10/13/89

United States Department of the Interior

BUREAU OF LAND MANAGEMENT

ELKO DISTRICT OFFICE

3900 E. Idaho Street
P.O. Box 831
Elko, Nevada 89801

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:

4400/4120
(NV-014)

OCT 13 1989

Ms. Dawn Lappin, Director
WHOA! Inc.
P.O. Box 555
Reno, NV 89504

Dear Ms. Lappin:

Enclosed is the Rock Creek allotment evaluation for your review. If you have any comments please submit them to the Elko Area Manager by November 10, 1989.

Sincerely yours,

Stanley Kemmerer

for LES SWEENEY, Manager
Elko Resource Area

Enclosure: As stated above

ROCK CREEK ALLOTMENT EVALUATION

I. INTRODUCTION

A. Allotment Name and Number: Rock Creek (No. 1025)

B. Permittees: Ellison Ranching Co.
Stanley C. Ellison Corp.
Nelo Mori

C. Evaluation Period: 1983 through 1988

D. Selective Management Category: I (Improve) and Priority: No. 13

II. INITIAL STOCKING LEVEL

A. Livestock Use

1. RMP/EIS and RPS Level:

a.	Total Preference:	69,730 AUMs
b.	Suspended:	20,733 AUMs
c.	Active:	48,997 AUMs
d.	TNR:	0 AUMs

2. Season of Use: April 15 to November 30

3. Kind and Class of Livestock:

   Cattle - Pairs and Yearlings

   Sheep

   Horses

4. Percent Federal Range/Exchange of Use: 78%

5. Other: Since the RMP/EIS and RPS were finalized, a Rangeline Agreement has been signed dividing the Rock Creek Allotment into two operations: Spanish Ranch Allotment and Squaw Valley Allotment. The agreement was signed in 1988 so has no effect on this evaluation which covers 1983 through 1988.

   Ellison Ranching Co. and Stanley C. Ellison Corp. will be considered as one operation in this evaluation. Since Nelo Mori only has .128% or 56 active preference AUMs out of the total 48,997 AUMs, no distinction will be made between the two operations regarding management practices. Use made by Nelo Mori occurs within the native pasture and any changes in preference will be assigned according to percent of preference each operator (Ellison and Mori) has within the native pasture.

B. Wildlife Use

Management Area	Reasonable Numbers (AUMs)
Crucial Deer Summer	2957
Deer Winter	855
Crucial Deer Winter	90
Deer Yearlong	1053
Crucial Deer Yearlong	60
Pronghorn Antelope	101

C. Wild Horse and Burro Use

Herd Management Area: Rock Creek

Herd Size: 119 Horses (1428 AUMs)

