of LCT which enter into Snow Creek from Summit Lake. LCT currently reside in Snow Creek as a result of an accidental introduction in 1988 (William Cowen, personal comm.)

Stream Habitat Conditions

A comparison of changes in percent habitat optimum and the riparian condition class between 1977, 1987, 1988, and 1990 show an improvement in habitat condition.

In September of 1992 NDOW did a GAWS stream survey on the entire length of Snow Creek. The GAWS survey showed that the stream was in fair condition at 55% of optimum habitat. The same data values were analyzed using the BLM stream survey analysis, the method that was used on previous surveys, and showed that the stream was at 49% of optimum habitat, giving the stream a poor rating. Pool Quality and lack of desirable stream bottom materials seem to be limiting optimum habitat. The low Pool Quality factors have been magnified by extremely low flows this year. Stream bank cover and bank stability ratings were at 54% and 78%

Changes in stream and riparian habitat condition ratings for Snow Creek between 1977, 1987, 1988, and 1990.

YEAR OF SURVEY	STREAM HABITAT CONDITION	% OPTIMUM	RIPARIAN CONDITION CLASS
1977		56	68
1987		39	44
1988		46	74
1990 (NDOW)		60	79
1992 (NDOW)		49	

Stream habitat condition ratings of fair recorded in 1977 declined to poor in 1988 then back to good in 1990. Major limiting factors included a poor pool-riffle ratio, and an absence of quality pools. Unconfirmed reports indicate that the existing condition of Snow Creek is in fair condition.

(4). Coleman Creek

Coleman Creek was surveyed in 1988 by BLM and partially surveyed by NDOW in 1991 (data not available). There are currently no fish in Coleman Creek (personal communication, Ralph Phoenix, NDOW). In 1988, the stream habitat condition rating was 44% (poor).

The Sonoma-Gerlach resource area inventoried Coleman Creek, but no stream survey data was collected to determine the condition of the stream itself. The condition of Coleman appears to be the result of heavy wild horse use on the south facing slopes, concentrated livestock use (uncontrolled livestock drift from adjacent allotments), unstable soils (open erosive slopes that naturally produce high sediment to the creek), and the 1983-84 high water event. High stream temperatures were also recorded.

In September of 1992 NDOW did a GAWS stream survey on the entire length of Coleman Creek. The GAWS survey showed that the stream was in fair condition at 59% of optimum habitat. The same data values were analyzed using the BLM stream survey analysis, the method that was used

on previous surveys, and showed that the stream was at 59% of optimum habitat, giving the stream a fair rating. Pool Quality and lack of desirable stream bottom materials seem to be limiting optimum habitat. The low Pool Quality factors have been magnified by extremely low flows this year. Stream bank cover and bank stability ratings were at 51% and 54%.

(5). Slumgullion Creek

Slumgullion Creek was first surveyed in 1977 by BLM and resurveyed in 1988 by BLM and in 1990 by NDOW. No fish were found during the NDOW survey.

Stream Habitat Conditions

A comparison of changes in percent habitat optimum and the riparian condition class between 1977, 1988, and 1990 show some improvement through 1990.

Changes in stream and riparian habitat condition ratings for Slumgullion Creek between 1977, 1988, and 1990.

YEAR OF SURVEY	STREAM HABITAT CONDITION % OPTIMUM	RIPARIAN CONDITION CLASS
1977	46	56
1988	48	59
1990	53	74

Stream habitat condition ratings of poor recorded in 1977 have improved slightly to fair in 1990. According to the NDOW survey, limiting factors for Slumgullion Creek are low water flows and poor pool structure. Quality pools were completely lacking throughout most of the system. Heaviest livestock use was observed in the headwaters.

(6). Donnelly Creek *

Donnelly Creek was first surveyed in 1977 by BLM and resurveyed in 1988 by BLM and in 1989 by NDOW. No fish were found during the 1989 survey, however, the stream does have the potential to support

a viable fish population. This stream was inventoried by BLM in 1991, however, no stream survey data was collected.

Stream Habitat Conditions

A comparison of changes in percent habitat optimum and the riparian condition class between 1977, 1988, and 1989 show a slight decline. Visual observations made in 1991 showed that upper reaches of Donnelly Creek are improving, but that the lower reaches are static to declining slightly. The use in this part of the creek was from deer who had found a niche for themselves in this area. Wild horse/Burro distribution flights show that horses are not using the lower reaches of Donnelly Creek. The vegetation along the creek is receiving heavy use whether or not livestock are using the Calico pasture signifying that livestock are not making substantial use of the creek. Heavy deer scat as well as three deer were seen along the lower reaches of Donnelly Creek to indicate that the deer were making the use. The north fork of Donnelly Creek had heavy use by wild horses, which the distribution flight maps and on the ground horse observations confirm by showing a high concentration of wild horses along the north fork of Donnelly Creek.

* Since the 1988 evaluation Donnelly Creek has been identified as a potential LCT recovery stream.

Changes in stream and riparian habitat condition ratings for Donnelly Creek between 1977, 1988, and 1989.

YEAR OF SURVEY	% OPTIMUM STREAM HABITAT CONDITION	RIPARIAN CONDITION CLASS
1977	54	83
1988	50	65
1989 (NDOW)	52	60

Stream habitat ratings of fair recorded in 1977 have dropped slightly but still remain fair. The main overall limiting factors for Donnelly Creek were low ratings for pool quality, stream bottom

substrate, and bank vegetation stability. Pool-riffle ratio rated good to excellent for most of this system. In 1989 as well as 1991, wild horses have had a negative affect on the stream system in the north fork of Donnelly Creek. Deer appear to be having a negative impact on the lower reaches of the creek.

No additional BLM data has been gathered applicable to this evaluation for the Desert Dace ACEC. Observations by the BLM Fishery Biologist (Winnemucca District) and personal communication with Dr. Gary Vinyard of the University of Nevada, Reno, indicated that water temperature and quality are being met for the habitat objective for Desert Dace.

a. WATER QUALITY

Water quality data has been collected in 1980 and 1982 for streams considered in this Allotment Evaluation. However, this data is outdated. While it can be used for baseline information, it will not be used in this evaluation process. Recent water quality data collected for Mahogany, Summer Camp, Donnelly, and Slumgullion Creeks will be used in this evaluation.

(1). Mahogany/Summer Camp Creek

The pH readings on Mahogany and Summer Camp Creek in 1990 (Cowen) ranged from 7.3 to 7.4. Stream temperatures at all sampling locations were all below 20 degrees C. However, it should be noted that these temperatures were recorded in October. Alkalinity ranged from 27.4 to 41.7 mg/l. Sulphate was from 2.0 to 4.0 mg/l. Conductivity at 25 degrees C ranged from 107 to 110 UMHOS.

(2). Slumgullion Creek

The pH readings on Slumgullion Creek ranged from 7.5 to 8.5. Stream temperatures averaged 77 Degrees F. with a maximum of 86 degrees F. Alkalinity ranged from 102.6 to 136.8 mg/l. Sulphate ranged from 50 to 60 mg/l.

(3). Donnelly Creek

The pH readings on Donnelly Creek ranged from 7.5 to 8.5. Stream temperatures averaged 47 degrees F with a maximum of 56 degrees F. Alkalinity ranged from 119.7 to 153.9 mg/l. Sulphate ranged from 50 to 60 mg/l.

(4). Snow Creek

No recent water quality data.

(5). Coleman Creek

No recent water quality data. Data will be available in the fall of 1992.

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V. EVALUATION OF OBJECTIVES

A. Short Term

1. Utilization of Willow (Salix spp.) and Aspen (Populus tremuloides) in stream bank riparian areas shall not exceed 30% on the following streams. (WLA-1.3)

Mahogany Creek (outside exclosure)
Mahogany Creek (inside exclosure-10%)
Summer Camp Creek
Snow Creek
Donnelly Creek
Slumgullion Creek
Soldiers Creek

This objective was not met for Donnelly Creek, Slumgullion, Coleman Creek or the springs adjacent to Snow Creek. For the years 89-91 all of these areas had moderate to heavy use. The utilization on the upper half of Donnelly Creek was minimal due to the dense willow cover in the upper reaches. The lower half of the creek, however, which is open so animals can access the creek for water had moderate to heavy use in the spring. The use in this part of the creek is from wildlife who have found a niche for themselves in this area. The North Fork of Donnelly Creek had some areas of heavy use by wild horses. Coleman Creek has had heavy use on the north side of the creek, but only light use on the south side and the lower reaches of the creek. Most of the use by livestock has historically been made by unauthorized livestock drifting over from adjacent allotments and not from the permittee in the Soldier Meadows Allotment.

For the stream as a whole, the utilization objective was met on Summer Camp Creek. There were some small segments where the utilization levels exceeded the objective; but they were small in size (acreage) and do not reflect the entire creek system. Monitoring for 89-91 shows only 0-20% utilization on the Salix/Potrt which were the agreed upon key species in the 88 evaluation. Concern was expressed after the 1990 grazing season that the area was absolutely devastated, but our data and a field trip with District and Resource Area staffs following the expressed concern, found use to only be slight on Salix and Potrt. It was discussed that grass and grass likes should be included as key species in the next evaluation.

2. Utilization of Nevada bluegrass (Poa nevadensis) and Cinquefoil (Potentilla spp.) on 1,383 acres of wetland riparian habitat shall not exceed 50%. (WL-1.)

These meadows complexes are too small to delineate out

separately while use pattern mapping, but the corresponding Use Pattern Map memos state that the meadows had moderate to heavy use. Therefore this objective is not being met.

3. Utilization shall not exceed 50% for mountain mahogany and 40% for aspen in upland sites. (WL-1.9)

This objective was not met. In the Warm Springs Pasture mountain mahogany had severe use. The leader growth and plant health appeared to be moderate and the drought seemed to be stressing shrubs in most areas. The mountain mahogany within the Summit Lake Pasture also had severe use as well as the mountain mahogany within the Mahogany Creek Exclosure. The mountain mahogany in these two areas had good leader growth and was in good plant condition. Along Summer Camp Creek the aspen have had light to heavy use with most being in the moderate use category. The area inside the Mahogany Creek exclosure had no use, moderate, and severe use on aspen. The Mahogany Creek Exclosure is an area that mule deer and pronghorn don't compete with the cattle and high wild horse numbers and their use on mountain mahogany and aspens inside the exclosure indicates that the use on these browse species outside of the exclosure is made at least in part by wildlife. Authorized livestock in 1990, did utilize aspens along Summer Camp Creek in the Summit Lake Pasture. Livestock also used the mountain mahogany for shade in the Warm Springs Pasture. The Mountain Mahogany is highlined to 4.5' in most instances from past use with very little regeneration evident either inside or outside of the exclosure.

B. Long Term

1. Improve or maintain riparian habitat along the following streams as follows: (WLA-1.3 & WL-1.9)

<u>Stream Name</u>	<u>Acres</u>	<u>From - To</u>
*Mahogany Creek	100	At - Excellent
*Summer Camp Creek	30	At - Excellent
*Snow Creek	30	At - Good
Donnelly Creek	109	Fair - Good
Soldiers Creek	100	Fair - Good
Slumgullion Creek	100	Poor - Good

* These streams have populations of the federally listed threatened Lahontan Cutthroat Trout.

<u>STREAM NAME</u>	<u>ACRES OF RIPARIAN HABITAT</u>	<u>MILES</u>	<u>PRESENT % OF OPTIMUM</u>	<u>EXPECTED % OF OPTIMUM</u>
*Mahogany Creek	100	6	68%	>60%
*Summer Camp Creek	30	2	60%	>60%
*Snow Creek	30	3	60%	>60%
Donnelly Creek	109	8	52%	>60%
Coleman Creek	100	8	44% (1988)	>60%
Slumgullion Creek	100	8	48%	>60%

* These streams have populations of the federally listed threatened Lahontan cutthroat trout.

NOTE: Coleman Creek will be added to the list of creeks addressed under this objective. Past stream surveys conducted on Soldiers Creek were in actuality conducted on lower Soldiers and Coleman Creek.

Mahogany Creek exceeded the 60% percent of optimum. It progressed from less than 60% to 68% in 1990 then dropped to 41% in 1992. The higher percent of optimum levels have not been achieved within the Mahogany Creek enclosure because of pool quality being a limiting factor in the overall rating. Mahogany Creek (within the enclosure) currently exhibits a significant amount of quality riffles which are deep and fast. These riffles, critical for the existing LCT fishery, do not factor into the overall rating as highly as quality pools do. This explains why the percent of optimums are less than 70%, even within the enclosure. Riparian Condition Class (RCC) a component of the percent of optimum (average bank cover and bank stability), reflects that even though the percent of optimum is less than 70%, RCC is near 90%. Even though Mahogany Creek may not have quality pools within the survey transects, bank cover and bank stability are rated Class I, excellent.

In 1992 the over all rating of the stream declined to 41% of optimum with all parameters declining in value. the exact reason for the decline can not be attributed to any one factor. Based upon documented field observations there have not been enough unauthorized livestock in this area to result in a major change in condition. The most probable causes for the declined rating could be attributed to the extended drought conditions and the different times of year that the data was collected. Additional factors could be the increased use in this area by wild horses/burros and wildlife as well as the drought related low flows contributing to lower pool/riffle and quality pool values.

Summer Camp Creek is progressing toward the objective of 70%. It has gone from 49% in 1988, 60% in 1990 and 61% in

1992. The Riparian Condition Class changed slightly from 92% in 1988 to 88% in 1990. Pool quality is the limiting factor in this creek.

Snow Creek has met the objective of 60% of optimum as of the 1990 NDOW study. The Riparian Condition Class has improved from 74% in 1988 to 79% in 1990. The major limiting factor to this creek is once again a poor pool-riffle ratio and an absence of quality pools.

Donnelly Creek is progressing toward the optimum as of the 1989 NDOW study, which had it improving from 50% in 1988 to 52% in 1989. The Riparian Condition Class dropped from 65% to 60% during the same time period. The limiting factors include pool quality, stream bottom substrate, and bank vegetation stability.

Slumgullion is progressing toward 60% of optimum. It was 48% in 1988 and in 1990 it improved to 53%. The Riparian Condition Class has improved also from 59% in 1988 to 74% in 1990. The limiting factor is pool quality.

Six consecutive years of drought combined with livestock (including non-permitted use) and wild horses concentrating along certain reaches of these riparian areas, appear to be the limiting factor for most of these streams.

2. Improve or maintain the following streams from the percent of optimum indicated to 60% or better. (WLA-1.3)

Table from 1988 Evaluation:

<u>Stream Name</u>	<u>Present % of Optimum</u>	<u>Public Miles</u>
Mahogany Creek	67%	6
Summer Camp Creek	62%	2
Snow Creek	56%	3
Donnelly Creek	53%	8
Soldiers Creek	58%	8
Slumgullion Creek	46%	8

NOTE: Coleman Creek will be added to the list of creeks addressed under this objective in future allotment evaluations.

Table reflecting the new information:

<u>STREAM NAME</u>	<u>PERCENT % OF OPTIMUM</u>	<u>YEAR MONITORED</u>	<u>PUBLIC MILES</u>
MAHOGANY CREEK	41%	1992	6
SUMMER CAMP CREEK	61%	1992	2
SNOW CREEK	49%	1992	3
DONNELLY CREEK	52%	1989	8
SOLDIERS CREEK	30%	1988	8
SLUMGULLION CREEK	53%	1990	8
COLEMAN CREEK	59%	1992	-

Note: Mahogany, Summer Camp, Snow, and Coleman Creeks were inventoried in 1992 by NDOW. To summarize, their findings of % of Optimum were: 47%, 65%, 55%, and 59% respectively. This partial information is incorporated to provide the most current data. This is only part of the required studies to determine stream trend, the other part being Riparian Condition Classes. Due to time constraints this required information has not been collected and analyzed, therefore, not incorporated. This new data does indicate the direction of trend and conclusions were derived from it.

This objective has already been addressed under objective 1 (long term).

3. Maintain habitat for the federally listed threatened Desert Dace at excellent within the 307 acre ACEC. (WL-1.5a)

The Use Pattern Maps (UPM) indicate that there wasn't a problem with exceeding the established use levels in this area of the pasture therefore the objective was achieved during the evaluation period. The Bureau is in the process of acquiring the lands that are habitat for the Desert Dace and will maintain or improve these areas in accordance with U. S. Fish and Wildlife Service (USFWS) guidelines.

No additional BLM data has been gathered applicable to this evaluation for the Desert Dace ACEC. Visual observation by the BLM Fishery Biologist (Winnemucca District) and personal communication with Dr. Gary Vinyard of the University of Nevada, Reno, indicated that water temperature and quality are being met for the habitat objective for Desert Dace.

4. Improve to and maintain in good or higher condition, 1,383 acres of wetland riparian habitat. (WL-1.IO)

Our ESI data shows 1679.12 acres of meadows that include range sites 023XY013(Dry Meadows- Pone3) , 023XY025(Wet Meadow- Dece), and 025XY001(Moist Floodplain- Salix/Eltr3- Elci2). 441 acres are in poor condition (26%), 770.23 acres are in fair condition (46%), 402.45 acres are in good

condition (24%), and 65.44 acres are in excellent condition (4%). It is undeterminable if the wetland riparian habitat is progressing toward this objective of good or higher condition because the past condition of these areas when the objective was established was not known.

5. Manage, maintain and improve public rangeland habitat condition to provide forage on a sustained yield basis, with an initial forage demand for big game of 786 AUMs for mule deer, 429 AUMs for pronghorn, and 264 AUMs for bighorn sheep by:
- a. Improving the following mule deer habitat from good to excellent condition: Bear Buttes DS-1 (4,174 acres); Mahogany DS-2 (24,047 acres); Soldier DW-7 (18,666 acres) and Warm Springs DW-8 (43,633 acres)
 - b. Improving Big Mountain DS-2 (7,077 acres) and Soldier DW-6 (6,995 acres) mule deer habitat from fair to good condition.
 - c. Improving Black Mountain DS-3 (19,462 acres) and Paiute DS-2 (2,255 acres) mule deer habitat from poor to fair condition.
 - d. Improving Black Butte AS-2 (19,148 acres) and Warm Springs AW-2 (61,452 acres) pronghorn habitat from fair to good condition.
 - e. Improving High Rock Lake AW-1 (7,665 acres) pronghorn habitat from poor to fair condition.
 - f. Improving Calico Mts. BY-6 (28,515 acres) California bighorn sheep habitat from 70% to 90% of optimum.
 - g. Maintain 49,254 acres of Black Rock Range BY-4 potential California bighorn sheep habitat in good condition to support reestablishment.

Mule Deer

Based on 1991 ESI data, the condition of the management areas in objectives a through c appears to be static. A slight decline in condition was recorded from 1988 to 1991. This change may be due to a difference in vegetative sampling techniques and to different criteria for plot selection. The 1988 sampling method used vegetative canopy cover to determine species composition, while the 1991 method determined species composition by weight. The 1988 transects were located in areas critical for mule deer

habitat, but were small inclusions in the ecological site. The 1991 transects were located in areas that are representative of the entire ecological site. This makes correlation between the two years difficult. Based on the limited data that we do have, we can say that we are not progressing toward our objectives.

Mule deer habitat analysis is based on: a browse vigor rating, forage quality, vertical cover, disturbance or interface, and water distribution. Forage variables from the above list were the only ones that changed during this period. Forage vigor, quality, and cover are the variables most likely to be influenced by management, and will therefore be the ones we will concentrate on in the future. For future evaluations, mule deer habitat condition transects will be done at the key areas identified under Resource Objectives in Section VII E of this document by an interdisciplinary team. Inclusions of special consideration will also be monitored and noted as such.

Pronghorn Antelope

ESI data from 1991 indicates that we have achieved objectives d and e in the Warm Springs AW-2 and High Rock AW-1 use areas. Data was not available for the Black Butte AS-2 area. Sampling techniques and transect locations may account for these differences as they did for mule deer.

Pronghorn habitat condition ratings are based on: vegetation quality, quantity, height, diversity, water distribution, water quantity, and limiting factors (fences, snow depth, and habitat disturbance). Vegetation will be monitored at key areas identified under Resource Objectives in section VII E of this document. Inclusions of special concern for pronghorn habitat will also be monitored and noted as such.

California Bighorn Sheep

Based on 1991 habitat suitability ratings, objectives f and g have not been achieved and progress is not being made in obtaining these objectives. Habitat suitability ratings for both the Calico Mountains BY-6 and the Black Rock Range BY-4 have declined slightly from the 1988 rating.

California bighorn sheep habitat suitability ratings are based on topography, water, forage, human conflicts, and domestic sheep use conflicts. The water rating includes: distance from escape cover, competition, visual obstruction, and distance between waters.

Competition for water was the only variable to change during the evaluation period due mostly to wild horse numbers being very high.

6. Protect known sage grouse strutting and nesting habitat and improve brooding habitat by: (WL-1.11)

- a. Following NDOW's guidelines for Vegetal Control Programs in Sage Grouse Habitat in Nevada.
- b. Maintain sagebrush canopy at 30% in sage grouse nesting areas where sagebrush does not exceed three (3) feet in height.

This objective has been met. There were no vegetal manipulations as a result of new range improvement projects such as fencing, brush control, or pipelines or alterations to the vegetation by wildland fires.

7. Maintain or improve 658 acres of aspen woodland and 1,825 acres of mountain mahogany thicket to late seral status or equivalent. (WL-1.9)

It is undeterminable if we are progressing toward this objective because the past condition was not known. Currently, though, from our ESI data there are 2139.02 acres of Aspen in the allotment. Aspen stands are considered a woodland site and are given a woodland suitability rather than a seral stage. The woodland suitability rating was not determined, but transects were performed on the understory vegetation. It would be more appropriate to address age class structure and/or stem density rather than a seral stage for aspen stands in future evaluations.

The mountain mahogany areas are classified as mahogany savannahs and are given a seral stage. 1419.29 acres were mapped of mountain mahogany, of which 769.65 acres are in mid seral (54%) and 649.64 acres are in late seral (46%).

This objective will be requantified in our technical recommendations.

8. Manage, maintain and improve rangeland conditions to provide forage on a sustained yield basis with an initial stocking level of 16,070 AUMs.

Improve range/ecological 1/ condition from:

Poor to fair on 49,161 acres.
Fair to good on 131,096 acres.
Good to excellent on 98,321 acres.

1/ The range/ecological conditions in this document are forage condition that will be replaced with ecological status condition as information becomes available. The objective will be redefined/quantified to obtain a particular ecological status when site potential and identified uses are combined to meet vegetative objectives.

An Ecological Site Inventory (ESI) was completed since the 1988 evaluation. This data will replace the forage condition and the objective will be redefined/quantified to obtain a particular ecological status when the site potential and identified uses are combined to meet vegetative objectives as desired plant communities.

At this time the allotment is not providing on a sustained yield basis a stocking level of 16,070 AUMs. During the evaluation period the actual use varied from 5329 to 7963 AUMs which is below the agreed upon voluntary reduction of 25% to 12,053 AUMs. The problems identified through the monitoring and evaluation are as follows:

- 1) The use pattern mapping shows that the livestock distribution is poor due to lack of water, so only parts of pastures are being used at this time.
- 2) Reservoirs in the Warm Springs pasture have been maintained/reconstructed, but need an extensive snow pack and spring rains to fill them. Once these reservoirs are full, UPM can document if improved livestock distribution is occurring. Currently the use is primarily being concentrated in the northern part of the pasture by wild horses and livestock with only slight use in the southern portion of the pasture.
- 3) In the northern portion of the Summit Lake pasture water projects need to be maintained or possibly reconstructed to provide water late in the summer for livestock. Additional waters may be needed in this part of the pasture to provide alternative watering sites other than the riparian areas.
- 4) Horse populations have been up to 175% above LUP identified numbers within the allotment.
- 5) In the Black Rock pasture the grass is naturally sparse and use has mainly been on the shrub species with concentrated use along Mud Meadow Creek by livestock and at the springs by horses in the higher elevations. Thus the carrying capacity for the winter range is lower than what was agreed upon in the 1988 evaluation.

This objective is being updated to utilize the ESI data that was collected since the last evaluation. In the technical recommendations portion of this evaluation, this objective has been redefined/quantified

to use desired plant communities for the identified uses in each specific area.

9. Manage, maintain and improve public rangeland conditions to provide an initial level of 10,140 AUMs of forage on a sustained yield basis for 2/ 835 wild horses and 10 burros in the following Herd (Management) Areas:

	<u>AML</u>	<u>AUMs</u>
Warm Springs Canyon	294/10	3528/120
Black Rock Range-West	424/0	5088/0
Calico Mountains	117/0	1404/0

2/ AML refer to adult horses and burros (i.e., two years or older).