0 Burros (0 AUMs)

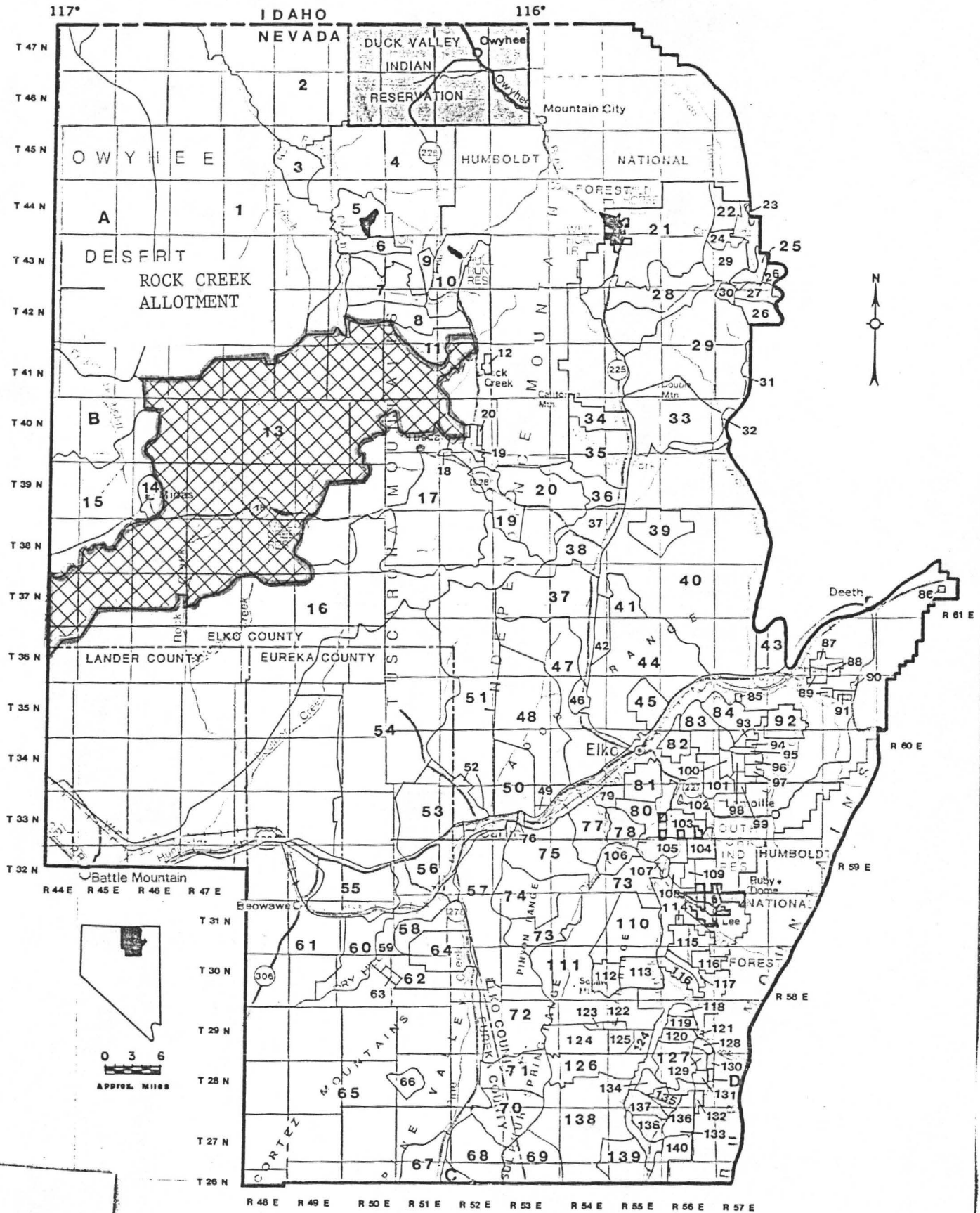
III. ALLOTMENT PROFILE

A. Description

The Rock Creek Allotment begins at the Elko/Humboldt County line on the west side of the Elko Resource Area (Map 1) and covers a large area to the east and north. The allotment and pasture boundaries are fenced with the exception of the boundary along the county line. There are large blocks of private land within the allotment, primarily along the major streams.

The allotment is characterized by terrain ranging from flat and gently rolling to mountainous. Elevations range from 4500 feet to peaks of 8500 feet. Vegetation on the allotment is diverse ranging from crested wheatgrass seedings to shadscale/bud sage to big sagebrush/Idaho fescue/bluebunch wheatgrass.

MAP 1. ELKO RESOURCE AREA OF THE ELKO DISTRICT, NEVADA



B. Acreage

1. Allotment Total

Public	Private	Total
353,860	118,302	472,162

2. Pastures

Midas Seeding	890	191	1,081
Horseshoe Seeding	5,148	0	5,148
Rock Creek Seeding	1,104	18	1,122
Native Range	346,410	101,109	347,519
Fenced Federal Range	639	23,592	24,231

C. Rangeland Program Summary (RPS) Objectives

1. Livestock

a. In the long-term (through 2007), provide forage to sustain 57,550 AUMs for livestock grazing.

b. By 2007, improve ecological status from late to PNC on 800 acres.

c. Through 2007, maintain or enhance the current forage condition on non-native range.

d. In the short term (5 years), maintain or enhance native vegetation with utilization levels not to exceed 50% annually on the key species.

2. Wildlife

Mule Deer

a. Improve and maintain all mule deer seasonal habitat within the Rock Creek Allotment in good or better condition for the achievement of 4181 reasonable numbers of mule deer and 5015 AUM's.

b. In crucial mule deer habitat improve or maintain key browse species to 45 percent of the overall species composition.

c. Throughout crucial deer summer habitat, improve or maintain water availability an average of between 2 to 4 miles apart.