* AML (appropriate management level) refers to the number of wild horse/ burro listed in the Sonoma-Gerlach MFP-III Wild Horse and Burro decision 1:1 to be used as a starting point for monitoring purposes. In accordance with the June 7, 1989 Interior Board of Land Appeals Ruling (IBLA 88-591), adjustments to wild horse/ burro populations and establishment of AML will be based on monitoring data to obtain the optimum number of wild horses and burros which result in a Thriving Natural Ecological Balance and avoids deterioration of the range.

This objective was met or exceeded, however not on a sustained yield basis. Total AUM demand by wild horses and burros within the allotment ranged from a low of 9788 AUMs in 1988, to a high of 16968 AUMs in 1991. In 1988 AUM demand in the Warm Springs Canyon and Calico Mountains Herd Management Areas exceeded the initial AUM level identified in the Sonoma-Gerlach MFP-III by 15% and 32% respectively. AUM demand in the Black Rock Range- West was 23% below the initial AUM level. In 1989 the AUM demand was exceeded in all three Herd Management Areas in the Soldier Meadows Allotment by 79% in Warm Springs, 123% in the Calico Mountains, and 15% in the Black Rock Range West. In 1990 the initial AUM demand was exceeded by 99% in Warm Springs Canyon, 148% in the Calico Mountains, and 3% in the Black Rock Range- West. In 1991 Warm Springs Canyon AUM demand was exceeded by 120%, Calico Mountains by 175%, and was slightly below in the Black Rock Range- West. The initial AUM level was exceeded for all years except for the Black Rock Range- West in 1988.

Use Pattern Mapping (UPM) collected in the Warm Springs Canyon Herd Management Area in May 1989 found moderate to heavy by wild horses in the Five Mile Flat area. UPM data collected in November 1989 on combined use (livestock and wild horses) indicates the heavy use zone in the Five Mile Flat increased in size and additional areas of heavy use were found in Sand Creek, Jacob Springs, and Rock Springs. Weighted average utilization for wild horses was 51% in October 1990 and 53% in July 1991.

Weighted Average Utilization (refer to Appendix 6) by wild horses only in the Calico Mountains Herd Management Area was 52% in April 1989, 56% in October 1989, 56% in March 1990, and 61% in May 1991.

In the Black Rock Range- West Herd Management Area, weighted average utilization North of Slumgullion was 53% (livestock and wild horses) in October/November 1990, and 59% by wild horses in November 1991. South of Slumgullion weighted average utilization on 1989 forage was 62% for combined use (wild horses and livestock) in April 1990. Weighted Average use by wild horses only was 65% in October 1990 and 70% in November 1991. Combined weighted average utilization on 1990 forage production was 60% in May 1991.

The Weighted Average Utilization calculations only used the moderate, heavy, and severe use classes. The light, slight, and no apparent use classes were not used. The moderate, heavy, and severe use classes were used because desired stocking level depends on the assumption that management, specifically utilization patterns, will not change if only the stocking level changes. These areas of moderate, heavy, and severe use are not concentrated around or near water sources that are the result of our not meeting our riparian, wetland, and/or meadow utilization objectives. Using the weighted average utilization calculations as we did should allow us to be able to meet these objectives.

Furthermore utilization levels which exceed 50% use by August 31 (end of the growing season) each year, tend to lead to a static or downward trend in range condition. At this level a sustainable yield of forage for wild horses will not be maintained.

10. Maintain and improve the free-roaming behavior of wild horses and burros by protecting and enhancing their home ranges.

Aerial distribution and on the ground distribution data collected during the evaluation period indicates that wild horses and burros have freedom of movement and are

maintaining their free roaming behavior within the Herd Management Areas. This objective has been met.

This objective will be requantified and combined with objective number 11 in the technical recommendations section of this evaluation.

11. Maintain/improve wild horse/burro habitat by assuring free access to water.

This objective has been met. During the time period covered by this evaluation the Bureau acquired the water rights to the Summit Lake Windmill for wild horses and wildlife and restored the windmill to working order. The permittee has repaired and replaced troughs within the allotment, and has worked on most catchment reservoirs in the area. The amount of the water available to wild horses and burros has increased during the evaluation period as a result of maintenance on springs and reservoirs within the allotment.

This objective will be requantified and combined with objective number 10 in the technical recommendation section of this evaluation.

12. Improve or maintain Mahogany Creek to Class A water standards.

Only three of the items of the water quality standards were measured. They were pH, temperature, and total dissolved solids. All three of these meant the specifications for class A water standards.

13. Improve or maintain the water quality of the following streams to the State criteria set for livestock drinking water, cold water aquatic life, water contact recreation (wading), and wildlife propagation:

Summer Camp Creek
Snow Creek
Donnelly Creek
Slumgullion Creek
Soldiers Creek

Except for Summer Camp only two of the items of the water quality standards were measured. They were pH and temperature. On Summer Camp total dissolved solids was also measured. On Summer Camp all three of the items measured met the class B water quality specifications. On Slumgullion Creek the pH met the specifications, but the temperature was too warm being 25 degrees C to 30 degrees C which is above the 20 degrees C for trout waters and 24 degrees C for

nontrout waters. Donnelly Creek met the specifications for pH and water temperature (trout or nontrout waters) for class B water standards. Water quality was not measured on Snow or Soldiers Creeks.

14. Maintain water quality standards for Desert Dace habitat in the spring where they occur to the following:

temperature	- 32-38°C/90-100°F
nitrites	- 90 mg/L
turbidity	- 50 NTU
pH	- 6.5-9.0
D.O.	- 5.0 mg/L

No additional BLM data has been gathered applicable to this evaluation for the Desert Dace ACEC. Visual observation by the BLM Fishery Biologist (Winnemucca District) and personal communication with Dr. Gary Vinyard of the University of Nevada, Reno, indicated that water temperature and quality are being met for the habitat objective for Desert Dace.

VI. CONCLUSIONS

There was not substantial difference in grazing use patterns between post-livestock and the year a pasture was rested from livestock. Areas of heavy use are associated with waters sources, riparian areas, and upland areas where wild horses have concentrated.

The primary factor for poor livestock distribution occurring is a lack of water availability throughout entire pastures; especially in the Warm Springs and Summit Lake Pastures. The southern portion of the Warm Spring Pasture has early water (late winter - early spring). It follows that the use has been slight to no apparent use in the southern portion when post-livestock monitoring is done. Livestock and wild horse use the northern portion of the pasture during the summer when water availability becomes critical. In order to effectively utilize this area, a technical recommendations is to combine the southern portion of the Warm Springs Pasture with the Soldier Meadows Pasture. This will allow for sufficient residual forage will be left during the winter months when the wild horses and burros use the area. In the Summit Lake Pasture, the water developments in the northern portion need to be reconstructed and additional developments should be built to enable the cows to utilize this part in the summer. Furthermore, water developments away from the creeks in the pasture may be needed to keep livestock from using the riparian areas for water. In 1990, when the cows used the Summit Lake Pasture, herding was effective in minimizing the utilization occurring in the riparian areas, but once the herder left use increased significantly. In addition, unauthorized livestock drift from neighboring allotments also increased the use in the Summit Lake Pasture. Drift fences recommended in the technical recommendations should stop the drift of unauthorized use.

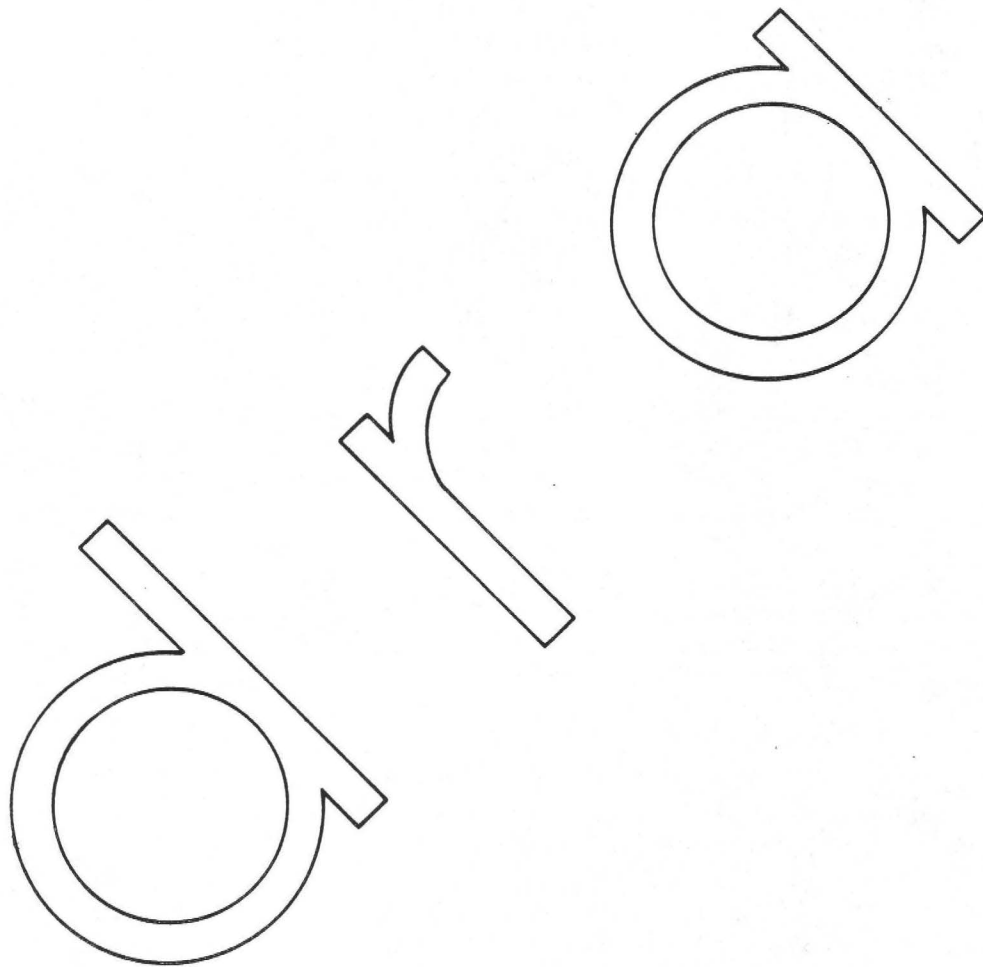
Wild horses were fairly evenly distributed yearlong throughout their respective HMAs. Little snowpack and mild winters allowed the wild horses to stay in the higher elevations during the winters. Only in the Warm Springs Canyon HMA did horses show different use areas between summer and winter. Water availability is the reason for their seasonal difference as explained above. Other areas of concentrated wild horse use are as follows: the spring areas in the northern part of the Warm springs Canyon HMA; the springs in the southern part of the Black Rock - West HMA; the Summit Lake Mountain area and the area between Snow and Coleman Creeks in the northern part of the Black Rock - West HMA; and along the north fork of Donnelly Creek in the Calico Mountain HMA.

Browse (mountain mahogany, quaking aspen, antelope bitterbrush, snowberry, and serviceberry) utilization ranged from light to sever both inside and outside of the Mahogany Creek Exclosure. This use was attributed to wildlife.

The highest use levels occurring along/in riparian areas was along the lower reaches of Donnelly Creek within the Calico Spring Pasture. This part of the creek had moderate to heavy use on willows before livestock were turned out. Wild horse distribution flights and other observations did not document high concentration of horses along the lower reaches of Donnelly Creek. Deer sightings and pellets were documented along the lower reaches. It follows that the use on the willow is attributed to wildlife. Overall, it appears the

majority of browse utilization within the allotment is done by wildlife.

Summer Camp and Coleman Creeks improved from 1988 to 1992. Slumgullion and Donnelly Creeks also improved as of 1990 and 1989 respectively. Mahogany and Snow Creeks had a lower rating in 1992 which was attributed to low water flows. The limiting factor for all the streams is the lack of quality pools. The other parameters appear to be satisfactory. Areas of concentrated use along the creeks by livestock, wild horses, and/or wildlife can affect overall specific ratings and impact riparian vegetation. A discrepancy has been identified between NDOW's and BLM's stream survey analysis. This will require some additional fine tuning as time allows.



VII. RECOMMENDATIONS

A. TECHNICAL RECOMMENDATIONS

1. Establish the Allotment Total Carrying Capacity

The carrying capacity was determined using the weighted average of utilization and desired stocking level calculations found in BLM Technical Reference 4400-7, see Appendix #6.

Total Carrying Capacity by Pasture for Livestock and Wild Horse/ Burros:

<u>Pasture</u>	<u>AUMS</u>
Black Rock	4820
Calico	2985
Soldier Meadows	1281
Warm Springs	8847
Summit Lake	4224
Hot Springs	1965
TOTAL:	24122

The total carrying capacity for the allotment will be distributed between livestock and wild horses and burros as follows:

a. Wild Horses/Burros

The AMLs are based on the carrying capacities to achieve thriving natural ecological balance within the use areas of the allotment. Wild horse/burro numbers were determined by using 20% utilization levels in rest pastures (spring and summer) before July 15 and 30% utilization on the winter pasture, before December 31, see Appendix #6.

<u>Herd Management Area</u>	<u>Wild Horse/ Burro Number-AML</u>	<u>AUMS</u>
Black Rock Range-West		
N. of Slumgullion	131	1572
S. of Slumgullion	85	1020
Subtotals	216	2592
Warm Springs Canyon	257/50	3684
Calico Mountains	142	1704
Grand Totals	615/50	7976

NOTE: The Strategic Plan for the Management of Wild Horses on the

Public Lands was signed on June 6, 1992. This policy states that unadoptable wild horses will remain on the public lands, and that other methods such as fertility control may be utilized for population management. It is BLM's current policy in Nevada to return unadoptable wild horses and/or horses that are six years of age or older to public lands.

Once AML is reached the wild horse/burro population will be maintained within the following ranges in order to insure that the carrying capacity is not exceeded.

<u>Herd Management Area</u>	<u>75% of AML to AML</u>	<u>Wild Horse/ Burro AUMS</u>
Black Rock Range-West		
N. of Slumgullion	98 to 131	1176 to 1572
S. of Slumgullion	64 to 85	768 to 1020
Subtotals	162 to 216	1944 to 2592
Warm Springs Canyon	193/38 to 257/50	2772 to 3684
Calico Mountains	106 to 142	1272 to 1704
Grand Totals	559/38 to 615/50	5988 to 7976

This is based on gathering horses every three years. If gathering schedule changes, these ranges may also change.

b. Livestock:

From:

Total Preference	Active Preference During Evaluation	Voluntary 25% Reduction	Number of Livestock	Period of Use
16,070	12,053	4,017	1500	1/10 - 5/20
			500	5/21 - 10/30

To:

Total Preference	Active Preference	Suspended	Number of Livestock	Period of Use	AUMs*
16,070	12,209	3,861			

Pasture	Number of Livestock	Period of Use	AUMs*
Black Rk	1299	1/01 - 3/31	3800
Calico	1299	4/01 - 4/30	1281
Soldier M	1299	4/01 - 4/30	1281
Summit LK	877	7/15 - 10/14	2652
Warm Spr.	1707	7/15 - 10/14	5163
Hot Spr.	1299	11/16- 12/31	1965

* The desired stocking level was determined on a pasture basis. AUMs associated with the rest pasture will not be allocated to any user (livestock, wild horse/burros, or wildlife) during the rest year in order to maintain a Thriving Natural Ecological Balance in the

allotment. Therefore only 9698 AUMs will be used on the years that the Summit Lake pasture is used and 12209 AUMs will be used when the Warm Springs pasture is used.

FORAGE DEMAND SUMMARY FOR LIVESTOCK AND WILD HORSE/BURROS

<u>Pasture</u>	<u>Livestock</u>	<u>Wild Horses/Burros</u>	<u>Pasture Totals</u>
Black Rock	3800	1020	4820
Calico	1281	1704	2985
Soldier Mead	1281	----	1281
Warm Springs	5163	3084/600	8847
Summit Lake	2652	1572	4224
Hot Springs	1965	----	1965
<u>Allot. Total</u>	<u>16142 *</u>	<u>7380/600</u>	<u>24122</u>

* The desired stocking level was determined on a pasture basis. AUMs associated with the rest pasture will not be allocated to any user (livestock, wild horse/burros, or wildlife) during the rest year in order to maintain a Thriving Natural Ecological Balance in the allotment. Therefore only 9698 AUMs will be used on the years that the Summit Lake pasture is used and 12209 AUMs will be used when the Warm Springs pasture is used.

2. Change the Grazing System

Change the grazing system from a two year deferred/rest rotation system under a two year cycle with five pastures (refer to existing system map overlay) to a two year deferred/rest rotation system with six pastures under a four year cycle (refer to proposed system map overlay). The proposed system would reduce the length of time that the livestock are grazing on the allotment and shorten the season of use within the Summit Lake Summer Pasture. By restricting livestock grazing to later in the season, the grazing system allows for seedripeness of the key species prior to use and assures that spawning of LCT activities will not be impacted by livestock grazing.

The livestock will start grazing in the Black Rock winter pasture at the beginning of the calendar year and use this area from January 1 to March 30 when they will move onto the spring pasture from April 1 to April 30. The two spring pastures are the Calico Spring Pasture and the Soldier Meadows Spring Pasture. The Calico

Spring Pasture will be used for two consecutive years and then rested for two years while the Soldier Meadows Pasture is being used. The livestock will then leave the allotment and graze in the Wall Canyon Allotment in the Cedarville Resource Area of the Susanville District from May 1 until July 14. On July 15 they will move into either the Warm Springs or the Summit Lake summer pastures and graze from July 15 to October 14. Livestock will graze each of the pastures on a two year alternate cycle and the Summit Lake pasture will be divided into three separate use areas by the proposed riparian pasture fence. The livestock will start in the southern portion of the Summit Lake pasture just south of Coleman Creek graze for four (4) weeks then move north into the riparian pasture for two (2) weeks then into the northern portion to graze for six (6) to eight (8) weeks when they will then trail off of the allotment and onto the Sheldon Antelope Refuge. The time frames for movement from the Coleman Creek part of the pasture and the riparian pasture are estimated. The livestock will begin to move from one pasture to the next pasture as the utilization on the key riparian plants approaches 30% utilization. Grazing will continue on the refuge from October 15 to November 15. The cattle will then move back onto the Hot Springs pasture and graze from November 16 to December 31.

The Summit Lake Riparian pasture fence will provide controlled livestock grazing for Summer Camp Creek and Snow Creek within the pasture two (2) out of four (4) years. Under the proposed system the Summit Lake Pasture will be grazed for three (3) months from July 15 to October 14 for two (2) years then rested for two (2) years for a total use period of six (6) months out of forty-eight (48) months. The riparian pasture will be grazed a total of one (1) month out of forty-eight (48) months. There will be no authorized grazing within the Mahogany Creek Enclosure.

Refer to the existing grazing system and the proposed grazing system overlays on the base map for the pasture boundaries and season of use. Livestock grazing will be maintained within the use areas by regulating the waters, salting and herding.

	Black Rock	Calico	Soldier M.	Warm Spring	Summit Lake	Hot Springs
1993	1/1-3/31	4/1-4/30	rested	7/15-10/14	rested	11/16-12/31
1994	1/1-3/31	rested	4/1-4/30	rested	7/15-10/14	11/16-12/31
1995	1/1-3/31	rested	4/1-4/30	rested	7/15-10/14	11/16-12/31
1996	1/1-3/31	4/1-4/30	rested	7/15-10/14	rested	11/16-12/31
1997	1/1-3/31	4/1-4/30	rested	7/15-10/14	rested	11/16-12/31
1998	1/1-3/31	rested	4/1-4/3	rested	7/15-10/14	11/16-12/31

3. Wild Horse/ Burro

- a. Combine the Black Rock Range- West and -East HMA's

Manage the wild horse populations of the Black Rock Range-West (Soldier Meadows Allotment, Sonoma-Gerlach R.A.) and the Black Rock Range-East (Paiute Meadows Allotment, Paradise-Denio R.A.) Herd Management Areas (HMAs) as one population. There are no topographic barriers or impediments to limit or restrict the free movement and interaction of wild horses between the two HMAs. Monitoring data indicates that the horses move back and forth between the two HMAs. Establish the Appropriate Management Level (AML) for the total area. The combined AML will be based on the carrying capacities and thriving natural ecological balances within the use areas of each allotment as shown below:

<u>HMA/Allotment</u>	<u>Wild Horse Numbers</u>	<u>AUMs</u>
<u>BLACK ROCK WEST</u>		
Soldier Meadows		
N. of Slumgullian	131	1572
<u>S. of Slumgullian</u>	<u>85</u>	<u>1020</u>
	Total 216	2592
<u>BLACK ROCK EAST</u>		
Paiute Meadows	<u>26</u>	<u>312</u>
	Total 242	2904

NOTE: Refer to Appendix 3 & 5 for an explanation of the Stocking Level Formula and procedures used to determine the AML in the Black Rock Range- West HMA. Refer to the Paiute Meadows Allotment Evaluation for the rationale used to establish the AML in the Black Rock East HMA.

Census and distribution flights conducted from 1969 to present indicate the historical distribution of wild horses on the Black Rock Range has been approximately fifty percent respectively between the two HMAs. It is unknown at this time what the distribution and number of horses will be between the two allotments at the recommended AML of 242 since the historic distribution patterns were for a typical age structured population, the specific distribution of the horses in the Black Rock Range will not be known until additional monitoring data is collected.

Change the HMA boundaries

The original HMA boundaries were developed along vegetative community lines, the District and Resource Area boundaries, and the Summit Lake Indian Reservation. Black Rock Range-West HMA (NV-227) and Warm Springs Canyon (NV-226) lie adjacent to one another and share a common boundary from

Sheldon Antelope Range/District boundary fence to a point approximately ½ mile southwest of Antelope Spring. The proposed changes in the boundaries of the Black Rock West HMA and the Warm Springs Canyon HMA are being proposed to reflect the actual use areas of the wild horses.

There are two proposed changes to the common boundary between the Black Rock Range-West and the Warm Springs Canyon HMA's.

1. **Soldier Creek:** Addition of 4188 acres from the Black Rock Range-West HMA from Soldier Creek through Dry Canyon to Warm Springs Canyon HMA. The new boundary would run from Soldier Meadows Ranch northeast along Soldier Creek and tie in with the original boundary of the Black Rock Range-West HMA north of Coleman Creek.

RATIONALE:

Soldier Creek acts as a natural break between the two HMAs. Distribution data and on the ground observations show horses in this area interact with the horse populations from the Warm Springs Canyon HMA when disturbed and not with the horses from the Black Rock Range-West HMA.

2. **Five Mile Flat:** Due to a proposed fence to manage livestock movement running north to south through section 6 and 7 of T.42N, R.26E, 4105 acres would be removed from the Black Rock Range-West HMA and added to the Warm Springs Canyon HMA.

RATIONALE:

The horses found utilizing this area west of the proposed fence tend to interact with the horse populations from the Warm Springs Canyon HMA when disturbed by aircraft and the horses east of the fence tend to interact with the horse populations from the Black Rock Range- West showing that they are part of that population. The proposed fence line would act as a break and keep the horses in their respective HMAs.

A total of 8293 acres would be transferred from the Black Rock Range- West HMA to the Warm Springs HMA.

c. Wild horse and Burro Census and Distribution

Continue collecting Wild horse/ Burros census and seasonal distribution data to determine population trends (reproductive rate, recruitment rate, etc.) and seasonal use areas. Wild horse/ Burros monitoring should be conducted on alternate years as follows:

- (1). Census every three years in July. (First year)
Start census flights in July of 1993.
- (2). Aerial distribution mapping every three years with flights conducted in January, April, July, and October. (second year)
- (3). Conduct on the ground distribution mapping in July and October every three years to supplement aerial distribution mapping, and provide more specific population information on band size and composition. (Third year)

d. Requantify long term objectives 10 and 11 to:

Maintain and improve the free-roaming behavior of wild horses and burros by:

- (a) protecting their home range
- (b) assuring free access to water

B. RIPARIAN OBJECTIVES

Requantify short term objective 1. and long term objectives 1. and 2.