Sage Grouse

a. Maintain or improve forb composition to 12% and shrub diversity within a one mile radius of all sage grouse strutting grounds including stream riparian zones.

b. Improve 18 springs and associated wet meadow riparian areas by increasing grass and forb diversity and composition.

Pronghorn Antelope

a. Improve and maintain antelope seasonal habitat within the Rock Creek Allotment in good or better condition for the achievement of 56 reasonable numbers of antelope and 101 AUMs.

3. Riparian/Fisheries

Short and long-term objectives for high priority stream habitats within the Elko Resource Area have been defined as follows:

a. In the short-term (over a 5 year period), improve current stream habitat condition by 30%.

b. In the long-term (over a 20 year period), improve stream habitat condition to a rating of good or higher, as defined below:

Stream/Riparian Condition Classification

(% of Habitat Optimum)

75% - 100% = Excellent

60% - 69% = Good

50% - 59% = Fair

49% - 0% = Poor

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

Short and long-term objectives for improvement of high priority and important stream habitats within the Rock Creek Allotment are shown below. Current stream condition ratings and objective levels are based on the most recent data collected from survey stations located on public land.

Stream	Miles Public Land	Most Recent Survey	Stream Survey Station	Game Fish*	% Habitat Optimum Current	1993	2007
High Priority Streams							
Rock Creek							
Upper	0.5	1986	3	LCT	47.9	60.0	60.0
Middle	6.0	1988	2-6	HLCT	22.5	29.3	60.0
Toe Jam Creek	0.8	1988	12	LCT	64.2	60.0	60.0
Red Cow Creek	3.5	1988	1-5, 10,11	RD	38.6	50.2	60.0
Winter's Creek	1.0	1988	4	RD	56.1	60.0	60.0
Other Important Streams							
Willow Creek							
Upper	1.0	1986	4	LCT	18.4	23.9	60.0
Lower	0.1	(No BLM data)		HLCT			
Big Cottonwood Canyon	1.6	1977	8	RD?	37.9	49.3	60.0

* LCT = Lahontan cutthroat trout; RD = Redband rainbow trout.

HLCT = Historic Lahontan cutthroat trout

4. Wild Horses and Burros

a. Through 2007, maintain Appropriate Management Levels (AML) at 119 horses (1428 AUMs) within the Rock Creek Herd Management Area.

D. Key Area Objectives (Livestock)

1. Key Area No. 1 - Horseshoe Seeding

a. Limit annual utilization level on crested wheatgrass to a maximum of 55%.

b. Maintain or increase the 57% frequency of crested wheatgrass.

2. Key Area No. 2 - Midas Seeding

a. Limit annual utilization level on crested wheatgrass to a maximum of 55%.

b. Maintain or increase the 38% frequency of crested wheatgrass.

3. Key Area No. 3 - Rock Creek Seeding

a. Limit annual utilization level on crested wheatgrass to a maximum of 55%.

b. Maintain or increase the 53% frequency of crested wheatgrass.

4. Key Area No. 4 - Rock Creek Native (South slope 12 to 14" p.z.)

a. Limit annual utilization levels om key grass species (bluebunch wheatgrass and Idaho fescue) to a maximum of 50%.

b. Increase % composition by weight of bluebunch wheatgrass from 6% to 9% in 5 years and 20% in twenty years.

c. Increase frequency of key species as shown below:

Key Species		5 Years	20 Years
	From	To	To
bluebunch wheatgrass	6%	10%	25%
Idaho fescue	.5%	1.5%	10%
antelope bitterbrush	7.5%	10%	15%

d. Limit annual utilization on antelope bitterbrush to 45%.

5. Key Area No. 7 - Rock Creek Native (Claypan 10 to 12" p.z.)

a. Limit annual utilization on key native grass species (bluebunch wheatgrass) to a maximum of 50%.