1. Do not exceed 30% utilization of current years growth on the key riparian vegetation, which includes: Aspen (Populus tremula tremuloides), Willows (Salix spp.), Nevada Bluegrass (Poa nevadensis), Sedges (Carex spp.), Rushes (Juncus spp.), Intermediate Wheatgrass (Agropyron intermedium), and Tufted Hairgrass (Deschampsia cespitosa), on Mahogany Creek, Summer Camp Creek, Snow Creek, Coleman Creek, Slungullion Creek, and Donnelly Creek.
2. Maintain or improve the riparian/ stream habitat condition on six (6) miles of Mahogany Creek 68% within the short term (2001) and long term (2017).
3. Improve the riparian/stream habitat condition on 2 miles of

Summer Camp Creek by 10% (from 1990 baseline data of 60%) within the short term (by 2001) and achieve excellent riparian stream habitat condition (70% of habitat optimum or better) by the year 2017.

4. Improve the riparian/stream habitat condition on 3 miles of Snow Creek by 10% (from 1990 baseline data of 60%) within the short term (by 2001) and achieve excellent riparian stream habitat condition (70% of habitat optimum or better) by the year 2017.
5. Improve the riparian/stream habitat condition on 8 miles of Donnelly Creek by 10% (from baseline 1989 data of 52%) within the short term (by 2001) and achieve excellent riparian stream habitat condition (70% of habitat optimum or better) by the year 2017.
6. Improve the riparian/stream habitat condition on 8 miles of Coleman Creek by 20% (from baseline 1991 data of 44%) within the short term (by 2001) and achieve excellent riparian stream habitat condition (70% of habitat optimum or better) by the year 2017.
7. Improve the riparian/stream habitat condition on 8 miles of Slumgullion Creek by 15% (from baseline 1990 data of 48%) within the short term (by 2001) and achieve excellent riparian stream habitat condition (70% of habitat optimum or better) by the year 2017.

C. Retain long term objective number 6:

Protect known sage grouse strutting and nesting habitat and improve brooding habitat by: (WL-1.11)

1. Following NDOW's guidelines for Vegetal Control Programs in Sage Grouse Habitat in Nevada.
2. Maintain sagebrush canopy at 30% in sage grouse nesting areas where sagebrush does not exceed three (3) feet in height.

D. Retain Long Term Objectives 12, 13 and 14.

12. Improve or maintain Mahogany Creek to Class A water standards.
13. Improve or maintain the water quality of the following streams to the State criteria set for livestock drinking water, cold water aquatic life, water contact recreation (wading), and wildlife propagation:

Summer Camp Creek
 Snow Creek
 Donnelly Creek
 Slumgullion Creek
 Soldiers Creek

14. Maintain water quality standards for Desert Dace habitat in the spring where they occur to the following:

temperature - 32-38°C/90-100°F
 nitrates - 90 mg/L
 turbidity - 50 NTU
 pH - 6.5-9.0
 D.O. - 5.0 mg/L

E. Allotment Objectives for Uplands and Meadows

Redefine long term objectives 5,7,8, and 9 by combining them into resource objectives to manage for desired plant communities.

RATIONALE: The limiting factor for wildlife is forage vigor, quality, and cover, therefore the objectives need to be vegetative ones. Livestock and wild horse objectives are for a sustainable yield of forage, which desired plant communities would account for.

The following lists by pasture the resource objectives, the management actions to meet those objectives, and the monitoring procedures to be used to see if the objectives are moving toward achievement.

Objectives for this allotment were based on ecological status inventory data. The seral stage of each vegetative community and it's potential was considered in conjunction with the wildlife, wild horse, and livestock use to develop desired plant community objectives. Short term objectives will be used to determine the progress each community is making toward it's desired stage. Following is a list of the key species plant symbols used, the common name and the scientific name:

**Key Spp
 Symbol**

AGSP
 CELE3
 DISP2
 ELCI2
 FEID
 HOBR
 JUBA
 LUPIN
 ORHY

Common Name

Bluebunch wheatgrass
 Mountain mahogany
 Inland saltgrass
 Basin wildrye
 Idaho fescue
 Meadow barley
 Baltic rush
 Lupine
 Indian ricegrass

Scientific Name

Agropyron spicatum
Cercocarpus ledifolius
Distichlis spicata stricta
Elymus cinereus
Festuca idahoensis
Hordeum brachyantherum
Juncus balticus
Lupinus spp.
Oryzopsis hymenoides

POA++	Bluegrass	<u>Poa spp.</u>
PONE3	Nevada blugrass	<u>Poa nevadensis</u>
POSE	Sandberg bluegrass	<u>Poa secunda</u>
PUTR2	Antelope bitterbrush	<u>Purshia tridentata</u>
SIHY	Bottlebrush squirreltail	<u>Sitanion hystrix</u>
STCO4	Needle & thread grass	<u>Stipa comata</u>
STTH2	Thurber needlegrass	<u>Stipa thurberiana</u>

Summit Lake Pasture

Resource Objectives

Key areas will be established by an interdisciplinary team in the SWA and Ecological Site indicated for each objective.

Objective 1 Short Term

Increase by weight the overall percentage of the following perennial grasses: AGSP, FEID, STTH2, ELCI2, POA++, STCO4, and SIHY from 28% to 35% on Ecological Site 023XY007 (Loamy 14-16") in SWA U044 by 2001. The aggregate of ELCI2, POA++, SIHY, and STCO4 can only make up 10% of the total composition.

Long Term

Within Ecological Site 023XY007 (Loamy 14-16") manage for the following percent composition by weight:

Percent Composition By Weight			
Lifeform	Existing	Desired	Potential
Perennial Grasses	28%	45%	60%
Forbs	7%	10%	10%
Shrubs	65%	45%	30%

This objective should be achieved by the year 2017.

Objective 2 Short Term

Maintain or increase perennial grasses at 45% composition by weight over the next eight years on Ecological Site 023XY017 (Claypan 14-16") in SWA U044. These perennial grasses are FEID, AGSP, STTH2, POA++, SIHY, and ELCI2 with the aggregate of the latter three making up no more than 10% of the total composition.

Long Term

Within Ecological Site 023XY017 (Claypan 14-16") manage for a desired plant community with the following percent composition by weight:

Percent Composition By Weight			
Lifeform	Existing	Desired	Potential
Perennial Grasses	45%	55%	65%
Forbs	11%	10%	10%
Shrubs	44%	35%	25%

This objective should be accomplished by the year 2017.

Objective 3 Short Term

Increase FEID and AGSP each from 2% to 6% composition by weight on Ecological Site 023XY026 (Mahogany Savanna) in SWA U044 by 2001. Maintain PUTR2 above 10% composition and CELE3 at 22% composition.

Long Term

Within Ecological Site 023XY026 (Mahogany Savanna) manage for a desired plant community with the following percent composition:

Percent Composition By Weight			
Lifeform	Existing	Desired	Potential
Perennial Grasses	23%	30%	40%
Forbs	Trace	8%	10%
Shrubs	77%	62% *	50%

* At least 25% must be CELE3 and 10% PUTR2.

This objective should be accomplished by the year 2017.

Objective 4 Short Term

Maintain the existing plant community with 61% perennial grasses, 22% forbs, and 17% shrubs in Ecological Site 023XY013 (dry meadows) in SWA U044 by the year 2001.

Long Term

Within Ecological Site 023XY013 (dry meadows) in SWA U044 manage for the desired plant community with the following percent composition by weight:

Percent Composition by Weight			
Lifeform	Existing	Desired	Potential
Perennial Grasses	61	65	80
Forbs	22	22	20
Shrubs	17	13	0

Decrease the percent by weight of JUBA by increasing the percent by weight of PONE3 and HOBR.

This objective should be achieved by 2017.

Objective 5 **Short Term**

Maintain the existing plant community with 89% perennial grasses, 11% forbs, and 0% shrubs in Ecological Site O23XY025 (wet meadows) in SWA U202 by the year 2001.

Long Term

Within Ecological Site O23XY025 (wet meadows) in SWA U202 manage for the desired plant community with the following percent composition by weight:

Percent Composition by Weight			
<u>Lifeform</u>	<u>Existing</u>	<u>Desired</u>	<u>Potential</u>
Perennial Grasses	89	85	80
Forbs	11	15	20
Shrubs	0	0	0

Decrease the percent by weight of Carex by increasing the percent by weight of DECE.

This objective should be achieved by 2017.

Rationale: This area has been identified as yearlong bighorn sheep range (BRBY-2, BRBY-4), mule deer summer range (BRDS-8), as well as a sage grouse strutting ground and brood use area. It is also used yearlong by wild horses and by cattle for 3 months (July 15 - Oct 14). By achieving these objectives the vegetative communities would be meeting the needs of the mentioned wildlife and livestock.

Recommended Management Actions for Summit Lake Pasture

- 1) Change the season of use from May 21- October 31 to July 15- October 14. The pasture will be used by livestock for two years and then rested for two consecutive years.
- 2) Divide the pasture into 3 smaller use areas.
- 3) Install drift fences within the pasture in order to control the movement of livestock:
 - a) between Soldier Meadows and Paiute Meadows to prevent the drift of livestock into Coleman Creek.
 - b) between Snow Creek and Coleman Creek to develop 2 riparian pastures.
 - c) between the Sheldon Antelope Range and the Summit Lake Indian Reservation. (this would be a solid fence)

4) Change the Warm Springs and Black Rock West HMA boundaries to correspond to the fence proposed in 3C.

5) Develop water in the northern pasture (Idaho Canyon area) in order to better distribute the livestock and develop off site waters (waters other than the creeks) in the Riparian pastures.

6) The target utilization level on uplands by wild horses once the AMU is reached is 20% before July 15 (seed dissemination) on livestock rested years. If the utilization levels are not being met after the second year number of horses will be adjusted.

7) a) Combined wild horse and livestock utilization objective on upland grass and grass-like species is 50% at the end of the livestock use period (either a scheduled pasture or the end of the grazing season). If the 50% utilization level is not being met with livestock moving into the next pasture earlier than scheduled or removed from the allotment sooner than expected, the grazing preference will be evaluated to determine if a downward adjustment is required. This evaluation will include wild horse, wildlife, and climatic factors.

b) By February 28, or the start of the new grazing season, utilization on upland grass and grass-likes shall not exceed 60%. For upland browse and meadows utilization shall not exceed 50%. If we are not meeting this objective wild horse numbers will be adjusted (utilization on grass species from 50 to 60% by wild horses will occur during the dormant season and should not have a detrimental impact to plant health and vigor).

8) The livestock will be moved as the key riparian species approach the 30% use level for Summer Camp and Snow Creeks.

9) When livestock use the two riparian pastures (b in #3) a herder and a BLM resource specialist - that will be available to monitor utilization levels and other resource parameters - shall be present. If a herder is not present or a BLM resource specialist is not available, the livestock can not be turned out; or if during the scheduled period neither are no longer available then the livestock shall be removed.

10) Set up Key Areas before the end of the first grazing year is over. (1993)

11) Install a 3-way enclosure on Coleman Creek which would exclude livestock, wild horses, and wildlife. The study enclosure would consist of three (3) equal portions of the habitat. One portion would exclude livestock, wild horses and big game. The second portion of the enclosure would exclude livestock and wild horses and have wildlife use only. The third portion would be open for livestock, wild horse, and wildlife use. (1996)

12) Install a wildlife enclosure on Mountain Mahogany within the Mahogany Creek enclosure.

- 14) Install an enclosure fence around the springs at the headwaters of Snow Creek that would exclude horses/burros and livestock.

If with the proposed grazing system and fencing strategy the utilization objectives on the streams are still not being met then corridor fencing would be considered:

Corridor fencing of Summer Camp Creek, Snow Creek and Coleman Creek was considered as an alternative to provide protection of the riparian areas associated with these streams by excluding grazing by livestock and wild horses and burros. The following is an estimate of the costs of fencing the mentioned streams and the resource conflicts related to the proposed fencing.

COST ESTIMATES OF RIPARIAN FENCING

<u>STREAM</u>	<u>MILES OF STREAM</u>	<u>COST</u>
Summer Camp Creek	11.0	\$99,000
Snow Creek	4.5	\$40,500
Coleman Creek	18.0	\$162,000
	<u>TOTAL</u>	<u>\$301,500**</u>

RESOURCE CONFLICTS

1. The proposed fencing of Coleman Creek would restrict the free-roaming movement of the wild horses, livestock and wildlife* movement from north to south within the pasture.
2. The proposed fencing of Summer Camp Creek would restrict wild horse, livestock and wildlife* movement from east to west within a portion of the pasture.
3. The proposed Summer Camp Creek fencing could create traps for horses and livestock where they intersect the existing Mahogany Creek Enclosure fence and the Summit Lake Tribal fence.
4. The proposed Snow Creek fence could create traps for horses, livestock and wildlife* where it would intersect the Summit Lake Tribal fence.
5. The proposed fencing would impose a substantial long term visual impact as well as short term disturbance during construction within a wilderness study area (WSA). This is in conflict with the Wilderness Interim Management Plan.

FOOTNOTE:

** The total cost does not include cattleguards, water gaps, gates, etc. The estimate of \$9,000/mi. is based on information provided by District Operations Staff on similar riparian fencing projects in the

Paradise-Denio Resource Area.

Monitoring Procedures For the Summit Lake Pasture

For Resource Objectives

- 1993 Establish vigor and age class studies on Putr2, Cele3, and Potrt.
- 1993 Establish Riparian Studies on Summer Camp, Snow Creek, and Coleman Creek.
- 2001 Read Double Sampling Transect and an Ocular transects at the key areas to determine if short term vegetative objectives are being met.
- 2017 Reread Double Sampling Transect and an Ocular transects at the key areas to determine if long term objectives are being met.

For Management Actions

Complete Use Pattern Maps prior to livestock turn out (July 15), after livestock are removed (October 14), and prior to start of next growing season until the use patterns are established.

On livestock rest years complete Use Pattern Maps at seed dissemination or around July 15 to determine if the 20% utilization requirement is being met until the use patterns are established.

Monitor riparian utilization levels on Coleman Creek, Summer Camp, Snow Creek, and Mahogany Creek and if it is or is exceeding the 30% use level on Key Species move the Livestock.

Inspect the Range Improvement Projects according to the RIPS schedule.

Establish studies on Coleman Creek inside and outside of the proposed exclosure.

Establish studies on Cele3 inside and outside of the proposed exclosure in the Mahogany Creek exclosure.

Warm Springs Pasture

Resource Objectives:

Key areas will be established by an interdisciplinary team in the SWA and Ecological Site indicated for each objective.

Objective 1 Short Term

Increase perennial grasses from 34% to 41% composition by weight on Ecological Site 023XY017 (Claypan 14-16") in SWA U125 by 2001. These perennial grasses are: AGSP, STH2, POA++, SIHY, and FEID.

Long Term

Increase FEID from a trace to 7% composition by weight while managing for a desired plant community with the following percent composition by weight.

Percent Composition By Weight			
Lifeform	Existing	Desired	Potential
Perennial grasses	34%	50%	65%
Forbs	8%	10%	10%
Shrubs	56%	40%	25%

This objective should be completed by the year 2017.

Objective 2 Short Term

Maintain the following perennial grasses: STH2, SIHY, and POA++ at 46% composition by weight through the year 2001 on Ecological Site 023XY031 (Claypan 10-14") in SWA U174. Also try to get AGSP established on the site.

Long Term

Increase AGSP to 5% composition by weight, as it's potential on the site is 20 to 50% composition by weight. Establish a desired plant community consisting of the following vegetation:

Percent Composition By Weight			
Lifeform	Existing	Desired	Potential
Perennial Grasses	46%	55%	65%
Forbs	12%	12%	10%
Shrubs	42%	33%	25%

This objective should be achieved by the year 2017.

Objective 3 Short Term

Increase AGSP from 9% to 13% and STH2 from 8% to 12% composition by weight on Ecological Site 023XY039 (Loamy Slope 10-14") in SWA U125 by 2001.

Long Term

Manage for a desired plant community consisting of the following percent composition within Ecological Site 023XY039 (Loamy Slope 10-14"):

Percent Composition By Weight

<u>Lifeform</u>	<u>Existing</u>	<u>Desired</u>	<u>Potential</u>
Perennial Grasses	35%	50%	65%
Forbs	6%	10%	10%
Shrubs	52%	40%	25%

This objective should be reached by the year 2017.

Objective 4 Short Term

Increase AGSP, FEID, and STH2 collectively, from 27% to 36% composition by weight on Ecological Site 023XY066 (Ashy Loam 12-14") in SWA U162 by 2001 while maintaining PUTR2 above 20% composition.

Long Term

Within Ecological Site 023XY066 (Ashy Loam 12-14") manage for the following percent composition by weight:

Percent Composition By Weight

<u>Lifeform</u>	<u>Existing</u>	<u>Desired</u>	<u>Potential</u>
Perennial Grasses	33%	43% *	60%
Forbs	2%	8%	10%
Shrubs	65 %	49% **	30%

* Must be at least 20 % FEID.

** Must be at least 20% PUTR2.

This objective should be achieved by the year 2017.

Objective 5 Short Term

Maintain or increase FEID at 12% and increase AGSP from 2% to 5% composition by weight. Maintain PUTR2 at 9% composition; increase CELE3 from 3% to 6% composition by weight on Ecological Site 023XY026 (Mahogany Savanna) in SWA U161.

Long Term

Manage for the following percent composition by weight on Ecological Site 023XY026 (Mahogany Savanna):

Percent Composition By Weight

<u>Lifeform</u>	<u>Existing</u>	<u>Desired</u>	<u>Potential</u>
Perennial Grasses	35%	40% *	40%
Forbs	3%	10%	10%
Shrubs	54%	50% **	50%

* Must be at least 15% FEID, 10% AGSP.

** Must be at least 9% CELE3, and 9% PUTR2.

This objective should be achieved by the year 2017.

Objective 6

Short Term

Maintain PONE3 at 12% and increase by weight forbs from 8% to 11% with LUPIN making up no more than 5% by weight of the forbs in SWA U199 on Ecological Site 023XY013 (dry meadows) by the year 2001.

Long Term

Within Ecological Site 023xy013 (dry meadows) in SWA U199 manage for the desired plant community with the following percent composition by weight:

Percent Composition by Weight			
Lifeform	Existing	Desired	Potential
Perennial Grasses	92	85	80
Forbs	8	15	20
Shrubs	0	0	0

Increase by weight PONE3 from 12% to 15% in SWA U199 on Ecological Site 023XY013 (dry meadows) by the year 2017.

Rationale: This area has been identified as pronghorn yearlong (BRPY-7) and summer range (BRPS-1, BRPS-8); mule deer yearlong (BRDY-3) and winter range (BRDW-4); and as a sage grouse brood use area. It is also used yearlong by wild horses and by cows for three months a year (July 15 to Oct. 14).

Management Actions For the Warm Springs Pasture

1) Change season of use from May 21- October 31 to July 15- October 14. The pasture will be used for two years and then will have two consecutive years of rest.

2) The target utilization level on uplands by wild horses once the AML is reached is 20% before July 15 (seed dissemination) on livestock rested years. If the utilization levels are not being met after the second year number of horses will be adjusted.

3) a) Combined wild horse and livestock utilization objective on upland grass and grass-like species is 50% at the end of the livestock use period (either a scheduled pasture or the end of the grazing season). If the 50% utilization level is not being met with livestock moving into the next pasture earlier than scheduled or removed from the allotment sooner than expected, the grazing preference will be evaluated to determine if a downward adjustment is required. This evaluation will include wild horse, wildlife, and climatic factors.

b) By February 28, or the start of the new grazing season, utilization on upland grass and grass-likes shall not exceed 60%. For upland browse and meadows utilization shall not exceed 50%. If we are not meeting this objective than wild horse numbers will be adjusted (utilization on grass species from 50 to 60% by wild horses will occur during the dormant season and

should not have a detrimental impact to plant health and vigor).

4) Shift distribution of cows, so they use the southern portion of the pasture more than they have in the past by improving the water sources in the southern portion of the pasture.

5) Establish additional Key Areas before the end of the grazing year.
(1993)

6) Consider the feasibility of seeding the Five Mile Flat area to provide additional forage for livestock, wild horses, and wildlife in the Warm Springs pasture.

7) Develop additional water sources to better distribute livestock and horses.

Monitoring Procedures for the Warm Springs Pasture

For Resource Objectives

- 1993 Establish vigor and age class studies on Putr2 and Cele3.
- 2001 Read Double Sampling Transect and an Ocular at the key areas to determine if short term vegetative objectives are being met.
- 2017 Reread Double Sampling Transect and an Ocular at the key areas to determine if long term objectives are being met.

For Management Actions

Complete Use Pattern Maps prior to livestock turn out (July 15), after livestock are removed (October 14), and prior to start of next growing season until use patterns are established.

On livestock rest years complete Use Pattern Maps at seed dissemination or around July 15 to determine if the 20% utilization requirement is being met until use patterns are established.

Inspect Range Improvement Projects according to the RIPS schedule.

Feasibility study on the seeding in the Five Mile Flat area.

Calico Pasture

Resource Objectives:

Key areas will be established by an interdisciplinary team in the SWA and Ecological Site indicated for each objective.

Objective 1 Short Term

Increase STH2 from 9% to 12% composition by weight on Ecological Site 027XY079 (Gravelly Claypan 8-10") in SWA U063 by 2001.

Long Term

Within Ecological Site 027XY079 (Gravelly Claypan 8-10") manage for the following percent composition by weight:

Percent Composition By Weight			
Lifeform	Existing	Desired	Potential
Perennial Grasses	25%	32%	45%
Forbs	8%	8%	5%
Shrubs	67%	60%	50%

This objective should be achieved by the year 2017.

Objective 2 Short Term

Increase AGSP from 2% to 5% composition by weight on Ecological Site 023XY037 (Clay Slope 8-12") in SWA U109 by 2001.

Long Term

Manage for a desired plant community with the following percent composition by weight on Ecological Site 023XY037 (Clay Slope 8-12"):

Percent Composition By Weight			
Lifeform	Existing	Desired	Potential
Perennial Grasses	26%	36%	70%
Forbs	25%	22%	10%
Shrubs	42%	42%	20%

Perennial grasses may include: AGSP- must be at least 8%, STH2, POA++, SIHY, FEID. This objective should be achieved by the year 2017.

Objective 3 Short Term

Increase FEID from 2% to 6% composition by weight while trying to establish AGSP on Ecological Site 023XY017 (Claypan 14-16") in SWA U042 by 2001.

Long Term

Manage for a desired plant community with the following percent composition by weight:

Percent Composition By Weight			
Lifeform	Existing	Desired	Potential
Perennial Grasses	34%	46%	65%
Forbs	28%	20%	10%
Shrubs	38%	34%	25%

Perennial grasses include FEID, AGSP, POA++, STH2, SIHY and other perennial grasses. This objective should be accomplished by 2017.

Rationale: This pasture has been identified as pronghorn antelope winter range (BRPW-1). Wild horses use this pasture yearlong and cows use it for one month (April 1 - April 30) for two years and then rest it for two years.

Management Actions for the Calico Pasture

1) Change season of use from April 11- May 20 to April 1- April 30. Use the Calico pasture for two years in a row and then rest it for two years while the White Rock pasture is being used.

2) The target utilization level on uplands by wild horses once the AML is reached is 20% before July 15 (seed dissemination) on livestock rested years. If the utilization levels are not being met after the second year number of horses will be adjusted.

3) a) Combined wild horse and livestock utilization objective on upland grass and grass-like species is 50% at the end of the livestock use period (either a scheduled pasture or the end of the grazing season). If the 50% utilization level is not being met with livestock moving into the next pasture earlier than scheduled or removed from the allotment sooner than expected, the grazing preference will be evaluated to determine if a downward adjustment is required. This evaluation will include wild horse, wildlife, and climatic factors.

b) By February 28, or the start of the new grazing season, utilization on upland grass and grass-likes shall not exceed 60%. For upland browse and meadows utilization shall not exceed 50%. If we are not meeting this objective then wild horse numbers will be adjusted (utilization on grass species from 50 to 60% by wild horses will occur during the dormant season and should not have a detrimental impact to plant health and vigor).

4) Set up key areas before the end of the first grazing year is completed. (1993)

5) Develop water or determine the feasibility of developing water in the Calicos to better distribute the livestock.

Monitoring Procedures for the Calico Pasture

For Resource Objectives

- 1993 Establish Riparian Studies on Donnelly Creek.
- 2001 Read Double Sampling Transect and an Ocular at the key areas to determine if short term vegetative objectives are being met.
- 2017 Reread Double Sampling Transect and an Ocular at the key areas to determine if long term objectives are being met.

For Management Actions

Complete Use Pattern Maps prior to livestock turn out (April 1), after livestock are removed (April 30), and prior to start of next growing season until use patterns are established.

On livestock rest years complete Use Pattern Maps at seed dissemination or around July 15 to determine if the 20% utilization requirement is being met are established.

Inspect Range Improvement Projects according to the RIPS schedule.

Soldier Meadows Pasture

Resource Objectives:

Key areas will be established by an interdisciplinary team in the SWA and Ecological Site indicated for each objective.

Objective 1 Short Term

Increase by weight AGSP from 31% to 36% on Ecological Site 023XY039 (loamy slope 10-14") in SWA U159 by 2001.

Long Term

Within Ecological Site 023XY039 (loamy slope 10-14") manage for the following percent composition by weight:

<u>Percent Composition by Weight</u>			
<u>L Lifeform</u>	<u>Existing</u>	<u>Desired</u>	<u>Potential</u>
<u>Perennial Grasses</u>	35	44	65
<u>Forbs</u>	7	10	10
<u>Shrubs</u>	58	46	25

This objective should be achieved by the year 2017.

Objective 2 Short Term

Increase FEID and STH2 collectively from 12% to 18% by weight on Ecological Site 023XY017 (claypan 14-16") in SWA U229 by 2001.

Long Term

Within Ecological Site 023XY017 (claypan 14-16") in SWA U229 manage for the following percent composition by weight:

Percent Composition by Weight			
Lifeform	Existing	Desired	Potential
Perennial Grasses	23	35	65
Forbs	8	10	10
Shrubs	69	55	25

This objective should be achieved by the year 2017.

Objective 3 Short Term

Increase by weight STH2 from 1% to 6% on Ecological Site 024XY005 (loamy 8-10") in SWA U181 by 2001.

Long Term

Within Ecological Site 024XY005 (loamy 8-10") in SWA 181 manage for the following percent composition by weight:

Percent Composition by Weight			
Lifeform	Existing*	Desired	Potential
Perennial Grasses	7	17	55
Forbs	3	5	5
Shrubs	87	78	40

This objective should be achieved by 2017.

* The remaining 3% is comprised of BRTE.

Objective 4 Short Term

Maintain or increase by weight the perennial grasses at 40% or higher on Ecological Site 023XY039 (loamy slope 10-14") in SWA U117 by 2001. The perennial grasses include AGSP and SIHY.

Long Term

Within Ecological Site 023XY039 (loamy slope 10-14") in SWA U117 manage for the following percent composition by weight:

Percent Composition by Weight			
Lifeform	Existing*	Desired	Potential
Perennial Grasses	40	45	65
Forbs	7	10	10
Shrubs	48	45	25

This objective should be achieved by 2017.

* The remaining 5% is comprised of BRTE.

Objective 5 Short Term

Increase by weight the following perennial grasses: SIHY, STH2, and POA++ collectively from 12% to 18% on Ecological Site 023XY037 (clay slope 8-12") in SWA U187 by 2001. Also try to establish AGSP on the site from the adjacent range sites.

Long Term

Within Ecological Site 023XY037 (clay slope 8-12") manage for the following Desired Plant Community while trying to establish AGSP on the site:

Percent Composition by Weight			
Lifeform	Existing	Desired	Potential
Perennial Grasses	12	25	70
Forbs	2	7	10
Shrubs	86	68	20

This objective should be achieved by 2017.

Objective 6 Short Term

Increase by weight the perennial grasses from 5% to 8% and increase ARSPS5 from 4% to 10% on Ecological Site 024XY025 (loamy slope 5-8") in SWA U114 manage for the following Desired Plant Community:

Percent Composition by Weight			
Lifeform	Existing*	Desired	Potential
Perennial Grasses	5	10	20
Forbs	Trace	5	5
Shrubs	92	85	75

This objective should be achieved by 2017.

* The remaining 3% is comprised of BRTE.

Objective 7 Short Term

Maintain the existing plant community with 61% perennial grasses, 22% forbs, and 17% shrubs in Ecological Site 023XY013 (dry meadows) in SWA U201 by the year 2001.

Long Term

Within Ecological Site 023XY013 (dry meadows) in SWA U201 manage for the desired plant community with the following percent composition by weight:

Percent Composition by Weight			
Lifeform	Existing	Desired	Potential
Perennial Grasses	61	65	80
Forbs	22	22	20
Shrubs	17	13	0

Increase the percent by weight of the perennial grasses by 4%, while maintaining or decreasing the percent JUBA at 24%.

Rationale: This area has been identified as pronghorn yearlong (BRPY-5) and winter (BRPW-6, BRPW-7); mule deer summer (BRDS-7, BRDS-5) and winter (BRDW-4); and bighorn sheep yearlong (BRBY-1, BRBY-2). It is also used yearlong by wild horses and burros and cows for one month a year (April 1- April 30).

Management Actions for the Soldier Meadows Pasture

- 1) Change season of use from April 11- May 20 to April 1- April 30. Use the White Rock pasture for two years in a row and then rest it for two years while the Calico pasture is being used.
- 2) The target utilization level on uplands by wild horses once the AML is reached is 20% before July 15 (seed dissemination) on livestock rested years. If the utilization levels are not being met after the second year number of horses will be adjusted.
- 3) a) Combined wild horse and livestock utilization objective on upland grass and grass-like species is 50% at the end of the livestock use period (either a scheduled pasture or the end of the grazing season). If the 50% utilization level is not being met with livestock moving into the next pasture earlier than scheduled or removed from the allotment sooner than expected, the grazing preference will be evaluated to determine if a downward adjustment is required. This evaluation will include wild horse, wildlife, and climatic factors.
b) By February 28, or the start of the new grazing season, utilization on upland grass and grass-likes shall not exceed 60%. For upland browse and meadows utilization shall not exceed 50%. If we are not meeting this objective than wild horse numbers will be adjusted (utilization on grass species from 50 to 60% by wild horses will occur during the dormant season and should not have a detrimental impact to plant health and vigor).

4) Set up key areas before the end of the first grazing year is completed. (1993)

Monitoring Procedures for the Soldier Meadows Pasture

For Resource Objectives

- 1993 Establish Riparian Studies on Slungullian Creek.
- 2001 Read Double Sampling Transect and an Ocular at the key areas to determine if short term vegetative objectives are being met.
- 2017 Reread Double Sampling Transect and an Ocular at the key areas to determine if long term objectives are being met.

For Management Actions

Complete Use Pattern Maps prior to livestock turn out (April 1), after livestock are removed (April 30), and prior to start of next growing season until the use patterns are established.

On livestock rest years complete Use Pattern Maps at seed dissemination or around July 15 to determine if the 20% utilization requirement is being met until the use patterns are established.

Inspect Range Improvement Projects according to the RIPS schedule.

Black Rock Pasture

Resource Objectives:

Key areas will be established by an interdisciplinary team in the SWA and Ecological Site indicated for each objective.

Objective 1 Short Term

Increase ORHY, SIHY, and STSP3 from a trace to 3% composition on Ecological Site 027XY018 (Gravelly Loam 4-8") in SWA U005 by 2001.

Long Term

Manage for a desired plant community with the following percent composition by weight on Ecological Site 027XY018 (Gravelly Loam 4-8").

Percent Composition By Weight

Lifeform	Existing	Desired	Potential
Perennial Grasses	Trace	9%	25%
Forbs	Trace	3%	5%
Shrubs	100%	88%	70%

The perennial grasses may include ORHY, POSE, SIHY, and STSP3. This objective should be achieved by 2017.

Objective 2 Short Term

Increase ORHY from 6% to 9% composition by weight on Ecological Site 027XY016 (Sodic Dunes) in SWA U004.

Long Term

Within Ecological Site 023XY016 (Sodic Dunes) manage for a plant community with the following percent composition by weight:

Percent Composition By Weight

Lifeform	Existing	Desired	Potential
Perennial Grasses	16%	20%	35%
Forbs	Trace	3%	5%
Shrubs	84%	77%	65%

Perennial grasses may include : ORHY- must be at least 12% composition, DISP3, ELCI2, and SIHY. This objective should be accomplished by 2017.

Rationale: This pasture has been identified as yearlong pronghorn antelope range (BRPY-5). It is used as a winter pasture by cattle (Jan. 1 - March 30) and it has occasional wild horse use.

Management Actions for the Black Rock Pasture

- 1) Change season of use from January 10- April 10 to January 1- March 31.
- 2) Once the AML is reached, the target utilization level on uplands by wild horses will be 30% before December 31 (seed dissemination) on livestock rested years. If the utilization levels are not being met after the second year the number of horses will be adjusted.
- 3) a) Combined wild horse and livestock utilization objective on upland grass and grass-like species is 50% at the end of the livestock use period (either a scheduled pasture or the end of the grazing season). If the 50% utilization level is not being met with livestock moving into the next pasture earlier than scheduled or removed from the allotment sooner than expected, the grazing preference will be evaluated to determine if a downward adjustment is required. This evaluation will include wild horse, wildlife, and climatic factors.

b) By February 28, or the start of the new grazing season, utilization on upland grass and grass-likes shall not exceed 60%. For upland browse and meadows utilization shall not exceed 50%. If we are not meeting this objective than wild horse numbers will be adjusted (utilization on grass species from 50 to 60% by wild horses will occur during the dormant season and should not have a detrimental impact to plant health and vigor). Combined utilization of upland perennial grasses wild horses and livestock shall not exceed 60% and utilization upland browse and meadows by February 28 or start of the new growing season.

4) Set up key areas before the end of the grazing year is completed.
(1993)

5) Develop water on the Black Rock range for wildlife (bighorn sheep), wild horses, and livestock.

6) Install drift fences between Soldier Meadows and Paiute Meadows to prevent livestock drift.

7) Shift livestock distribution, so that use is being made in the Hot Springs (southern) portion of the allotment as well as the Mud Meadow Creek area.

Monitoring Procedures for the Black Rock Pasture

For Resource Objectives

- 2001 Read Double Sampling Transect and an Ocular at the key areas to determine if short term vegetative objectives are being met.
- 2017 Reread Double Sampling Transect and an Ocular at the key areas to determine if long term objectives are being met.

For Management Actions

Complete Use Pattern Maps prior to livestock turn out (January 1) and after livestock are removed (March 31).

Inspect the Range Improvement Projects according to the RIPS schedule.

Hot Springs Pasture

Resource Objectives

- 1) Resource objectives will be established in this pasture in the Desert Dace Management Plan.

Management Actions for the Hot Springs Pasture

- 1) Establish the Hot Springs pasture as a fall pasture to be used November 16- December 31.
 - 2) Set up key areas after the resource objectives are written for the Desert Dace Management Plan is written.
- F. Conduct a re-evaluation in 2001 analyzing Resource Objectives developed from the ecological site inventory to determine if desired plant community objectives are being met. If resource problems are identified a re-evaluation will be conducted sooner. The re-evaluation date is based on completing two grazing cycles. It will take two cycles to measure the effectiveness of management actions, the grazing system, and estimated AMOs for wild horses to conclude if the short term objectives are met or not met.
- G. Conduct a re-evaluation in 2017 to determine if long term desired plant community objectives have been achieved.
- H. Annual monitoring will be reviewed and a narrative written documenting the success of the management actions and the grazing system toward meeting the AMP objectives. This is an informal process. This narrative will analysis climate, actual use, utilization, upland/riparian trend, and any other pertinent data. If the available information documents management actions are not achieving or meeting resource needs, BLM, through consultation; coordination; and cooperation with all affected parties, will devise a strategy to deal with the shortcomings.

The type and frequency of monitoring will be considered when the narrative is written. This will be the time to insure the studies are appropriate for the objective, if time frames between readings should be expanded, new studies added, or if a study should be dropped.

I. Allotment Objectives From the 1988 Soldier Meadows Allotment Evaluation

A. Short Term

1. Utilization of Willow (Salix spp.) and Aspen (Populus tremuloides) in stream bank riparian areas shall not exceed 30% on the following streams. (WLA-1.3)

Mahogany Creek (outside enclosure)
 Mahogany Creek (inside enclosure-10%)
 Summer Camp Creek
 Snow Creek
 Donnelly Creek
 Slumgullion Creek
 Soldiers Creek

2. Utilization of Nevada bluegrass (Poa nevadensis) and Cinquefoil (Potentilla spp.) on 1,383 acres of wetland riparian habitat shall not exceed 50%. (WL-1.10)
3. Utilization shall not exceed 50% for mountain mahogany (Cercocarpus ledifolius) and 40% for aspen (Populus tremuloides) in upland sites. (WL-1.9)

B. Long Term

1. Improve or maintain riparian habitat along the following streams as follows: (WLA-1.3 & WL-1.9)

<u>Stream Name</u>	<u>Acres</u>	<u>From - To</u>
*Mahogany Creek	100	At - Excellent
*Summer Camp Creek	30	At - Excellent
*Snow Creek	30	At - Good
Donnelly Creek	109	Fair - Good
Soldiers Creek	100	Fair - Good
Slumgullion Creek	100	Poor - Good

* These streams have populations of the federally listed threatened Lahontan Cutthroat Trout (LCT).

2. Improve or maintain the following streams from the percent of optimum indicated to 60% or better. (WLA-1.3)

<u>Stream Name</u>	<u>Present % of Optimum</u>	<u>Miles</u>
Mahogany Creek	67%	6
Summer Camp Creek	62%	2
Snow Creek	56%	3
Donnelly Creek	53%	8
Soldiers Creek	58%	8
Slumgullion Creek	46%	8

3. Maintain habitat for the federally listed threatened Desert Dace at excellent within the 307 acre ACEC. (WL-1.5a)
4. Improve to and maintain in good or higher condition, 1,383 acres of wetland riparian habitat. (WL-1.10)
5. Manage, maintain and improve public rangeland habitat condition to provide forage on a sustained yield basis, with an initial forage demand for big game of 786 AUMs for mule deer, 429 AUMs for pronghorn, and 264 AUMs for bighorn sheep by:
 - a) Improving the following mule deer habitat from good to excellent condition: Bear Buttes DS-1 (4,174 acres); Mahogany DS-2 (24,047 acres); Soldier DW-7 (18,666 acres) and Warm Springs DW-8 (43,633 acres).
 - b) Improving Big Mountain DS-2 (7,077 acres) and Soldier DW-6 (6,995 acres) mule deer habitat from fair to good condition.
 - c) Improving Black Mountain DS-3 (19,462 acres) and Paiute DS-2 (2,255 acres) mule deer habitat from poor to fair condition.
 - d) Improving Black Butte AS-2 (19,148 acres) and Warm Springs AW-2 (61,452 acres) pronghorn habitat from fair to good condition.
 - e) Improving High Rock Lake AW-1 (7,665 acres) pronghorn habitat from poor to fair condition.
 - f) Improving Calico Mts. BY-6 (28,515 acres) California bighorn sheep habitat from 70% to 90% of optimum.
 - g) Maintain 49,254 acres of Black Rock Range BY-4 potential California bighorn sheep habitat in good condition to support reestablishment.

6. Protect known sage grouse strutting and nesting habitat and improve brooding habitat by: (WL-1.11)
- a) Following NDOW's (Nevada Department of Wildlife) guidelines for Vegetal Control Programs in Sage Grouse Habitat in Nevada.
 - b) Maintain sagebrush canopy at 30% in sage grouse nesting areas where sagebrush does not exceed three (3) feet in height.

7. Maintain or improve 658 acres of aspen woodland and 1,825 acres of mountain mahogany thicket to late seral status or equivalent. (WL-1.9)

8. Manage, maintain and improve rangeland conditions to provide forage on a sustained yield basis with an initial stocking level of 16,070 AUMs.

Improve range/ecological 1/ condition from:

Poor to fair on 49,161 acres.
 Fair to good on 131,096 acres.
 Good to excellent on 98,321 acres.

1/ The range/ecological conditions in this document are forage condition that will be replaced with ecological status condition as information becomes available. The objective will be redefined/quantified to obtain a particular ecological status when site potential and identified uses are combined to meet vegetative objectives.

9. Manage, maintain and improve public rangeland conditions to provide an initial level of 10,140 AUMs of forage on a sustained yield basis for 2/ 835 wild horses and 10 burros in the following Herd Management Areas:

	<u>AML</u>	<u>AUMs</u>
Warm Springs Canyon	294/10	3528/120
Black Rock Range-West	424/0	5088/0
Calico Mountains	117/0	1404/0

2/ AML refer to adult horses and burros (i.e., two years or older).

10. Maintain and improve the free-roaming behavior of wild horses and burros by protecting and enhancing their home ranges.

11. Maintain/improve wild horse/burro habitat by assuring free access to water.
12. Improve or maintain Mahogany Creek to Class A water standards.
13. Improve or maintain the water quality of the following streams to the State criteria set for livestock drinking water, cold water aquatic life, water contact recreation (wading), and wildlife propagation:

Summer Camp Creek
 Snow Creek
 Donnelly Creek
 Slumgullion Creek
 Soldiers Creek

14. Maintain water quality standards for Desert Dace habitat in the spring where they occur to the following:

temperature - 32-38°C/90-100°F
 nitrates - 90 mg/L
 turbidity - 50 NTU
 pH - 6.5-9.0
 D.O. - 5.0 mg/L

II. Allotment Objectives from the Fox Mountain HMP

2. Specific Objectives

NOTE: Those objectives constrained by habitat projects are target dated. Planned action dates and projects are dependent upon workload, workforce and funding levels.

a. Fisheries

- 1) Improve fisheries habitat as follows:

<u>Stream/Components</u>	<u>Objectives</u>	<u>When</u>
b) Donnelly Creek	Overall Rating from 53% to 60%+	1995
Sedimentation	From 63% to 10%	1994
Bank Cover	From 59% to 60%	1994
Bank Stability	From 55% to 60%	1994
Maximum Summer H ₂ O Temperature	Decrease to 70°F	1994
Average Pool Quality	To 60%	1994

- 3) Utilization on key plants in the streambank riparian zones should not exceed 30%. Key plants include willow (Salix spp.), and bluegrass (Poa spp.).

- 4) Maintain the potential use of Cottonwood, Wagon Tire and Donnelly Creeks for recovery of the Lahontan cutthroat trout.

b. Terrestrial

- 4) Improve Mule Deer habitat as follows:

<u>Use Area</u>	<u>From</u>	<u>To</u>	<u>When</u>
Donnelly Peak DS-5	0.72 (Good)	0.80 (Excellent)	1995

- 5) Improve Pronghorn habitat as follows:

<u>Use Area</u>	<u>From</u>	<u>To</u>	<u>When</u>
Donnelly Peak AS-1	0.61 (Fair)	0.76 (Good)	1996
Wagner Springs AW-1	0.54 (Fair)	0.70 (Good)	1998

- 6) (a) Establish Sage Grouse habitat improvement needs by 1991.
 (b) Protect sage grouse strutting grounds and nesting habitat and improve brooding habitat by 1996.

- 7) Improve Chukar habitat by 1998 as follows:

68,659 acres from low to medium density
 204,881 acres from medium to high density
 138,139 acres maintain at high density

- 8) Improve the condition of 2,126 acres of wetland riparian habitats to late seral by 1994 as follows 1/:

Dry Meadows

Establish an air dry weight vegetative composition of 30-40% perennial grasses, 30-40% forbs, and not to exceed 5% shrubs. Key preferred species shall be Nevada Bluegrass (dominate), carex, yarrow, dandelion, clover, and wild rose.

Wet Meadows

Establish an air dry weight vegetative composition of 30-40% native perennial grasses, 30-40% forbs, and not to exceed 5% shrubs. Key preferred species shall be tufted hairgrass (dominate), meadow barley, yarrow, dandelion, aster, clover, wild rose, and willow.

Utilization of key plant species in wetland riparian habitats shall not exceed 50% unless a meadow is to be managed for the specific benefit of sage grouse within the established grazing plan.

1/ Objectives are established in accordance with the USDA
 - Soil Conservation Service Technical Guide Section II E for the
 Major Land Resource Area 23 - Malhuer High Plateau dated 3/88.

3. Objective Summary

All specific objectives are summarized on Form 6780-2 Habitat Management Plan Progress Report (pages 15 through 32).

D. PLANNED ACTIONS

NOTE: Dates provided in this HMP are target dates. Planned action completion is constrained by workload, workforce and funding levels.

1. Description of Actions

a. Fisheries

- 1) Lower sedimentation loading, and maximum summer water temperature while increasing bank cover, bank stability and average pool quality in Cottonwood, Donnelly, Red Mountain, and a portion of Wagon Tire Creeks by fencing those portions of the streams on public lands as needed (Overlay 10, Appendix One). Cottonwood and Wagon Tire Creeks are fenced as one unit.
 - (c) Donnelly Creek: Project layout and design completed in 1989. Engineering, design, and clearances completed in 1990. Construction completed in 1992.
 - (g) Cottonwood, Donnelly and Wagon Tire Creeks are available to be used as Lahontan cutthroat trout streams as long as no treatment of existing cold water game fish population is necessary. If treatment is deemed necessary an amendment to this HMP will be necessary.

b. Terrestrial

- 3) Mule Deer habitat improvement will be accomplished through a few broad steps.
- 4) Improvement of Pronghorn habitat will be accomplished in several broad steps.

E. EVALUATION AND MONITORING

Methodology used by NDOW to gather wildlife seasonal distribution and population data are at the discretion of that agency. The Buffalo Hills Monitoring Plan, Nevada Rangeland Monitoring Handbook, Winnemucca District Coordinated Monitoring Plan and BLM Manual Supplement NSO 6630 - Big Game Studies provide the minimum standards which will be met in monitoring terrestrial wildlife habitat condition, use and trend. BLM Manual Supplement NSO 6671 - Stream Surveys has been used and will continue to be used to monitor fisheries habitat. Initial riparian

habitat studies were established during 1987 using Platts et al, 1987. Permanent studies will be established by 1989. Copies of documents referenced above are available at the Winnemucca District Office. Interdisciplinary studies have been established in the HMP area. Use pattern mapping and evaluation is a cooperative effort between range, wild horses, and wildlife specialists.

III. Allotment Objectives from the Desert Dace HMP

3. Desert Dace HMP Management Objectives

Soldier Meadow is located in the Sonoma-Gerlach Resource Area. Wildlife MFP III decisions applicable to Soldier Meadow are listed below.

- 1) Retain in public ownership all public lands containing valuable wildlife habitat, as determined by appropriate Bureau personnel at the time of disposal proposals, unless it is determined that such lands, because of its location or other characteristics are difficult and uneconomical to manage as part of the public lands or there is a higher and better use.
- 2) In BLM initiated actions apply no herbicides or pesticides directly over the Sonoma-Gerlach Resource Areas's streams, lakes or reservoirs unless adverse impacts can be adequately mitigated.
- 3) That fire lines not be constructed by heavy equipment on riparian stream zones and that fire retardant not be applied to water.
- 4) Designate a 307.22 acre parcel surrounding the warm spring located in T. 40 N., R. 24 E., Section 23 which contains the Soldier Meadow desert dace as an area of critical environmental concern.
- 5) The Sonoma-Gerlach Resource Area will be open to geothermal and oil and gas leasing with the following restrictions:

Special stipulations for no surface occupancy will be applied to the visible remnants of the Applegate-Lassen Trail from Rye Patch Reservoir to the Western Pacific Railroad track near Trego. In this area the Trail is defined as the actual trail itself.

Sage grouse strutting grounds

S-1 cultural and historical sites "

The George Lund Petrified Forest

The Soldier Meadow desert dace Area of Critical Environmental Concern (ACEC)

Habitat Management Plan Objectives

The desert dace is currently listed by the State of Nevada as a

"protected" species, a classification that gives the species full state protection. The Bureau of Land Management and the Nevada Department of Wildlife cooperatively consider the species to be a sensitive species, requiring special management attention. In addition, the U.S. Fish and Wildlife Service is currently reconsidering the species for listing as threatened.

The Bureau's policy is to manage habitat for State listed and sensitive species much as it would federally listed species. Bureau Manual 6840.06 states:

"It is Bureau policy to conserve federally and State-listed endangered or threatened animals and to utilize its authorities in furtherance of the purposes of the ESA (Endangered Species Act) and similar State laws. State laws protecting animals faced with local extirpation or premature extinction apply to BLM programs and actions to the extent that they are consistent with the ' Federal Land Policy and Management Act (P.L. 94-579) and other Federal law. It is also Bureau policy to ensure that the crucial habitats of sensitive animals will be managed and/or conserved to minimize the need for listing those animals by either Federal or State Governments in the future."

Thus, while the desert dace is not currently listed as a federal threatened or endangered species, it is consistent with Bureau policy to develop and implement this HMP, in order to protect and enhance the desert dace habitat.

The desert dace is the only priority species for this Habitat Management Plan. A priority species is defined as those fish, wildlife, and plant species or habitats that have been identified in the MFP, RMP, (Resource Management Plan) or through special studies as having special significance for management (reference BLM Manual 6780.05E).