6. Key Area No. 9 - Rock Creek Native (Loamy slope 10-12" p.z.)

a. Limit annual utilization on key native grass species (bluebunch wheatgrass and Idaho fescue) to a maximum of 50%.

b. Increase % composition of the following key species:

Key Species		5 Years	20 Years
	From	To	To
bluebunch wheatgrass	5%	8%	17%

7. Key Area No. 10 - Rock Creek Native (Loamy 8-10"p.z.)

   a. Limit annual utilization level on key native grass species (bluebunch wheatgrass and great basin wildrye) to a maximum of 50%.

8. Key Area No. 11 - Rock Creek Native (Claypan 12-16" p.z.)

   a. Limit annual utilization level on key native grass species (bluebunch wheatgrass) to a maximum of 50%.

   b. Maintain % composition of bluebunch wheatgrass at a level no lower than 30% throughout a 20 year period.

   c. Maintain or increase % frequency of bluebunch wheatgrass at or above 19% throughout a 20 year period.

9. Key Area No. 12 - Rock Creek Native (Claypan 12-16" p.z.)

   a. Limit annual utilization of key grass species (bluebunch wheatgrass and Idaho fescue) to a maximum of 50%.

   b. Limit annual utilization of antelope bitterbrush to a maximum of 45%.

c. Increase % composition of the key species as shown below:

Key Species	From	5 Years To	20 Years To
Idaho fescue	12%	14%	18%
antelope bitterbrush	4%	5%	8%

d. Increase % frequency of the following key species:

Key Species	From	5 Years To	20 Years To
bluebunch wheatgrass	2%	4%	10%
Idaho fescue	26%	28%	30%
antelope bitterbrush	16%	17%	20%

10. Key Area No. 13 - Rock Creek Native (Loamy 8 to 10" p.z.)

a. Limit annual utilization on key native grass species (bluebunch wheatgrass and great basin wildrye) to a maximum of 50%.

b. Increase % frequency of the following key species:

Key Species	From	5 Years To	20 Years To
bluebunch wheatgrass	3%	5%	10%
indian ricegrass	3%	5%	10%

11. Key Area No. 14 - Rock Creek Native (Loamy 8-10" p.z.)

a. Limit annual utilization on bluebunch wheatgrass to a maximum of 50%.

b. Increase % composition of bluebunch wheatgrass from 5% to 8% in 5 years and 17% in 20 years.

c. Increase frequency of bluebunch wheatgrass from 11% to 13% in 5 years and 18% in 20 years.

E. Key Area Objectives (Wildlife)

1. In the short term improve and in the long term maintain key browse species, antelope bitterbrush, early sagebrush, Wyoming big sagebrush and snowberry, to 45% of the overall species composition within key areas CDW-2-T-02, CDS-T-88-31, CDY-T-88-33, DW-T-88-34, CDS-T-88-35, DY-T-88-36, DY-T-88-37 and CDY-T-88-38.

2. Improve or maintain water availability on average of between 2 to 4 miles apart throughout all key areas.

3. Reduce shrub height to an optimum level of 10-20 inches for the benefit of pronghorn antelope.

4. Improve and maintain forb composition from 0.3% on CDW-2-T-02; 6.0% on CDS-T-88-31; 3% on DW-T-88-34; 3% on CDS-T-88-35 and 7% on DY-T-88-36 to 8 percent of overall species composition for the benefit of sage grouse.

F. Key Area Objectives (Riparian/Fisheries)

Refer to III.C.3. (Rangeland Program Summary Objectives)

G. Key Species Identification

1. Uplands

Bluebunch wheatgrass

Idaho fescue

Great basin wildrye

Crested wheatgrass

Antelope bitterbrush

2. Riparian Areas

Young willows - sedges

Aspen suckers

3. Crucial Wildlife Habitat

Antelope bitterbrush

IV. MANAGEMENT EVALUATION

A. The purpose of this evaluation is to determine the proper stocking rate of the allotment, to evaluate present grazing management and determine if the multiple use objectives for the allotment are being met.

B. Summary of Studies Data

1. Actual Use

a. Livestock (see Figure 1 and Appendix A) - Made by cattle (pairs and steers), sheep, and horses. Average level of use during the evaluation period has been 37,958 AUMs (12,188 AUMs below the present active preference of 48,997 AUMs).

b. Wildlife (Data from 1986 Final RMP/EIS)

Mule Deer Existing Numbers: 2093

Mule Deer Existing AUMs: 2511

Pronghorn Antelope Existing Numbers: 28

Pronghorn Antelope Existing AUMs: 50

c. Wild Horses and Burros

Census Year	Numbers	AUMs
1984	119	1428
1986	149	1788
1987	190	2280
1988	264	3168

3. Precipitation (see Figure 2)

Calendar Year Precipitation: Long-term (1958 through 1987) annual mean for the Tuscarora Station (within two miles of the north-eastern portion of the Rock Creek Allotment) is 12.73 inches. Sixteen of the sample years received less than 12.73 inches and thirteen have received more. Total amounts have ranged from a low of 7.20 inches to 1966 to a high of 22.32 inches in 1983 (Appendix B).

Crop Year (September through June) Precipitation: Crop year precipitation is used for interpreting monitoring data rather than calendar year precipitation because of its closer tie to annual fluctuations in plant growth. The long-term (1958 through 1988) average annual crop year precipitation level at the Tuscarora Station is 11.18 inches. Sixteen of the sample years have received less than 11.18 inches and thirteen have received more (data is incomplete for one year). Total amounts have ranged from a low of 6.29 in 1974 to a high of 18.62 in 1983 (Appendix B).

3. Utilization

a. Key Area utilization data is shown in Table 1. The desired use level of 55% on crested wheatgrass seedings has been exceeded one year (1986 within Midas Seeding) at only one of the key areas. The desired use level of 50% on native key species was exceeded on key areas No. 4 and No. 13 in 1986.