The WMA contains habitat for other species of animals. The discussion of these animals, except endemic mollusks, is reserved for future revisions of this HMP.

The specific objectives of this HMP are as follows:

- 1) Determine the biological needs and current population status of the desert dace through a baseline study of its present habitat and population level.
- 2) Sign a cooperative agreement with NDOW to establish populations of desert dace in as many as possible of the five warm springs on public land in the habitat area that do not now support such populations, but which have potential to do so.
- 3) Reduce to a minimum the possibility that man's activities will endanger

the desert dace and its habitat.

- 4) Develop a list of biologically acceptable alternate habitats for the desert dace for use as transplant sites should the species or its natural habitat become endangered through man's activities.
- 5) Determine the taxonomic status and distribution of the endemic mollusks on public land in the WHA.

4. Planned Actions

4.1 Actions Planned Under HMP Objective 1

Determining the biological needs and current population status of the desert dace is a function of the Nevada Department of Wildlife. Practically all of the dace habitat and dace population is located on private land where BLM has no management authority.

4.2 Actions Planned Under HMP Objective 2

- 4.2.1 Nevada Department of Wildlife will transfer desert dace from existing populations to springs on public land in the habitat area found to be suitable for them (accomplished in cooperation with BLM under cooperative agreement). In order to assure gene pool diversity in public land dace populations, each of the transplant populations will originate from a different source spring; no one spring will provide seed stock for more than one transplant.

Some of the potential habitats may need to be enlarged or have emergent vegetation removed before they are suitable for introduction of dace. Altering potential habitat should be done on very limited basis. The effects of the alteration on the habitat should be monitored to determine if it would be desirable to alter other potential habitats.

A bioassay will be performed for each spring prior to introduction of a population of dace.

- 4.2.2 In cooperation with NDOW, monitor the introduced desert dace populations for viability and their habitats for continued suitability.

- 4.2.3 Aquatic surveys will be made of each potential transplant site before introductions, to insure protection of any endemic organisms that may be incompatible with the dace.

Since little is known about the specific factors in the desert dace's habitat requirements, few specifics can be stated about those requirements. However, from information obtained from chemical analyses of the springs, and from observation of the springs by BLM personnel it appears that all but one of the seven warm springs on public land in the habitat area could support dace populations. The one clear exception is Number 7, which has 110°F temperature, and runs only a short distance before entering private land. One other spring, Number 1, may have an excessive growth of tules or cattails, which could prevent a transplant

from succeeding. One spring, Number 4, already supports a dace population as a result of a 1975 transplant. Thus, at least four, possibly five, new populations could be established.

On the ground checks of all potential transplant sites will be made by Bureau of Land Management and Nevada Department of Wildlife personnel before transplants occur. There will be consensus of agreement between the agencies that each transplant has at least a 50% chance of succeeding, based on habitat quality, and the bioassay, before each transplant occurs.

Until such time as transplanted populations became firmly established, in the judgement of fisheries personnel of both BLM and NDOW, at least semi-annual joint inspections of the area will be made. The proprietor of Soldier Meadow Ranch will be invited to participate in these inspections. The inspections will take place in early spring and late fall, unless future conditions warrant a change in the timing. Once populations are firmly established, joint annual inspections of the habitat area will be made. Personnel of both agencies will make additional inspections of the transplant springs any time they are in the area and time permits. Written reports of population and habitat conditions will be made following all inspections, and copies will be sent to all concerned people and agencies.

Should any inspection of the habitat area reveal problems with transplanted desert dace populations or their habitat, suitable measures needed to correct the problems will be determined jointly by concerned entities. Such measures will be carried out as soon as possible by the appropriate agency.

4.3 Actions Planned Under HMP Objective 3

4.3.1 The public land surrounding Spring 4 has been designated an Area of Critical Environmental Concern (ACEC). The area that has been designated an ACEC is as follows (see appendix 2 - Map 5):

T 40 N., R. 24 E., Sec. 23
Lot 2 - 44.38 acres
Lot 3 - 43.86 acres
Lot 5 - 43.61 acres
Lot 6 - 44.39 acres
Lot 8 - 43.37 acres
Lot 9 - 43.66 acres
Lot 2 - 43.95 acres
307.22 acres total

As habitat for a sensitive species, federal candidate threatened species and a species on the state protected list, the area qualifies for ACEC designation.

Designation as an ACEC insures that proper management attention is

focused on the area, and will thus help reduce the possibility of man's activities endangering the dace or its habitat.

- 4.3.2 Designate areas surrounding potential transplant sites within the WHA as ACECs upon completion and success of transplants.
- 4.3.3 Install a Stevens A-71 recorder and V-notch weir on spring No. 4 to establish baseline flow data. Recorders and weirs should be placed on other springs which are potential dace habitat, at such time dace have been established in them.
- 4.3.4 Acquire through exchange or purchase, title to any private land within the habitat area which becomes available for exchange or purchase.
- 4.3.5 The land designated as an ACEC should be withdrawn from mineral entry if the desert dace is federally listed as threatened or endangered.
- 4.3.6 To prevent livestock concentrations near desert dace habitat, a stipulation directing that livestock salt be placed no closer than one quarter mile of any warm spring or warm water carrying ditch or stream in the habitat area will be included in the grazing permit for the Soldier Meadow Allotment (see section 7.1.1).

4.4 Actions Planned Under HMP Objective 4

"Under Objective 4, the following actions will be taken.

All hot and warm springs and thermal artesian wells within the Winnemucca District will be studied for their suitability for use as alternate desert dace habitats. The characteristics of each spring or well that will be studied are:

1. Physical Characteristics

- a. Location (public or private land, relationship to private land);
- b. Water temperatures, amount of flow;
- c. Spatial areas suitable for fish habitat;
- d. Previous water rights, giving rights for uses incompatible with dace habitation.

2. Chemical Characteristics

Determine whether chemical characteristics of the water will allow desert dace and associated biota to live.

3. Biological Characteristics

- a. Determine whether or not an adequate food source for desert dace is present, or could be introduced;
 - b. Determine presence or absence of desert dace competitors and predators;

- c. Determine presence or absence of threatened or endangered species, and degree of potential conflicts between desert dace and any such species.

Any list of alternate habitat sites is likely to be quite short. Several of the above characteristics will eliminate many such sites. Land ownership alone will eliminate most springs and wells in the district. Water temperatures will eliminate some, as may the presence or absence of threatened or endangered species, or species potentially so listed. "

Should there be no suitable already existing alternate habitat, one could be "created" by drilling along the edge of Black Rock Desert. Several artesian thermal wells exist in this area on private land. A suitable alternate habitat could be created in this manner. This possible alternative is only suggested here as an emergency measure; it will not be pursued further unless necessary.

The research that must be conducted to determine which warm springs and/or wells in the Winnemucca District would be suitable alternate desert dace habitats is generally beyond the capabilities of the Bureau. It could best be accomplished through a contract with a university, which would have the needed expertise available in the form of faculty and graduate students.

4.5 Actions Planned Under HMP Objective 5

Contract a study to determine the distribution and taxonomic status of endemic snails in springs on public land in the WHA.

4.6 Information Sources to Support Actions

Currently no other state or federal management plans have been developed for the priority species of this HMP.

4.7 Water Right Considerations

Six springs within the WHA qualify as public water reserves. These include springs 1, 3, 4, 5. Two sources are located at spring 1 and 5 (see district water rights file Soldier Meadow, T. 40 N., R. 24 E.,--Hot springs A, B, C, D, E, F). The Bureau will not file with the state for water rights to springs that qualify as public water reserves. The Bureau will protest all filings made on public water reserves.

Executive Order 107 of April 17, 1926 states public water reserves are withdrawn from settlement, location, sale, or entry and reserved for public use. The Act of June 25, 1910 as amended, cited in the Executive Order provides that the land withdrawn "shall at all times be open to exploration, discovery, occupation, and purchase under the mining laws of the United States, so far as the same apply to metalliferous minerals."

Alterations to springs should be done in accordance with provisions of Nevada water law and with concurrence of the water right owner if a valid water right exists.

5. Evaluation and Monitoring

The only planned action which lends itself to monitoring is the transplanting of desert dace to the warm springs on public land. Steps needed to monitor these transplants have already been outlined in Section 4.1.2. Schedules and costs are given in Section 10.

This habitat management plan is subject to annual review and revision, as needed, either through Bureau motion or by request of any concerned entity. All revisions must be documented, dated, and signed by the District Manager.

This plan should be incorporated into a Coordinated Resource Management Plan (CRMP) if one is developed for the Soldier Meadow Allotment.

NOTE: At the time of this re-evaluation (1993) the Desert Dace is a federally listed threatened species.

There are five (5) stations that collect climatological data that are relatively close to the Soldier Meadows Ranch. Four (4) of the stations are well established National Oceanic and Atmospheric Administration (NOAA) sites and one is a BLM Remote Automated Weather System (RAWS) site.

a. NOAA

The following table describes the amount of growing season, annual, departure from normal, and percent of normal precipitation recorded at the Denio, Dufferrena, Gerlach, and Leonard Creek Ranch NOAA weather stations from 1988 through 1991. Annual precipitation is recorded from October to September and growing season precipitation is March through August. This is provisional data supplied by the SCS (Soil Conservation Service) Climatic Data Facility.

Precipitation Data

	<u>Precip - Inches</u>		<u>Departure from Normal</u>		<u>Percent of Normal</u>	
	<u>Grow Ssn</u>	<u>Annual</u>	<u>Grow Ssn</u>	<u>Annual</u>	<u>Grow Ssn</u>	<u>Annual</u>
<u>1988</u>						
Denio	3.14	6.56	-1.46	-2.66	68.3	71.1
Dufferrena	2.74	5.46	-1.03	-1.54	72.7	76.5
Gerlach	2.72	5.32	-0.80	-2.08	77.3	71.9
Leonard Crk	2.94	7.21	-0.68	-0.89	81.2	89.0
<u>1989</u>						
Denio	4.37	9.04	-0.23	-0.18	95.0	98.0
Dufferrena	2.91	5.60	-0.86	-1.54	77.2	78.4
Gerlach	3.80	8.09	0.28	0.69	108.0	109.9
Leonard Crk	3.89	9.43	0.27	1.33	107.5	116.4
<u>1990</u>						
Denio	4.38	6.60	-0.22	-2.62	95.2	71.6
Dufferrena	3.37	4.93	-0.40	-2.21	89.4	69.0
Gerlach	6.28	8.15	2.76	0.75	178.4	110.1
Leonard Crk	4.67	7.74	1.05	-0.36	129.0	95.6
<u>1991</u>						
Denio	6.37	9.58	1.77	0.36	138.5	103.9
Dufferrena	5.72	7.85	1.95	0.71	151.7	109.9
Gerlach	4.27	7.08	0.75	-0.32	121.3	95.7
Leonard Crk	5.06	7.90	1.44	-0.20	139.8	97.5

The following tables show the normal precipitation received at each station.

<u>Growing Season</u>	
<u>Station</u>	<u>Normal Precip.</u>
Denio	4.60"
Dufferrena	3.77"
Gerlach	3.52"
Leonard Crk	3.62"

<u>Annual</u>	
<u>Station</u>	<u>Normal Precip.</u>
Denio	9.22"
Dufferrena	7.14"
Gerlach	7.40"
Leonard Crk	8.10"

b. RAWS

The following table lists the amount of growing season, annual, departure from normal, and percent of normal precipitation recorded at the Dry Canyon Remote Automated Weather System (RAWS) from 1987 through 1990. Due to a change in RAWS archival procedures, 1991 precipitation data is not available at this time.

Dry Canyon Elevation - 5249'

<u>Year</u>	<u>Precipitation -Inches</u>		<u>Departure From Normal</u>		<u>Percent of Normal</u>	
	<u>Grow Ssn</u>	<u>Annual</u>	<u>Grow Ssn</u>	<u>Annual</u>	<u>Grow Ssn</u>	<u>Annual</u>
1987	6.00	7.90	2.32	1.82	163.0	129.9
1988	2.60	5.70	-1.08	-0.38	70.7	93.8
1989	3.10	6.10	-0.58	0.02	84.2	100.3
1990	3.00	4.60	-0.68	-1.48	81.5	75.7

Normal = 4 year average (1987 - 1990) = 3.68 in. growing season
 = 4 year average (1987 - 1990) = 6.08 in. annual

NOTE: The above tables based on best available data. The following lists the years used and the years of incomplete data for each station.

Denio Elevation - 4185'

Growing season based on 38 years (1952-1991); incomplete for 1964 & 1965.

Annual based on 37 years (1952 -1991); incomplete for 1964, 65 & 87.

Dufferrena Elevation - 4800'

Growing season based on 32 years (1960 -1991).

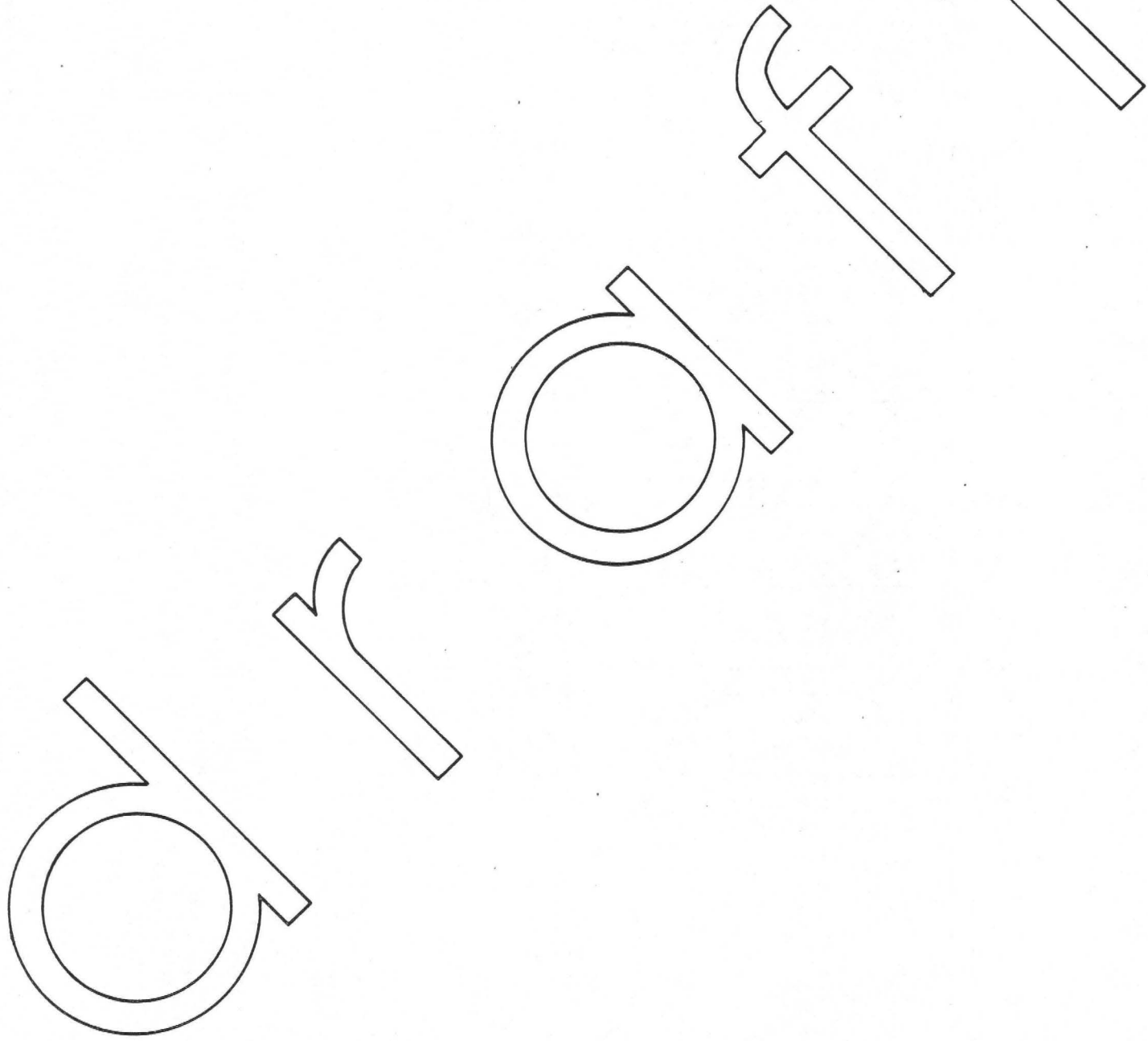
Annual based on 28 years (1960 -1991); incomplete for 1974, 82, 84 & 86.

Gerlach Elevation - 3950'

Data from stations at two different locations, but in the same general area. Growing season based on 25 years (1949 - 1991); incomplete for 1950, 58-62, & 73-85. Annual based on 21 years (1949 - 1991); incomplete for 1950, 51, 58-62, & 72-86.

Leonard Crk Elevation - 4220'

Growing season based on 36 years (1955 - 1991); incomplete for 1980.
Annual based on 32 years (1956 - 1991); incomplete for 1980 - 83.



APPENDIX 3

Actual Use Numbers

I. Livestock

ACTUAL USE BY PASTURE 1988 - 1991				
Pasture	Grazing Year	Number of Livestock	Period of Use	AUMs
	1988			
Black Rock		250	1/10-2/22	362
		860	2/23-2/28	170
Allotment Yearly Total				532
	1989			
Black Rock		860	3/01-3/31	876
		230	4/01-4/10	76
Soldier M.		1340	4/11-4/30	837
Warm Spr.		500	5/01-10/30	3008
Black Rock		1208	1/10-2/28	1986
Allotment Yearly Total				6783
	1990			
Black Rock		1208	3/01-3/31	1231
Calico		1247	4/01-5/20	2050
Summit LK		500	6/10-9/21	1710
		130	9/22-10/30	167
Warm Spr.*		280	9/22-10/30	359
Black Rock		1208	1/10-2/28	1986
Allotment Yearly Total				7618
	1991			
Black Rock		1208	3/01-4/10	1628
White Rock		1000	4/11-5/20	1315
Soldier M.		340	4/11-5/20	447
Warm Spr.		645	7/01-10/30	2587
Black Rock		1500	1/10-2/29	2515
Allotment Yearly Total				8492

II. Wildlife

	Deer		Antelope		Big Horn Sheep		TOTAL
	Population	AUMS	Population	AUMS	Populations	AUMS	AUMS
1988	1261	3026	314	754			3780
1989	1018	2443	185	444			2887
1990	795	1908	533	1279			3187
1991	719	1726	558	1339			3065
1992					11*	26	

* Eleven California bighorn sheep were released on the Black Rock Range in February 1992. Eight ewes and three rams were transplanted from the Eight Mile Creek area.

III. Wild Horse/ Burro

The following is a summary of the Wild Horse and Burro numbers and the AUM forage demand by Herd Management Area (HMA) within the allotment from 1988 through 1991.

<u>HMA</u>	<u>HORSES</u> NUMBERS/AUMS		<u>BURROS</u> NUMBERS/AUMS		<u>TOTAL</u> AUMS
1988					
BLACK ROCK WEST					
N. OF SLUMGULLION	112*	1344	0	0	1344
S. OF SLUMGULLION	214*	2568	0	0	2568
Total:	326*	3912	0	0	3912
WARM SPRINGS	339*	4068	7*	84	4152
CALICO MTNS. 1/	154	1724	0	0	1724
TOTAL	819	9704	7	84	9788

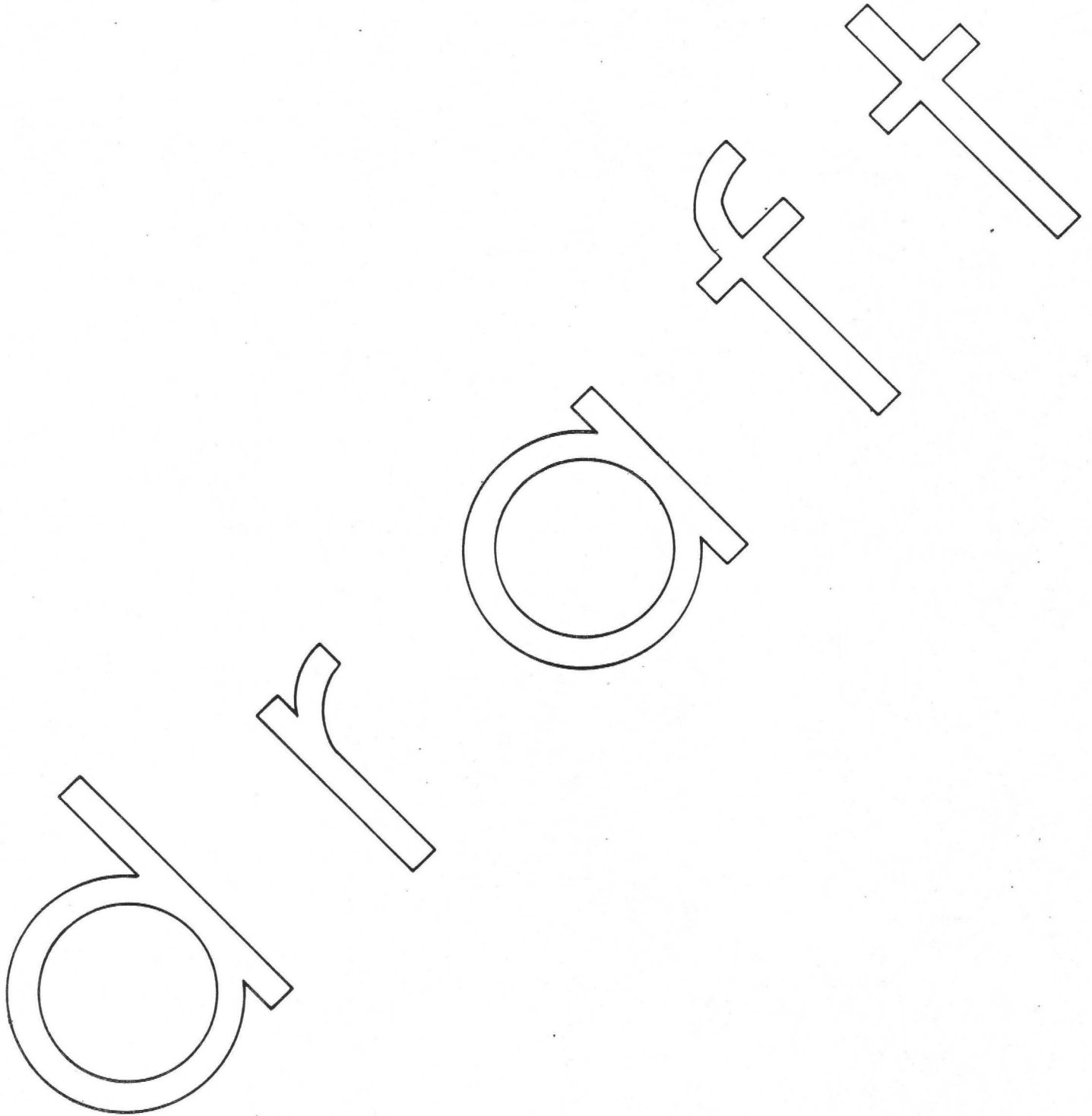
1/ AUM demand by wild horses has been adjusted to reflect the removal of the 62 horses from the Calico Mountains HMA in December of 1988.

1989					
BLACK ROCK WEST					
N. OF SLUMGULLION	341	4092	0	0	4092
S. OF SLUMGULLION	145	1740	0	0	1740
Total:	486	5832	0	0	5832
WARM SPRINGS	526	6312	20	240	6552
CALICO MTNS.	261	3132	0	0	3132
TOTAL	1273	15276	20	240	15516

1990					
BLACK ROCK WEST					
N. OF SLUMGULLION	238	2856	0	0	2856
S. OF SLUMGULLION	200	2400	0	0	2400
Total:	438	5256	0	0	5256
WARM SPRINGS	584*	7008	22*	264	7272
CALICO MTNS.	290*	3480	0	0	3480
TOTAL	1312	15744	22	264	16008

1991					
BLACK ROCK WEST					
N. OF SLUMGULLION	211	2532	0	0	2532
S. OF SLUMGULLION	209	2508	0	0	2508
Total:	420	5040	0	0	5040
WARM SPRINGS	648*	7776	24*	288	8064
CALICO MTNS.	322*	3864	0	0	3864
TOTAL	1390	16680	24	288	16968

* Not censuses that year, so an increase of 11% from the previous year was used.