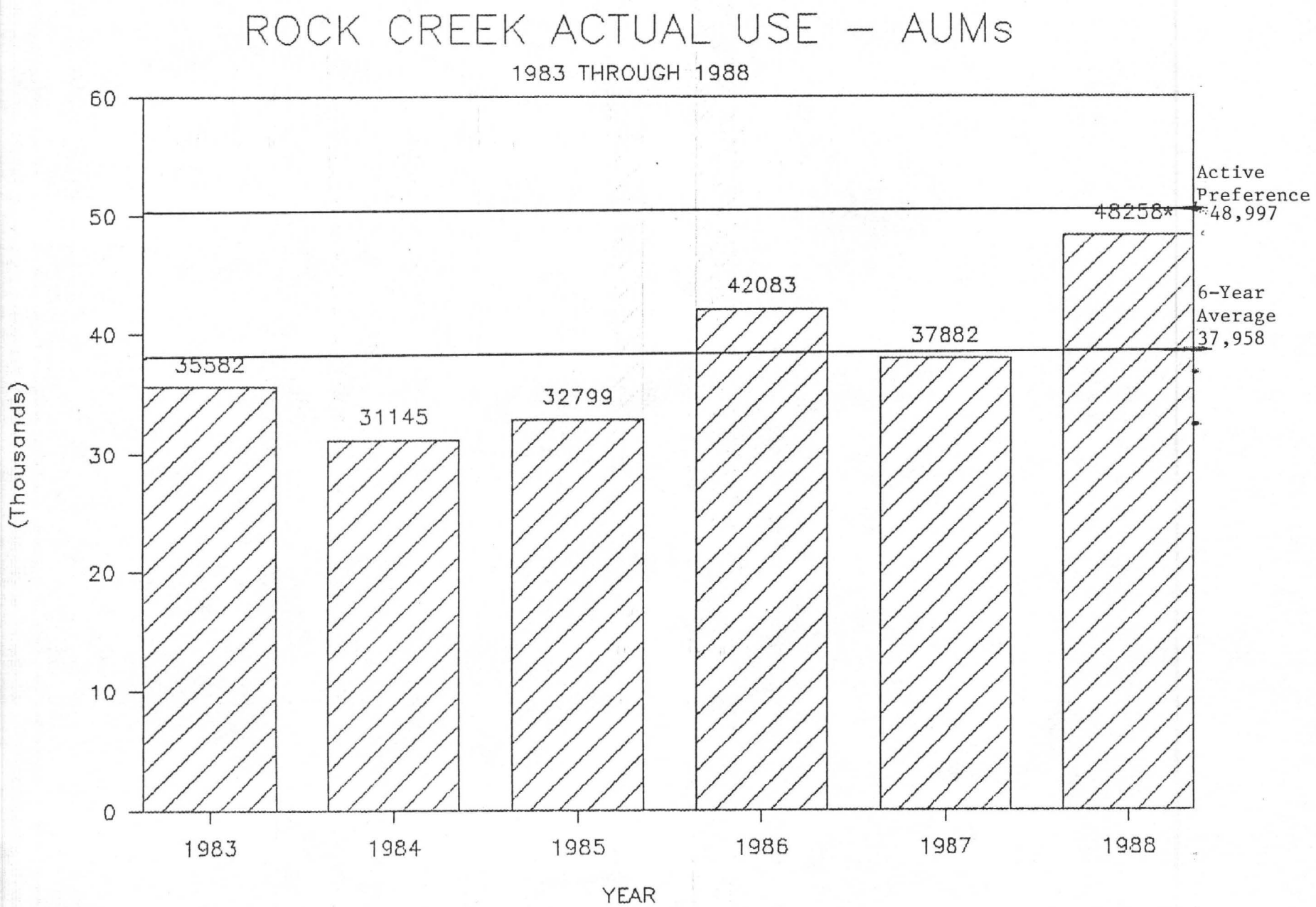


Figure 1. Actual use data for the Rock Creek Allotment, 1983 through 1988.

* Billed AUMs - Actual use data incomplete.