APPENDIX 4 UTILIZATION

I. Utilization

A. Use Pattern Mapping

Use Pattern Mapping (UPM) data was collected for the last three years over the period 1989, 1990, and 1991. UPM mapping was done using six use classes: No apparent use (0%); slight use (1-20%); light use (21-40%); moderate use (41-60%); heavy use (61-80%); and severe use (81-100%).

Refer to UPM's in the study files.

Warm Springs pasture was supposed to be used on alternate years and rested while the Summit Lake pasture was used. Warm Springs pasture has been used yearly due to the 30% utilization limit on the creeks in the Summit Lake pasture and that a section 7 consultation must be done with the USFW before the Summit Lake pasture is used again.

	<u>Season of Use</u>				
	Black Rock	Calico	Soldier M.	Warm Spring	Summit Lake
1988	1/10-2/28				
1989	3/01-4/10	rested	4/11-4/30	5/01-10/30	rested
1990	1/10-3/31	4/01-5/20	rested	9/22-10/30	6/10-9/21
1991	1/10-4/10	rested	4/11-5/20	7/01-10/30	rested

1. Black Rock Winter Pasture

a. 1989

April- (post livestock) generally moderate use throughout the pasture. Areas of heavy use occurred from Mud Meadow Reservoir down along Mud Meadow Creek until the creek was about even with Box Canyon and from Wheeler Ranch up along Donnelly Creek for 2 miles, a portion of which is in the Calico pasture.

October- (pre-livestock) 46% no apparent use, 8% light use, 22% moderate use, and 24% heavy use. The areas of heavy use are the spring areas, especially Mustang Springs, and Mud Meadow Creek from Mud Meadow Reservoir to the Wheeler Ranch. There is heavy trailing by horses throughout the pasture. The grasses are very sparse and the

use is mainly on the shrubs- greasewood (Sarcobatus vermiculatus), ephedra (Ephedra), shadscale (Atriplex confertifolia), and spiny hopsage (Grayia spinosa).

b. 1990

April- (post livestock) Generally moderate use was found throughout the pasture with the heavy use areas found along Mud Meadow Creek and along Donnelly Creek for two miles up from Wheeler Ranch. Most of Donnelly Creek is in the Calico Pasture.

October- (pre-livestock) 1% no apparent use, 24% light use, 18% moderate use, and 57% heavy use. The moderate use area was in the canyon south of Clapper Canyon. The heavy use areas include Mustang Springs, Through Springs, Clapper Canyon and the flat east of Wheeler Reservoir. Horses had been rolling in the silt around Mustang Springs, which shows that the horses concentrated in the area.

In October 1990, the use on bitterbrush was found to be heavy. The plant vigor and leader growth was moderate. The use on the grasses was also found to be heavy.

c. 1991

May- (post livestock) 49% moderate and 51% heavy. The moderate area included the flats between Mud Meadows and Wheeler Reservoir. The heavy areas included Mud Meadow Creek and the flats south of Wheeler Ranch to Double Hot Springs. Cows used Mud Creek early in the winter and then were moved onto private land and fed due to extreme cold and lack of feed.

November- (pre-livestock) 60% slight, 23% light, 1% moderate and 16% heavy. The moderate area included part of Slumgullion. The heavy use areas included part of Slumgullion and all the spring areas on the Black Rock West south of Slumgullion. Three major horse trails exist from Copper Canyon to Mud Meadow Reservoir.

2. Calico Spring Pasture

a. 1989

March- (pre-livestock) 28% slight use, 70% light use, 1% moderate use, and 1% heavy use. Last year's growth was monitored for this mapping to determine use through the winter.

September- (wild horse use only) 17% no apparent use, 40% light use, 30% moderate use, and 13% heavy use. The heavy use areas include Box Canyon and Harry Spring. This year's growth was monitored to determine utilization.

b. 1990

March- (pre-livestock) 28% no apparent use, 3% light use, 49% moderate use, and 20% heavy use. The heavy use occurred in Box Canyon and along Donnelly Creek. Donnelly Creek had light use in the fall of 1989 and moderate to heavy use in the spring 1990. Although this was a pre-livestock mapping some cows had moved on to the Calico Pasture before the mapping was done.

May- (post livestock) heavy use found throughout the pasture with an area of moderate use South of Cottonwood Creek. Wild horse stud piles were dispersed from Cherry Creek to Box Canyon.

c. 1991

May- (pasture rested from livestock) 46% moderate use and 54% heavy use. The areas of moderate use include Donnelly Creek and the flats to the foothills of the Calicos from Wagner Springs north. The heavy use areas include Harry Springs and the flats south of Wagner Springs. Mechanical damage from horses pawing at the shrubs occurred in the Jackass Flat area. Moderate use on willows (Salix spp.) less than 6' tall occurred along Donnelly Creek. The heavy use area near Harry Spring appeared to be a deer wintering range. The deer scat was scattered throughout the area. Last year's growth was monitored to determine the

utilization.

3. Warm Spring Pasture

a. 1989

May- (pre-livestock) overall the use was light. Moderate use was found in two areas- the reservoir north of Bear Buttes and Chukar Gulch area. Cows had used the Chukar Gulch area prior to the mapping, but did not go onto the rest of the pasture until May 21. The Five Mile Flat area had moderate to heavy use on basin wildrye (Elymus cinereus).

November- (post livestock) Bear Buttes south had light use of which most would have been placed into the slight category had 6 use classes been used. Bear Buttes north to the Sheldon had light to moderate to heavy use. The dry meadows had moderate to heavy use. The Summit Lake Well and Five Mile Flat had heavy use as well as Sand Creek, Jacob Spring and Rock Spring areas. Trough Mountain Spring had moderate use.

b. 1990

October- (rested from livestock use except for in the Chukar Gulch area) 12% no apparent use; 58% light use; 28% moderate use; and 2% heavy use. The heavy use areas include Trough Mountain, the dry meadows in the northern part of the pasture, Five Mile Windmill, and Jacob Spring. There was a higher concentration of horses north of Clear Springs and west of Trough Mountain. Two heavy horse trails going down to Antelope Springs were present, which shows that horses trail through the area. The cows used the Summit Lake pasture until 9/21 when the utilization level in Summer Camp was approaching the 30% utilization objective on aspens (Populus tremuloides) and willows (Salix spp.), so the cows had to be moved off the Summit Lake Pasture. The cows were then moved onto the Indian Reservation and into the Chukar Gulch area of the Warm Springs pasture where the use was found to be light at the time of this mapping.

In October 1990, bitterbrush had areas of no use to severe use. Snowberry had light use. Mountain mahogany had severe use. The leader growth and plant health appeared to be moderate and the drought seemed to be stressing shrubs in most areas. The areas monitored indicated the same use on the grasses as the browse. The same browse species are being similarly used inside the Mahogany Creek Enclosure indicating the use on the browse species is from wildlife. In addition, areas near water sources normally had the heavier use on mountain browse available along with the grasses. Normally mountain browse species is a winter and early spring forage supply for mule deer and pronghorn, however with the high number of wild horses, the wildlife species are forced to modify their foraging habits. This adds additional stress to the wildlife species in addition to the impacts of the drought.

c. 1991

July- (pre-livestock) 87% slight; 9% light; 3% moderate; and 1% heavy. The Five Mile Flat area had light use. The heavy use was in the meadow areas in the northern part of the pasture and the immediate area surrounding the Five Mile Windmill.

November- (post livestock) 32% slight; 32% light; 25% moderate; and 11% heavy. The heavy use areas included Buck Springs, Rock Springs, Sand Creek, Jacob Springs, and Five Mile Flat areas.

4. Summit Lake Pasture

a. 1989

September- (rested from livestock) Generally no apparent use to slight use. The North end of the pasture had slight (0-20%) use. Idaho Canyon area and Summer Camp had slight use also. Coleman Creek however had heavy use.

October- (rested from livestock use) The bench north of Coleman Creek had heavy use.

b. 1990

April/May- (pre-livestock) 7% no apparent use, 72% light use, 8% moderate use, and 13% heavy use. The heavy use occurred along Slumgullion from the ranch up to White Rock Canyon and in the drainage north of Coleman Creek (Soldier Creek).

July- (During livestock use period) Riparian monitoring on Slumgullian and Summer Camp - willows (Salix spp.) and aspens (Populus tremuloides) both had 0-10% use in the riparian. The adjoining uplands had 20% use on bluebunch wheatgrass (Agropyron spicatum), bottlebrush squirreltail (Sitanion hystrix), basin wildrye (Elymus cinereus), and bluegrass (Poa spp.).

September- (During livestock use period) Riparian monitoring on Summer Camp -willows (Salix spp.) and aspens (Populus tremula tremuloides) had 0-20% use and the adjoining uplands had 30% use on bottlebrush squirreltail (Sitanion hystrix) and bluegrass (Poa spp.) and 30-40% use on bluebunch wheatgrass (Agropyron spicatum) and basin wildrye (Elymus cinereus)

October and November- (post livestock) The use was as follows : 52% light use; 40% moderate use; and 8% heavy use. The light use was in the northern portion of the pasture and moderate use was mainly in the southern portion of the allotment. The heavy use areas included the springs around Snow Creek and along the Indian Reservation fence. A significant amount of deer sign was noted between the Indian Reservation and the Sheldon Antelope Refuge. The use on the antelope bitterbrush (Purshia tridentata) was heavy.

In October 1990, the Quaking Aspen adjacent to Slumgullion Creek had light use. The bitterbrush had heavy use on the lower elevations. This is a winter mule deer area and most probably the mule deer had already left their summer range for the winter range because of the over utilization of the forage by the high number of wild horses. The use on the grasses also corresponds to use as noted on the browse. The overall

browse health and leader growth was noted to be good (6").

The aspens near Snow Creek had light use. The snowberry in the headwaters of Snow Creek had severe use, this also corresponds to the use as noted on the grasses. This is an area where licensed and unauthorized cattle congregate and wild horses are present yearlong. Mule deer also congregate in this area during October for thermal cover as well as for protective cover from the hunters, which are numerous in this area. The mule deer normally may not browse snowberry at this time of the year, but because of the use already on the grass species the deer are forced to use the snowberry. The browse leader growth and plant health was good.

The area outside the Mahogany Creek enclosure was found to have slight, light, moderate, and severe use on snowberry. Aspen had heavy and severe use. Ceanothus and mountain mahogany had severe use. Along Summer Camp Creek the aspen had light to heavy use with most being in the moderate use category and this area is where cattle congregated once the herder left. The areas which had the higher use on the browse also are areas which had higher use on the grasses.

The area inside the Mahogany Creek enclosure had no use, moderate, and severe use on aspen. The snowberry had slight use. The ceanothus and mountain mahogany had severe use. The leader growth and the plant health was good. Pole Creek area in 1990 had some unauthorized cattle congregate there. The Mahogany Creek enclosure is a refuge for mule deer and pronghorn from the impacts of cattle and high wild horse numbers.

c. 1991

July- (rested from livestock use) Riparian monitoring along Summer Camp Creek - willows (Salix spp.) and aspens (Populus tremula tremuloides) had no apparent use.

November- (rested from livestock use) 41%

no apparent use except for wildlife in special habitat (in the enclosure); 7% slight use; 14% light use; 20% moderate use; and 18% heavy use. The light use areas included the lower reaches of Coleman Creek to Soldier Creek and the south side of Coleman Creek. The moderate use areas included the bench Summit Lake Mountain Area and an area between the Indian Reservation and the Sheldon. The heavy use areas included the bench north of Coleman Creek, the spring area associated with Snow Creek, and the area adjacent to the Five Mile Flat area. The antelope bitterbrush (Purshia tridentata) was decadent between the Indian Reservation and The Sheldon. There was little leader growth this year. And although the leader growth was sparse, the antelope bitterbrush (Purshia tridentata) received heavy use by the deer. The taller antelope bitterbrush (Purshia tridentata) was showing signs of highlining. Many deer dropping sighted in the area. The snowberry (Symphoricarpos spp.) in this area had moderate use.

B. Utilization in Riparian Areas

1. 1990

Key Forage Plant method was used on the following streams :

- a. May- Coleman Creek transect 85% or severe use on willows (Salix spp.); Slumgullian Creek- 24% or light use on willows (Salix spp.); the lower reaches of Donnelly Creek- 88% or severe use on willows (Salix spp.); and the lower reaches of Snow Creek 77% or heavy use on willows and 73% or heavy use on Aspens (Populus tremula tremuloides).

2. 1991

- a. July- use at the upper and mid reaches of Coleman Creek had moderate use. The lower reaches had 33% or light use on willow (Salix spp.).

Severe use was noted at the springs and seeps at the headwaters of Snow

Creek.

b. October-

Use pattern mapping west side of Big Mountain had severe use at the numerous springs and meadows. Heavy use was found on the perennial grasses in the uplands.

c. November-

Coleman Creek- 73% or heavy use on willows (Salix spp.), 87% or severe use on sedges (Carex spp.), 89% or severe use on grasses.

Slungullian Creek- 49% use on willows (Salix spp.), 80% on sedges (Carex spp.), and 80% on basin wildrye (Elymus cinereus).

Mud Meadow Reservoir- 7% use on willows (Salix spp.).

Wheeler Reservoir had 3% use on willows (Salix spp.).

Donnelly Creek had 77% use on willows (Salix spp.), 74% use on sedges (Carex spp.), and 89% use on grasses.

Summer Camp Creek had 90% use on willows (Salix spp.), aspen (Populus tremula tremuloides), 70% use on sedges (Carex spp.) and 71% use on grasses.

Snow Creek- 90% use on willows (Salix spp.), 85% use on aspens (Populus tremula tremuloides)

APPENDIX 5 Wild Horse/ Burro Distribution

Data on the distribution of wild horses and burros has been collected by aircraft (helicopter and fixed-wing) since 1988.

The following is a summary of the Black Rock West, Calico, and Warm Springs Canyon HMA distribution flights:

Black Rock West

<u>Date</u>	<u>N. of Slum.</u>	<u>S. of Slum.</u>	<u>Aircraft</u>
July 1989	334	140	Bell 47G3B-S
February 1990	208	161	Bell 47G3B-S
January 1991	156	62	Cessna 210
July 1991	357	58	Maule M-5
December 1991	207	180	Hughes 500D
March 1992	235	96	Cessna 210

July 1989

N. of Slumgullion

The horses were heavily distributed from Red Mtn. to Wood Canyon.

S. of Slumgullion

The horses were scattered evenly throughout the area with a concentrated group west of Big Mtn. and on Mustang Spring.

Out of HMA Boundary

There were 12 horses north of the HMA boundary and 5 horses west of the HMA boundary.

February 1990

N. of Slumgullion

Horses observed were evenly distributed throughout the area with a larger concentration between Coleman Creek and Snow Creek.

S. of Slumgullion

Horses were evenly distributed throughout the southern half of the HMA.

Out of HMA Boundary

There were several groups scattered to the west of the HMA boundary.

January 1991

N. of Slumgullion

Distribution was fairly even with a small concentration in the Summit Lake Mtn. area.

S. of Slumgullion

The majority of horses were concentrated from Black Mtn. north to Slumgullion. One group of 15 horses were observed in Clapper Creek area.

July 1991

N. of Slumgullion

Horses were scattered throughout the area with the highest concentrations around Summit Lake Mtn. and Summer Camp Canyon. A smaller concentration was noted near Red Mtn.

S. of Slumgullion

All the horses were found at Clapper Creek and northward to Slumgullion.

December 1991

N. of Slumgullion

The major concentrations were around Summit Lake Mtn. and Wood Canyon, but animals were scattered throughout the area.

S. of Slumgullion

Distribution was from Big Mtn. northward to Slumgullion.

Out of HMA Boundary

Horses were scattered to the southern end of the Black Rock Range.

March 1992

N. of Slumgullion

Major concentration of horses was from Slumgullion to Summit Lake Mtn.

S. of Slumgullion

Horses were distributed evenly throughout the southern pasture with a concentration at Black Mtn.

Warm Springs Canyon

<u>Date</u>	<u># Horses</u>	<u># Burros</u>	<u>Aircraft</u>
February 1988	596	14	Jet Ranger B206
July 1989	526	20	Bell 47G3B-S
February 1990	302	0	Cessna 210
January 1990	187	16	Cessna 210
July 1991	549	23	Maule M-5
March 1992	557	23	Cessna 210

February 1988

The major concentration of horses found on this flight were on the southern end of the HMA, and in the northeast corner. The northwestern corner had no horses at this time. Burros were found on the southern end of the HMA.

July 1989

The horses were concentrated around Trough Mtn., north of Rock Springs, and north of Black Buttes area. Burros were observed south of Black Buttes to the southern HMA boundary.

February 1989

Concentrations seemed to be towards the southern end of the HMA area with the major areas being Chukar Gulch and Dry Canyon.

January 1991

Horses were fairly evenly distributed throughout the area. Burros were found toward the southern end of the HMA.

July 1991

The highest concentrations were observed in the northern part of the HMA area, from Bear Buttes, and Trough Mtn. to Five Mile Flat. The burros were located at the southern end of the HMA.

March 1992

The southern area of the HMA had the highest concentrations. The areas containing the most horses were; Chikar Gulch, Warm Springs Canyon, Dry Canyon, and northwest of Clear Springs. Burros were located at the southern end of the HMA.

Calico Mountains

<u>Date</u>	<u># Horses</u>	<u>Aircraft</u>
October 1988	154	Bell 47G3B-1
July 1989	261	Bell 47G3B-S
February 1990	140	Cessna 210
August 1990	155	Cessna 210
January 1991	81	Cessna 210
July 1991	125	Maule M-5
March 1992	268	Cessna 210

October 1988

Horses were found evenly distributed throughout the high elevations. There were very few throughout the foothills.

July 1989

Horses were evenly distributed throughout the northern part of the pasture. Harry Spring had a high concentration of horses and the only horses found south of there, were at Jackass Flat.

February 1990

On this flight, horses were evenly distributed throughout the area with very few horses between Box Canyon and Willow Creek.

August 1990

The major concentrations of horses were found between Willow Creek and Donnelly Creek.

January 1991

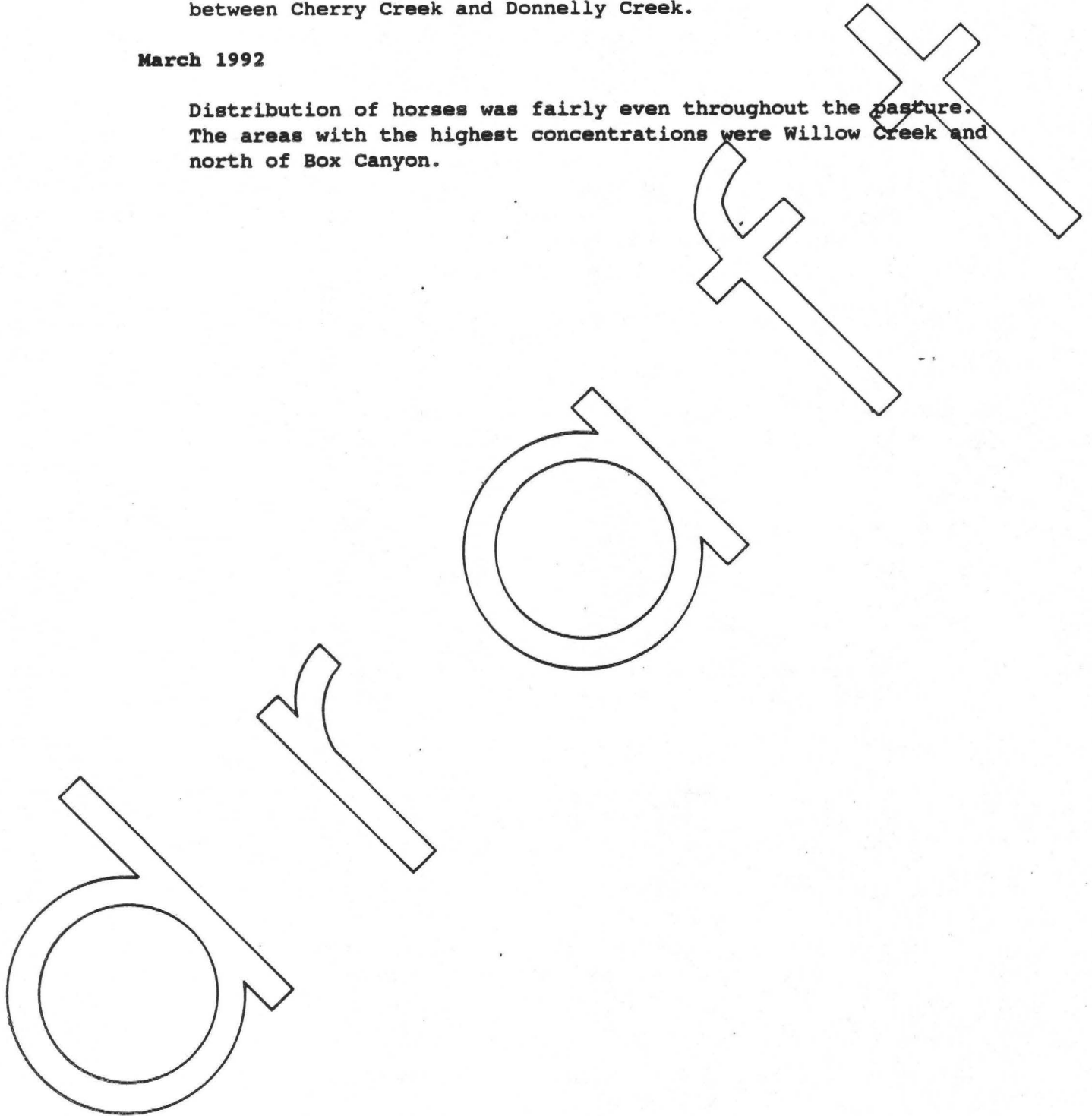
Horses were evenly distributed throughout the area with the major concentration between Cherry Creek.

July 1991

Major concentration of horses in the southern part of the pasture between Cherry Creek and Donnelly Creek.

March 1992

Distribution of horses was fairly even throughout the pasture. The areas with the highest concentrations were Willow Creek and north of Box Canyon.



APPENDIX 6 Stocking Level Calculations and procedures.

To determine stocking levels the Weighted Average Utilization and Desired Stocking Level calculations were used.

$$\text{Weighted Average Utilization} = \frac{\text{zone a} \quad \text{zone b} \quad \text{zone..}}{(\# \text{ acres} \times \text{midpoint of use class}) + (\# \text{ acres} \times \text{midpoint of use class}) + \dots}$$

Total # of Acres

The moderate and heavy use zones were used in calculating the Weighted Average Utilization.

$$\text{Desired Stocking Level} = \frac{\text{Actual Use}}{\text{Weighted Average Utilization}} = \frac{\text{Desired Actual Use}}{\text{Desired Average Utilization}}$$

The Desired Stocking Level calculation was used to determine the potential stocking level in order to set wild horse and livestock numbers by pasture in the Soldier Meadows Allotment. 20% utilization by July 15 by wild horses was used on the Calico, White Rock, Warm Springs, and Summit Lake pastures as the desired average utilization. 20% was used because it is the upper limit of the slight category and it was felt that 20% utilization would assimilate, as close as possible, a rest pasture when the pasture is rested from livestock. July 15 was chosen as the date for the 20% utilization because the key species selected should all have gone through seed dissemination by this date. On the Black Rock winter pasture 30% utilization by wild horses before livestock turnout (January 1) was used as the desired average utilization because this utilization level would leave enough feed or vegetation for the wild horses and livestock grazing the area through the winter. 60% utilization was used as the desired end of grazing season (February 28) utilization for all pastures. 50% utilization was used as the combined wild horse and livestock desired utilization level on the uplands by the end of the growing season (August 31).

APPENDIX 7 Key Species Monitored: Upland and Riparian

1. Upland Habitat

<u>Symbol</u>	<u>Scientific Name</u>	<u>Common Name</u>
AGSP	<u>Agropyron spicatum</u>	bluebunch wheatgrass
AMAL2	<u>Amelanchier alnifolia</u>	serviceberry
ARSP	<u>Artemisia spinescens</u>	bud sagebrush
ATCO	<u>Atriplex confertifolia</u>	shadscale
BASA3	<u>Balsamorhiza sagittata</u>	arrowleaf balsamroot
CELE3	<u>Cercocarpus leditolius</u>	curlleaf mountain mahogany
CRAC2	<u>Crepis acuminata</u>	tapertip hawksbeard
ELCI2	<u>Elymus cinereus</u>	basin wildrye
ELTR3	<u>Elymus triticoides</u>	creeping wildrye
EPHED	<u>Ephedra spp.</u>	ephedra
EULA5	<u>Eurotia lanata</u>	winter fat
FEID	<u>Festuca idahoensis</u>	Idaho Fescue
LUPIN	<u>Lupinus spp</u>	lupine
ORHY	<u>Oryzopsis hymenoides</u>	Indian ricegrass
POSE	<u>Poa secunda</u>	Sandberg's bluegrass
PUTR2	<u>Purshia tridentata</u>	antelope bitterbrush
SIHY	<u>Sitanian hystrix</u>	bottlebrush squirreltail
STCO3	<u>Stipa columbiana</u>	Columbia needlegrass
STTH2	<u>Stipa thurbiana</u>	Thurber's needlegrass
SYMPH	<u>Symphoricarpus spp</u>	snowberry

2. Riparian Habitat

<u>Symbol</u>	<u>Scientific Name</u>	<u>Common Name</u>
AGIN2	<u>Agropyron intermedium</u>	intermediate wheatgrass
CAREX	<u>Carex spp.</u>	sedge
DECS	<u>Deschampsia cespitosa</u>	tufted hairgrass
HOBR	<u>Hordeum brachyantherum</u>	meadow barley
JUNCUS	<u>Juncus spp.</u>	rush
JUBA	<u>Juncus balticus</u>	baltic rush
POA++	<u>Poa spp</u>	bluegrass
POA3	<u>Poa nevadensis</u>	Nevada bluegrass
POTR5	<u>Populus tremuloides</u>	quaking aspen
ROWO	<u>Rosa woodsii</u>	woods rose
SALIX	<u>Salix spp.</u>	willow
* POBA	<u>Potentilla basaltica</u>	basalt cinquefoil

* Listed as a rare and sensitive species

APPENDIX 8 List of acronyms

ACRONYM

AML
 AUM
 AS
 AW
 AY
 BLM
 BR
 BS
 BW
 BY
 DS
 DW
 DY
 ESI
 FONSI
 HMA
 LCT
 MFP
 NEPA
 NDOW
 NOAA

 RAWS
 RIPS
 RMP
 SCS
 SWA
 UPM
 WHA

DEFINITION

Appropriate Management Level
 Animal Unit Month
 Antelope Summer
 Antelope Winter
 Antelope Yearlong
 Bureau of Land Management
 Black Rock
 Bighorn sheep Summer
 Bighorn sheep Winter
 Bighorn sheep Yearlong
 Deer Summer
 Deer Winter
 Deer Yearlong
 Ecological Site Inventory
 Finding Of No Significant Finding
 Herd Management Area
 Lahontan Cutthroat Trout
 Management Framework Plan
 National Environmental Policy Act
 Nevada Department Of Wildlife
 National Oceanic and Atmospheric
 Administration
 Remote Automated Weather Station
 Rangeland Improvement Project System
 Resource Management Plan
 Soil Conservation Service
 Site Writeup Area
 Use Pattern Map
 Wildlife Habitat Area

ADDITIONAL DEFINITIONS

March through August
 the amount of vegetation necessary for
 the subsistence of one cow or its
 equivalent (i.e., five deer, five
 antelope, five bighorn sheep, five
 domestic sheep or one horse) for one
 month.

No use 0%, Slight Use 1 - 20%, Light
 Use 21 -40%, Moderate Use 41 - 60%,
 Heavy Use 61 - 80%, Severe Use 81 -
 100%.

Percent of Potential Natural Seral
 Community by Air Dry Weight

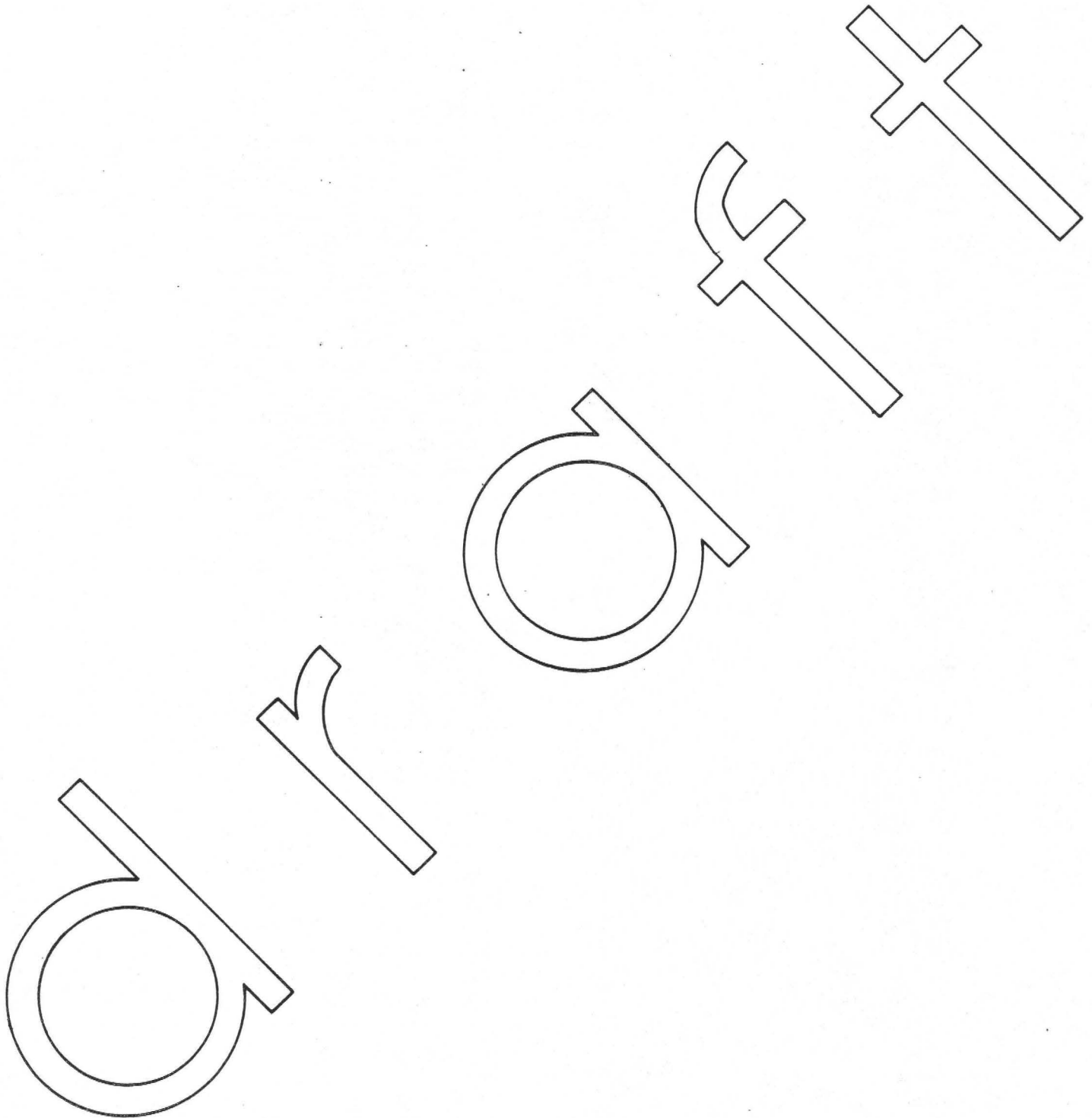
0 - 25 Early
 26 - 50 Mid
 51 - 75 Late

Growing Season -
 Animal Unit Month -

Use Classes -

Seral StagesClass

Habitat Suitability Rating - Poor, Fair, good, Excellent

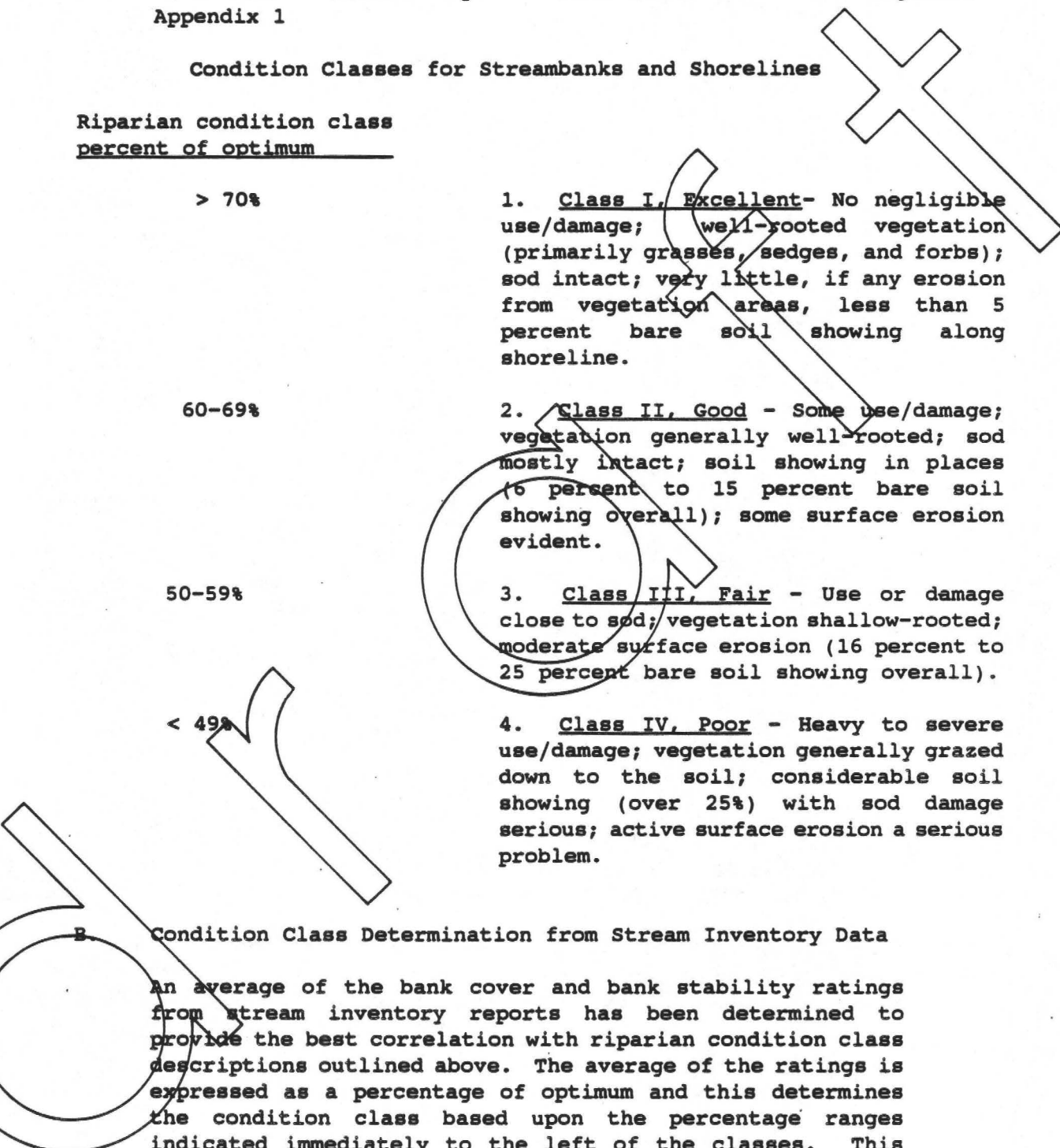


APPENDIX 9 BLM RIPARIAN CONDITION CLASS

A. From 6740 - Wetland-Riparian Area Protection and Management - Appendix 1

Condition Classes for Streambanks and Shorelines

Riparian condition class
percent of optimum

- 
- > 70% 1. Class I, Excellent - No negligible use/damage; well-rooted vegetation (primarily grasses, sedges, and forbs); sod intact; very little, if any erosion from vegetation areas, less than 5 percent bare soil showing along shoreline.
- 60-69% 2. Class II, Good - Some use/damage; vegetation generally well-rooted; sod mostly intact; soil showing in places (6 percent to 15 percent bare soil showing overall); some surface erosion evident.
- 50-59% 3. Class III, Fair - Use or damage close to sod; vegetation shallow-rooted; moderate surface erosion (16 percent to 25 percent bare soil showing overall).
- < 49% 4. Class IV, Poor - Heavy to severe use/damage; vegetation generally grazed down to the soil; considerable soil showing (over 25%) with sod damage serious; active surface erosion a serious problem.

B. Condition Class Determination from Stream Inventory Data

An average of the bank cover and bank stability ratings from stream inventory reports has been determined to provide the best correlation with riparian condition class descriptions outlined above. The average of the ratings is expressed as a percentage of optimum and this determines the condition class based upon the percentage ranges indicated immediately to the left of the classes. This method was derived through discussions between the NSO Fishery Biologist, Elko, and Winnemucca Fishery Biologists, and through comparisons with photographs and site specific knowledge.

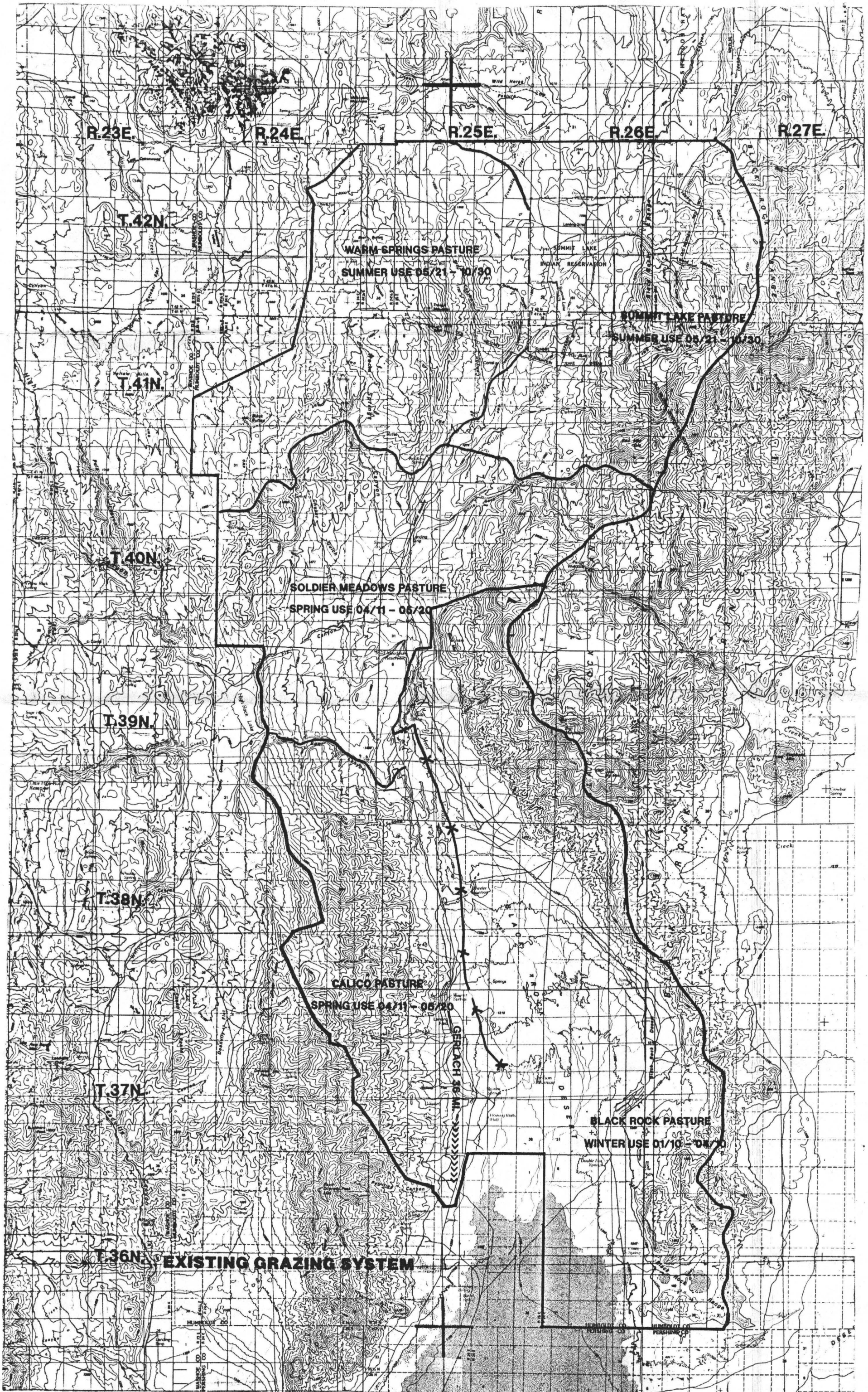
APPENDIX 10 Phenology.

Soldier Meadows Allotment

DEVELOPMENT STAGES

<u>Species</u>	<u>Start Growth</u>	<u>Flowering</u>	<u>Peak of Flowering</u>	<u>Seedripeness</u>	<u>Seed Disseminate</u>
Grasses:					
STTH2	3/15-3/30	5/15-5/30	6/01-6/15	6/15-6/30	6/30-7/15
ORHY	3/15-3/30	5/01-5/15	5/15-5/30	6/01-6/15	6/15-6/30
POA++	3/15-3/30	5/01-5/15	5/15-5/30	6/01-6/15	6/15-6/30
SIHY	3/15-3/30	5/01-5/15	5/15-5/30	6/01-6/15	6/15-6/30
FEID	3/15-3/30	5/15-5/30	6/01-6/15	6/15-6/30	7/01-6/15
AGSP	5/01-5/30	6/01-6/15	6/15-6/30	6/30-7/15	7/15-7/30
ELCI2	3/15-3/30	5/01-5/15	5/15-5/30	6/01-6/15	6/15-6/30
BRMA4	3/15-3/30	5/01-5/15	5/15-5/30	6/01-6/15	6/15-6/30
Forbs:					
BASA3	4/15-4/30	5/01-5/15	5/15-5/30	6/01-6/15	6/15-6/30
CRAC2	4/15-4/30	5/15-5/30	6/01-6/15	6/01-6/15	6/15-6/30
SPHAE	4/15-4/30	5/15-5/30	5/15-5/30	6/01-6/15	6/15-6/30
HAVE	4/15-4/30	5/15-5/30	6/01-6/15	6/15-7/01	6/15-7/01
TAOF	4/15-4/30	5/15-5/30	6/01-6/15	6/15-7/01	6/15-7/01
LUPIN	4/15-4/30	5/15-5/30	6/01-6/15	6/15-7/01	6/15-7/01
ERIOG	4/15-4/30	5/15-5/30	6/01-6/15	6/15-7/01	6/15-7/01
CASTI	4/15-4/30	5/15-5/30	6/01-6/15	6/15-7/01	6/15-7/01
CREPI	4/15-4/30	5/15-5/30	6/01-6/15	6/15-7/01	6/15-7/01
ACMIL	4/15-4/30	5/15-5/30	6/01-6/15	6/15-7/01	6/15-7/01
BAHO	4/15-4/30	5/15-5/30	6/01-6/15	6/15-7/01	6/15-7/01
Shrubs:					
PUTR2	3/15-3/30	5/15-5/30	6/01-6/15	7/01-7/15	7/15-7/30
SYMPH	3/15-3/30	5/15-5/30	6/01-6/15	7/01-7/15	7/15-7/30
POTR5	3/15-3/30	5/15-5/30	6/01-6/15	7/01-7/15	7/15-7/30

This phenology data was obtained from reference to the Sonoma-Gerlach Environmental Impact Statement. Phenology study data was collected in cooperation with Natural Resource Consultants during the period 1977-1979.



R.23E

R.24E

R.25E

R.26E

R.27E

T.42N

WARM SPRINGS PASTURE
SUMMER USE 05/21 - 10/30

SUMMIT LAKE PASTURE
SUMMER USE 05/21 - 10/30

T.41N

T.40N

SOLDIER MEADOWS PASTURE
SPRING USE 04/11 - 06/20

T.39N

T.38N

CALICO PASTURE
SPRING USE 04/11 - 05/20

T.37N

BLACK ROCK PASTURE
WINTER USE 01/10 - 04/10

T.36N EXISTING GRAZING SYSTEM

GERLACH 36 MI.

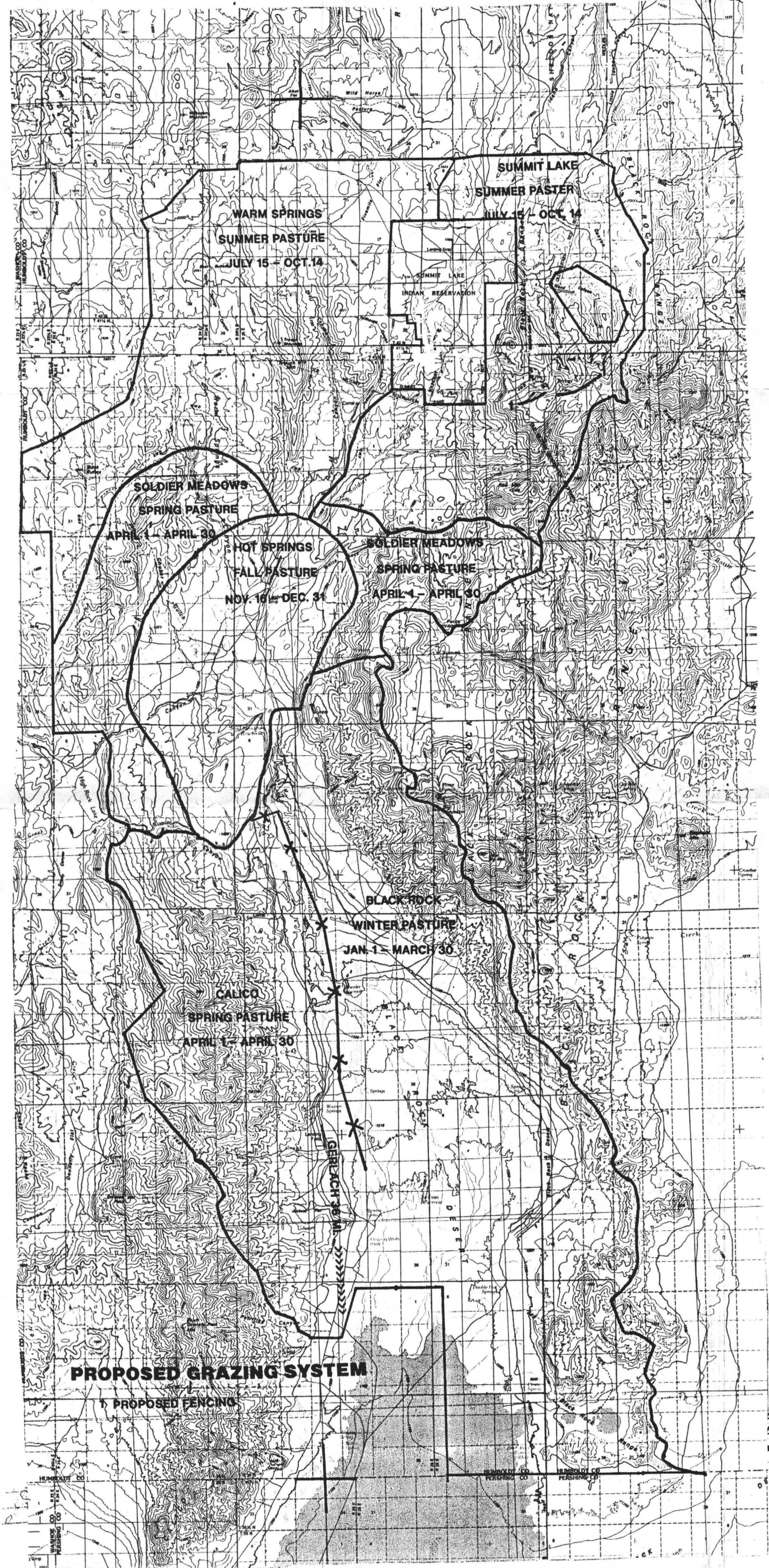
INDIAN RESERVATION

SUMMIT LAKE

CREEK

HUMBOLDT CO.

PERKINS CO.



W H O A

WILD HORSE ORGANIZED ASSISTANCE
P.O. BOX 555
RENO, NEVADA 89504
(702) 851-4817

BOARD OF TRUSTEES

DAVID R. BELDING
JACK C. McELWEE
GORDON W. HARRIS

In Memoriam

LOUISE C. HARRISON
VELMA B. JOHNSTON, "Wild Horse Annie"
GERTRUDE BRONN

February 12, 1993

Bud Cribley, Area Manager
Sonoma Gerlach Resource Area
Winnemucca District Office
705 East Fourth Street
Winnemucca, Nevada 89445

Re: Draft Soldier Meadows Allotment Evaluation

Dear Mr. Cribley,

Thank you for the opportunity to review and comment on the Draft Soldier Meadows Allotment re-evaluation. According to the AE, this re-evaluation addresses the 1988 livestock agreement and the 1988 Soldier Meadows Allotment Evaluation. Since the allotment does not have an AMP, HMP, HMAP, the land use planning is incomplete.