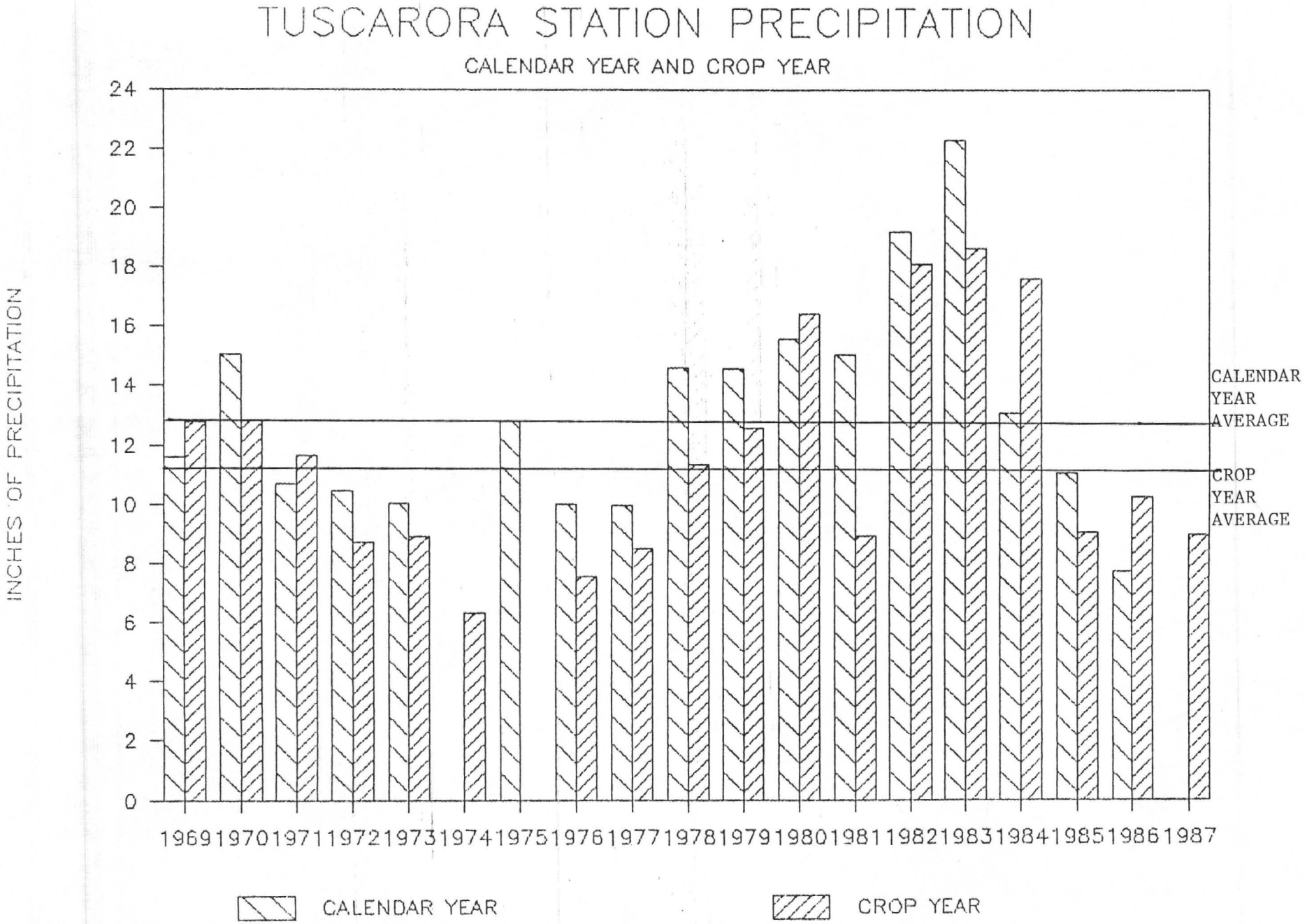
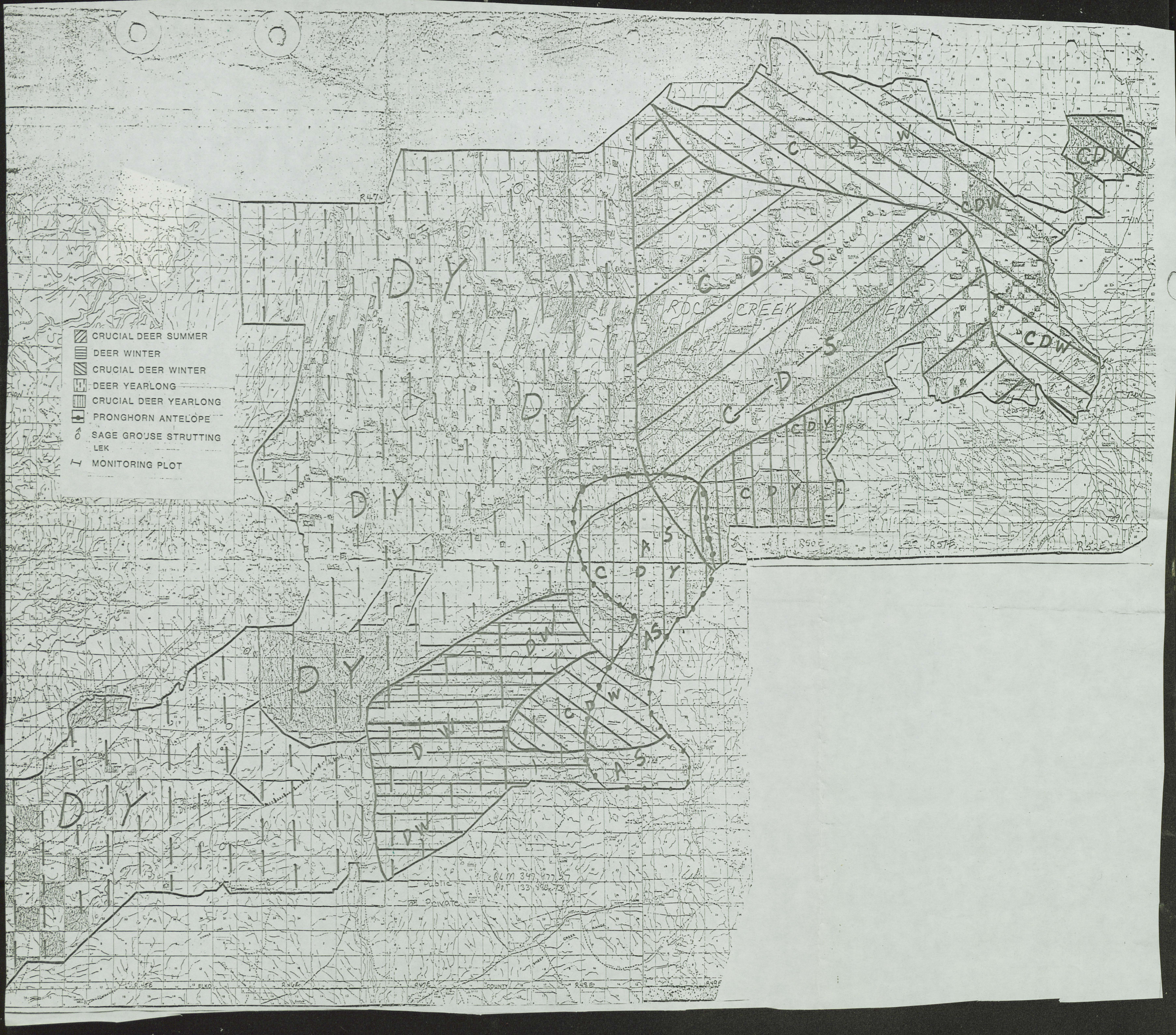