Decisions and management actions to protect natural resources of the Black Rock Range are dependant on a manager's decision based upon the data and analysis of this allotment re-evaluation.

The Soldier Meadows Allotment had an allotment evaluation and livestock agreement issued in 1989. This agreement between the permittee and the Bureau set allotment specific objectives, seasons of use and forage utilization limits to restore important natural resources of the Black Rock Range. These limitations were not adequately monitored by the Bureau and conditions not enforced. We cannot foresee the future funding necessary to remedy the problems with livestock found in the 1988 allotment evaluation or the 1993 allotment re-evaluation.

A wild horse management plan is needed for this herd. Failure to provide the necessary livestock, wildlife, and wild horse planning to implement the land use plan goals, objectives, and decisions cannot be rectified under current funding limitations, therefore, we seek resource protection and proper wild horse management in this document and manager decisions.

Page 7, 1988 Recommended Forage Demand

The 1988 Soldier Meadows Allotment Evaluation stated that the appropriate management levels for wild horses and burros was 835/10 or 10,140 AUM's. Again, we have stated that these numbers were

existing numbers in 1982 and were to be monitored and adjusted, if necessary, to levels meeting an ecological balance. Resource data of the draft Sonoma-Gerlach Resource Grazing Environmental Impact Statement did not suggest that existing numbers of livestock, wild horses/burros, or wildlife were meeting multiple use objectives or maintaining rangelands in "good" condition.

We must insist that any reference to "appropriate management levels" be directed to numbers of wild horses and burros that are set by the use of monitoring data and are not going to cause resource damage.

Furthermore, we must insist that until consistent, sane methodology is established to set the AML, and until those numbers are adjusted upward or downward based on that utilization; that livestock numbers will also be adjusted. It is insane to have wild horses starving and BLM still protecting actual use.

Carrying capacity for the Black Rock Herd was determined by use of different proportions and utilization rates in Soldier Meadows and Paiute Meadows Allotments. The Sonoma-Gerlach Resource Area determined carrying capacity by use of different assumptions and rationales than the Paradise-Denio Resource Area. From our point of view, both Resource Areas are wrong from two different approaches. This is an inherent problem in the Winnemucca District.

Livestock carrying capacity will not meet allotment short term objectives. Riparian habitat was not fully considered and improper seasons of use will damage critical wildlife habitat. It is evident, that regardless of specific livestock monitoring data collected on key management areas, the Bureau intends to reduce wild horses to benefit livestock on the Soldier Meadows Allotment.

Page 51, Objectives

Any effort to extend the schedule to meet Short Term or Long Term Objectives should require an amendment to the land use plan.

Desired Plant Community is a draft internal policy designed to mask the specific obligations of the land use plan. For example, brush is a key species for big game. To implement a new concept changing the composition of upland sites from brush to grasses is contrary to MFP III Decisions of the land use plan.

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Actual use by pasture must be accurate to allow carrying capacity estimates by pasture to be valid.

There are no maps depicting use pattern mapping by allotment by species.

Page 10, Utilization

These pasture summaries are confusing, when compared to Appendix 4. We prefer Appendix 4 to determine wild horse use of key species and key management areas.

Bud Cribley
February 12, 1993
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If this section is to exhibit use pattern mapping data, why are conclusions drawn?

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In Paiute you used 50%, in Soldier Meadows you used 60%. Is this inconsistent use meant to skew AUM's? Obviously it won't meet short term objectives.

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We do not agree that the data cannot show differences between livestock and wild horse use of this allotment.

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Summary

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In conclusion, we cannot support the poor resource decisions found in these recommendations. If you have any questions or would care to discuss this further, please feel free to contact us.

Sincerely,

DAWN Y. LAPPIN
Director



COMMISSION FOR THE
PRESERVATION OF WILD HORSES

Stewart Facility
Capitol Complex
Carson City, Nevada 89710
(702) 687-5589

COMMISSIONERS

Dan Keiserman,
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Reno, Nevada

Paula S. Askew
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Smith Valley, Nevada

Dawn Lappin
Reno, Nevada

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Sincerely,

CATHERINE BARCOMB
Executive Director

SOLDIER MEADOWS

2-11-93

Wayne Howle, Roy Leach, Dawn, CB, Rose

PAT Coffin Fish/Wildlife, John King, Wildlife, William Callen Fizek

Soldier meadows % livestock vs % horses

different from PAIUTE % livestock vs % horses

Section 7 consultation Fish + Wildlife w/ BLM

Western slope of Black Rock - SOLDIER MEADOWS

Eastern slope of Black Rock - PAIUTE

scheduled AEs for five years being extended to
6, 7, 8 years

switching desired plant communities,

★ get a: draft policy within BLM to change plant review

→ modifying objectives to meet what they are doing!

★ #44007 Rangeland Monitoring

pg 51 Analysis - interpretation

court order range improvements done/not done?

★ write + request under FOIA any livestock use agreements in Herd Areas

1st

para - LUP. object.

2nd

NDA in no AMP

he + BLM violated agreement w/ Pentter

he violated BLM didn't enforce

3) increase use when objectives aren't being met.



declaring an "emergency" for WHIS - what about
livestock + wildlife decisions/changes

LUP - what were objectives
did you meet those
why not, when

41% of deer population has died in past 5 years

Soldier Meadows

FMUD Comments

Page 3 You state that the Summit Lake Pasture will not be used by livestock until range projects are constructed and riparian condition classes improve to 70%. On page 22 of your final livestock decision you show use in the Summit Lake pasture during the second year. The decision is therefore in error you can not have it both ways. Please inform us of the correct decision.

Page 23 How can an accurate level of actual use be calculated if gates are open in pastures one week before move dates so cattle can drift into the pastures?

Page 27 You should consider fencing Action 1 dry meadows or other alternatives before removing horses.

4-20-93

Draft

SOLDIER MEADOWS/SONOMA-GERLACH RESOURCE AREA
 VS.
 PAIUTE MEADOWS/PARADISE DENIO RESOURCE AREA

Wild Horse and Livestock Decisions

Allotment evaluations and manager decisions for these allotments are pending, proposed and issued. The real decision of all these documents concern **carrying capacities** and how the available AUMs are allocated to livestock, wild horses and wildlife. These two allotments are found in the Black Rock Range of Humboldt County and are divided by two Resource Areas of the Winnemucca District.

Found within the written mazes of decision making support documents are the data, calculations and assumptions for **carrying capacities** for these allotments. Resource Areas are bound by common procedures and policies, however the outcomes are very different and both do not protect critical riparian systems or provide forage for wildlife. The following will illustrate the differences and errors made by the Winnemucca District:

Common Procedures

Bureau of Land Management - "Rangeland Monitoring Analysis, Interpretation and Evaluation, TR 4400-7" - Desired Stocking Level calculation:

$$\frac{\text{ACTUAL USE}}{\text{KEY MANAGEMENT AREA UTILIZATION}} = \frac{\text{DESIRED ACTUAL USE}}{\text{DESIRED KEY MANAGEMENT UTILIZATION}}$$

Actual Use - reported livestock use in AUMs by permittee. Wild horse use estimate by BLM.

Key Management Area - area that influences or limits management opportunities of the land surrounding it.

Utilization - the proportion of current year's forage production that is consumed or destroyed by animals.

Desired KMA Utilization - allowable use level or Short Term Objective for allotment.

Desired Actual Use - **carrying capacity** or maximum level of livestock that will not damage vegetation or related resources.

Key Management Area Utilization - Use pattern mapping data collected by the Bureau as defined in the "Nevada Rangeland Monitoring Handbook".

Common Objectives/Assumptions

Winnemucca District implement riparian objectives throughout all allotment evaluations that are consistent with its land use plan. The Short Term Objectives for Paiute Meadows and Soldier Meadows are the following:

Utilization of (key vegetation) in stream bank riparian areas shall not exceed 30% on the following streams -----.

Utilization of (key vegetation) on wetland riparian habitat shall not exceed 50%.

These Short Term Objectives or utilization rates are to be applied to carrying capacity calculations as defined as Desired KMA Utilization. In absolute use of the Bureau's formula to set numbers for wild horses and livestock to meet these Short Term Objective and protect riparian habitat, the Winnemucca District could have made reductions in no less than 50% of existing livestock and wild horses. The District choose to alter the formula, change objectives and make arbitrary allocation of forage at ungulate levels known to cause damage to riparian habitat.

Sonoma-Gerlach and Paradise-Resource Area made different assumptions, different objectives and different forage allocations affecting the same mountain range and resources.

SONOMA-GERLACH SOLIDER MEADOWS ALLOTMENT
(Draft Allotment Evaluation completed, proposed decision or final decision pending)

Carrying Capacity Formula

$$\frac{\text{Actual Use}}{\text{Weighted Average Utilization}} = \frac{\text{Desired Actual Use}}{\text{Desired Average Utilization}}$$

By changing the formula to include "weight averaging", the Resource Area violated the guidelines of TR4400-7. Averaging can only be applied where forage production and utilization in uniform. Monitoring data shows that riparian vegetation is heavily to severely used, while upland grasses are slight to moderate. Clearly a livestock distribution problem that discounts the Bureau's discretion to use averaging. Averaging heavy and severe utilization and weighting it by acreage mapped will mathematically alter the 90 percent utilization of stream bank riparian to 80 percent or 70 percent. This change in the calculation significantly influences the carrying capacity or desired actual use.

By changing the Short Term Objectives from 30% or 50% to 60%, the Resource Area will mathematically increase the carrying capacity or desired actual use significantly.

Once a carrying capacity or desired actual use is determine by misuse of Bureau procedure and poor assumptions, the forage is allocated to user. Based upon Sonoma-Gerlach Buffalo Hills Final Multiple Use Decision, we assume that active preference or current livestock use will be allocated to the permittee. Wildlife will receive no forage. The remainder will be allocated to wild horses.

PARADISE-DENIO PAIUTE MEADOW DECISION

(Final allotment evaluation completed, Final Full Force and Effect Multiple Use Decision)

Carrying capacity formulas are altered as found in Sonoma-Gerlach. Weight Averaging is applied to the allotment where monitoring data has shown livestock to have a distribution problem.

The desired average utilization is not 30% for stream bank riparian vegetation, but 50% for upland species. This change in utilization rate will make significant differences in the mathematics for determining the carrying capacity.

Allocation of forage to users is different from Sonoma-Gerlach misuse of procedures. Paradise-Denio refers to the ratio of the initial stocking rates for livestock and existing numbers of wild horses prior to its land use plan (1982). The Paiute Meadows Final Multiple Use Decision allocates forage as 92% livestock and 8% to wild horses. No forage for wildlife. These proportions of allocated forage have nothing to do with which ungulate caused damage to riparian habitat or what is an ecological balance.

The Decision goes further to modify the Short Term Objective to omit "shall not exceed.". This action cleary defines their intent that the action will not protect natural resources.

DAWN, CATHY - WILD HORSE CONW.

2/5/93

THIS RE IS VERY POOR. I HAD TO
MAKE A TABLE TO PRESENT THE
DATA. IN GENERAL HORSE #'S
WILL HAVE TO BE REDUCE $\frac{1}{2}$ FROM
THE PROPOSED ACTION TO ACHIEVE
SHORT TERM OBJECTIVES.

AGAIN, BLM WANTS HORSES
OFF NO ACTION ON LIVESTOCK

R
D

NDOW
COMMENTS

ary 5, 1993

Mr. Bud Cribley
Sonoma-Gerlach Resource Area
Bureau of Land Management
705 East Fourth Street
Winnemucca, Nevada 89445

RE: Draft Soldier Meadows Allotment Evaluation

Dear Bud:

The Nevada Department of Wildlife has received the Soldier Meadows Allotment Re-Evaluation. Land use planning for this allotment is incomplete. An allotment management plan (draft May 1990) has never been completed. It was our understanding that the Soldier Meadows Allotment Evaluation/Livestock Agreement in 1989 was to implement and achieve the land use plan goals, objectives and decisions. Short term objectives or allowable use levels for riparian and mountain browse species were stipulated in the Livestock Agreement. In addition to these stipulations, the Bureau and permittee agreed to an intensive management system to re-evaluate this allotment in 1991. Data presented in this re-evaluation indicate that objectives were not met and the document is over a year delinquent.

We offer the following comments and concerns:

SPECIFIC COMMENTS

Page 4, Management Actions from 1988 Evaluation Agreement

The Livestock Agreement by the permittee and Bureau set specific use areas, utilization limits and an intensive grazing system. Management actions were to be enforced with by Bureau monitoring studies and contingent upon meeting 50% utilization limits on key forage, annually. Summer pastures (Warm Springs Canyon and Summit Lake) were to receive rest from livestock on alternative years.

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Page 5, Actual Use

a. Livestock

Appendix 3 exhibits actual use of the allotment. The intensive management system of the Livestock Agreement was not implemented. Winter and summer use areas were not adhere too. Tress pass was a significant problem.

b. Wildlife

Page 6, Wild Horses and Burros

Wild horse and burro population estimates should be presented based upon inventory flights conducted in 1988 through 1992. These data should present the young to adult ratios to verify the assume 11% recruitment rates in the population estimates.

Page 10, Utilization

Use pattern mapping data should be presented per pasture and specific to ungulate use. Livestock exclosures exist on these pastures or use areas and must be included.

Conclusions are inappropriate for this section of the evaluation.

Page 14, Wild Horse and Burro Distribution

Herd delineations are not presented in the livestock pastures or use areas. Since the allotment evaluation and technical recommendations are based upon pastures, it would seem reasonable that each herd delineation should include livestock pastures for analysis.

Page 18, Stream Survey

We agree with the District that the federal General Aquatic Wildlife Survey data (not NDOW), has some differences with the Bureau of Land Management's stream survey. It would be appropriate to resolve this matter with the Bureau, Department and Service prior to a Section 7 Consultation.

Page 28, Evaluation of Objectives

Data summaries shows that trespass, wildlife, wild horses and livestock grazing are not meeting objectives. It should present specific data that shows that livestock were not grazed according to the Livestock Agreement and the 50% upper use limit on key forage was not enforced by the Bureau of Land Management. Use pattern mapping data collected on specific years can delineate the use by ungulate on all pastures except Soldier Meadows Pasture. Livestock exclosures on this allotment provide insight to ungulate use and site potential.

Page 41, Conclusions

The District chose to draw conclusions prior to the presentation of all data and analysis. Use pattern mapping data maps were not provided in Appendix 4. Data scattered throughout this document must be summarized in relationship to meeting allotment specific objectives. The conclusion that livestock use cannot be segregated from wild horse use is not accurate. Conclusions can be supported with data found in this evaluation.

Wildlife populations are limited to the carrying capacity of the range. The Department of Wildlife harvests mule deer and antelope at levels not impacting to the total population. Buck harvests are limited by quotas and harvest is subject to recruitment rates within the herd. Therefore, a harvested buck should assure the recruitment of several fawns into the population, as long as adequate forage, cover and water are maintained. The big game populations for the Black Rock and Calico Ranges have declined steadily during this evaluation period. Numbers have decreased due to the significant losses of fawns on the summer and winter ranges. These trends in wildlife are proportional to the downward trends in wildlife habitats in the Soldier Meadows Allotment. It should be noted both habitat and numbers of wildlife have decreased during the past six years of drought; while livestock and wild horse numbers have been maintained or increased. It would appear reasonable that proper adjustments in the competitor will enhance wildlife habitat and populations.

Conclusions of this evaluation are that objectives are not met due to trespass livestock, over stocking of livestock, high wild horse populations, poor distribution of livestock, incomplete range improvement projects and lack of monitoring/enforcement of the Livestock Agreement. Surviving wildlife are now being added to the list of contributors to this impossible management situation of public range.

Land use plan goals, objectives and decisions require the District to adjust, if necessary, livestock and wild horse populations based upon monitoring data. Monitoring data presented in this evaluation can draw specific conclusions and management remedies.

For example, Calico Pasture was rested from livestock in 1989 and 1991. Short term objectives were not met. Wild horse use of wetland meadows is specific in the use pattern mapping data. A conclusion can be drawn and remedy presented in the Technical Recommendations for this pasture.

Another example, Summit Lake Pasture was rested from livestock in 1989 and 1991. Short term objectives were not met. Wild horse, trespass cattle and mule deer use of riparian and browse key vegetation use pattern mapping data were collected. Conclusions can be drawn and remedies presented for each user in the Technical Recommendations for this pasture.

Another example, Black Rock Pasture has been used by livestock and wild horses since 1989. Use pattern mapping conducted prior to livestock showed that the short term objective was not met. Conclusions can be drawn for wild horse use along Mud Meadow Creek and Mustang Springs and remedies can be presented in the Technical Recommendations for this pasture.

Page 43, Technical Recommendations

Carrying capacities did not take into account use pattern mapping data for riparian habitats and methodology to meet short term objectives for the Soldier Meadows Allotment. Actual data and calculations are not found in Appendix #6. Weight averaging should only be applied where there is uniform distribution and utilization (See Technical Reference 4400-7).

Carrying capacities per pasture will not meet short term objectives. Use pattern mapping data and actual use data show that the proposed carrying capacities will cause damage to riparian systems.

For example, during 1990 in the Calico Pasture the 290 wild horses consumed 3,480 AUMs of forage and caused heavy utilization to Donnely Creek. The Technical Recommendation is to allocate 20% of key riparian forage to horses prior to livestock use. According to Technical Reference 4400-7, the following is the carrying capacity of wild horses:

$$\frac{3,480 \text{ Aums}}{80\% \text{ Util.}} = \frac{\text{Desired AUMs}}{20\% \text{ Desired Util.}}$$

The carrying capacity for wild horses on the Calico Pasture is 870 AUMs or 73 horses. The Technical Recommendation is for 1,702 AUMs or 142 horses. Coupled with the recommendation to stock 1,299 head of cattle during the springs of 1993, 1996 and 1997, the short term objective for Donnely Creek will not be met, even on "rested" years. During the years of combined use, the carrying capacity will be exceeded by at least five times. The shift of twenty days in the season of use for livestock will not mitigate or prevent resource damage.

Another example is during 1990 in the Black Rock Pasture 200 wild horses consumed 2,400 AUMs of forage and caused heavy utilization at Mustang spring, Through Springs and Clapper Canyon riparian. The Short Term Objective for wetland riparian habitats was not met. If 20% of the Short Term Objective of 50% utilization on wetland riparian habitats were allocated to wild horses prior to livestock, then the following carrying capacity would apply to wild horses:

$$\frac{2,400 \text{ AUMs}}{80\% \text{ Util.}} = \frac{\text{Desired AUMs}}{20\% \text{ Desired}}$$

The carrying capacity for wild horses on the Black Rock Pasture is 600 AUMs or 50 horses. The Technical Recommendation is for 1,020 AUMs or 216 horses with 3,800 AUMs or 1,299 cattle for winter use in the next six years. This proposed use by livestock and wildlife exceeds levels observed in 1990 when none of the short term objectives were met.

Recommended carrying capacities and seasons of use will not meet short term objectives.

For example, during 1990 in the Summit Lake Pasture the 238 wild horses consumed 2,856 AUMs and 500 cattle consumed 1,877 AUMs which caused heavy to severe use of mountain browse and stream bank riparian. Studies conducted in southern Oregon showed that livestock heavily used bitterbrush during and after seed set. The Draft Sonoma-Gerlach Grazing EIS stated that phenology data indicates bitterbrush sets seed from mid-June to the first of July. These data also correspond to seedripeness of key perennial grasses that become less palatable to livestock after seedripeness. We assume that improper season of use by livestock have caused the overuse of bitterbrush. Also, the hot season of use by livestock contributed significantly to not meeting short term riparian objectives in 1990. This conclusion was determined by the Bureau and Fish and Wildlife Service in 1990. The Technical Recommendation to retain 131 wild horses and authorize 877 cattle during the hot season will not meet short term objectives allotment.

Page 49, Riparian Objectives

Modification of specific allotment objectives to extend the short term and long term time frames of the land use plan is not appropriate.

Allocating a percent of forage to wild horses prior to livestock grazing appears to be reasonable, but is not practically applied in the Technical Recommendations.

Adding key species for riparian species is essential to the allotment evaluation and decision making processes.

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Moving livestock to meet proper utilization limits on key forage was conditional to the Livestock Agreement (1989) and grazing license. This allotment evaluation shows that the system was not adhere to, monitoring was not completed and compliance was not enforced by the Bureau. This condition did not produce the assured results of the previous allotment evaluation recommendations. Therefore, we do not recognize this as a meaningful remedy to the ongoing resource damage.

Adjusting wild horse to meet allotment specific objectives will be necessary. As stated before, carrying capacities can be estimated with current monitoring data. Our estimates are based upon meeting proper utilization prior to livestock. However, these estimates don't assume that wild horse use of riparian will stop after livestock are present, or that the remaining 10% of available forage will allow livestock to be present throughout the proposed seasons of use.

Fencing projects to exclude livestock from riparian areas are found in the Draft Solider Meadows Allotment Management Plan and Fox Mountain Habitat Management Plan. Funding has not been available to complete these projects in the past four years and we assume that funding will decrease with the current devaluation of federal AUM.

Page 51, Allotment Objectives for Uplands and Meadows

Modifying specific allotment objectives to extend the short and long term time frames of the land use plan is inappropriate.

Implementing the Draft Desired Plant Community through the use of the Ecological Site Studies is contrary to the land use plan decisions and allotment specific objectives. Recommended long term objectives call for reducing the shrub compotent to increase perennial grasses. These changes in allotment objectives are contrary to MFP III Decisions and allotment specific objectives for mule deer and antelope.

Page 72, Appendix 1

Specific objectives and planned actions of the Fox Mountain Habitat Management Plan were not considered in this allotment evaluation. All objectives and planned actions were agreed upon with the Department and are binding.

Bud, we encourage you to reconsider your present course in selective management options. This allotment was to set the example for the Winnemucca District in all future allotment evaluations. We are disappointed that the conditions of the Livestock Agreement were not monitored or enforced by the Resource Area. Wildlife habitat is seriously degraded and big game populations are declining due to habitat loss and competition with exotic ungulates. We cannot foresee how the proliferation of existing conditions, decline in Bureau funding and failure to

control trespass will reverse the declining trends in range conditions.

Sincerely,

WILLIAM A. MOLINI, DIRECTOR

Richard T. Heap, Jr.
Region I Manager
Region I

REL:rl/

CC: Habitat, Reno

SOLDIER MEADOWS
ALLOTMENT EVALUATION 1993

DATA TABLE NDOW

	LIVESTOCK			HORSES		OBJECTIVES			PROPOSED ACTION				
	Season Use	AUMs	No.	AUMs	No.	1 #	2 #	3 #	Livestock			Horse	
Blackrock									Season Use	AUMs	No.	No.	AUMs
1989	3/1-4/10	1,484	860	1,740	145	Neg.	Neg.	N.A.	1/1-3/31	3,800	1,299	216	1,020
1990	1/10-3/31	3,217	1,208	2,400	200	Neg.	Neg.	Neg.					
1991	1/10-4/10	3,614	1,208	2,500	208	Neg.	Neg.	N.A.					
Calico													
1989	Rest	---	---	3,132	261	Neg.	Neg.	N.A.	4/1-4/30	1,281	1,299	142	1,704
1990	4/1-5/20	2,050	1,247	3,480	290	Neg.	Neg.	N.A.					
1991	Rest	---	---	3,864	322	Neg*	Neg.	N.A.					
Soldier M.													
1989	4/11-4/30	837	1,340	---	---	N.A.	N.A.	N.A.	4/1-4/30	1,281	1,299	---	---
1990	Rest	---	---	---	---	N.A.	N.A.	N.A.*					
1991	4/11-5/20	1,762	340	---	---	N.A.	N.A.	N.A.					
Warm Spr.													
1989	5/1-10/30	3,008	500	6,552	546	N.A.	Neg.	Neg.	7/15-10/14	5,163	1,707	257	3,684
1990	9/22-10/30	359	280	7,272	606	N.A.	Neg.	Neg.					
1991	7/1-10/30	2,587	645	8,064	672	N.A.	Neg.	Neg.					
Summit Lk.													
1989	Rest	---	---	4,092	341	Neg.	N.A.	Neg.	7/15-10/14	2,652	877	131	1,572
1990	6/10-9/22	1,877	500	2,856	238	Neg.	N.A.	Neg*					
1991	Rest	---	---	2,532	211	Neg.	N.A.	Neg*					

* Mule deer damage

2-5-93