Figure 2. Calendar and crop year precipitation data for the Rock Creek Allotment from the Tuscarora Station.

Table 1. Percent utilization on key species for key areas in the Rock Creek Allotment pastures for 1983 through 1988.

Pasture Key Area	Key Species	Year 1983	1984	1985	1986	1987	1988
Horseshoe Seeding							
01	crested wheatgrass	8%			50%	40%	44%
Midas Seeding							
02	crested wheatgrass				65%	38%	31%
Rock Creek Seeding							
03	crested wheatgrass	20%			26%	25%	
Native (No recognized pastures)							
04	bluebunch wheatgrass/				43%		12%
	Idaho fescue/				21%		10%
	antelope bitterbrush*				57%		34%
07	bluebunch wheatgrass				1%		
09	bluebunch wheatgrass/	16%			2.5%		
	Idaho fescue/ great	9%			12%		
	basin wildrye*	37%			7%		
10	bluebunch wheatgrass/				2%	7%	
	great basin wildrye*				1%		
11	bluebunch wheatgrass/				5.5%		
	Idaho fescue*	3%			16%		
12	Idaho fescue/				27%		16%
	bluebunch wheatgrass/				2%		10%
	antelope bitterbrush*				32%		24%
13	bluebunch wheatgrass/				50%		26%
	great basin wildrye*				60%		
14	bluebunch wheatgrass/				8%		
	great basin wildrye*				13%		

* Key species with the highest utilization was used in stocking rate calculations.


CRUCIAL DEER SUMMER
DEER WINTER
CRUCIAL DEER WINTER
DEER YEARLONG
CRUCIAL DEER YEARLONG
PRONGHORN ANTELOPE
SAGE GROUSE STRUTTING LEK
MONITORING PLOT
ROCK CREEK ALLOTMENT
Public
Private

b. Use pattern Maps were made for each of the crested wheatgrass pastures in 1987 (Maps 2 through 4). The entire allotment was use mapped in 1986 (Map 5). The heavy and severe use areas shown on these maps are primarily on streams and springs which are mostly privately owned. There are some heavy use areas on public ground between the Squaw Valley Ranch and Willow Reservoir where cattle concentrate during the fall gather.

c. Utilization Based Adjustments (Calculated Carrying Capacities) for each key area can be found using the following formula:

$$\frac{\text{Actual Use AUMs}}{\text{Actual Utilization}} \times \text{Desired Utilization} = \text{CC}$$

Adjusting the "CC"s to a "normal production year" (CC divided by the Tuscarora Station Yield Index for each year from Appendix B) results in a corrected carrying capacity (CCC). Appendix C shows both "CC"s and "CCC"s for each key area using the utilization data in Table 1 and the actual use data for each pasture in Appendix A. From this information, the "CCC" for each pasture would be:

PASTURE	CCC
Horseshoe Seeding	2,875
Midas Seeding	1,061
Rock Creek Seeding	993
Native Range*	37,547
Fenced Federal Range	429
Allotment Total	42,476

* This is a result of using the 1986 utilization/actual use data for Key Areas No. 4 and 13 within the native pasture. These utilization values exceeded the objective level and were used as the limiting factor when estimating stocking rate. If all the key areas are considered, a stocking rate far above the objective level of 57,550 would have been attained. However, utilization levels on key species within these Key Areas (No. 4 and No. 13) would most likely exceed the proper use levels identified in the RPS and RMP.

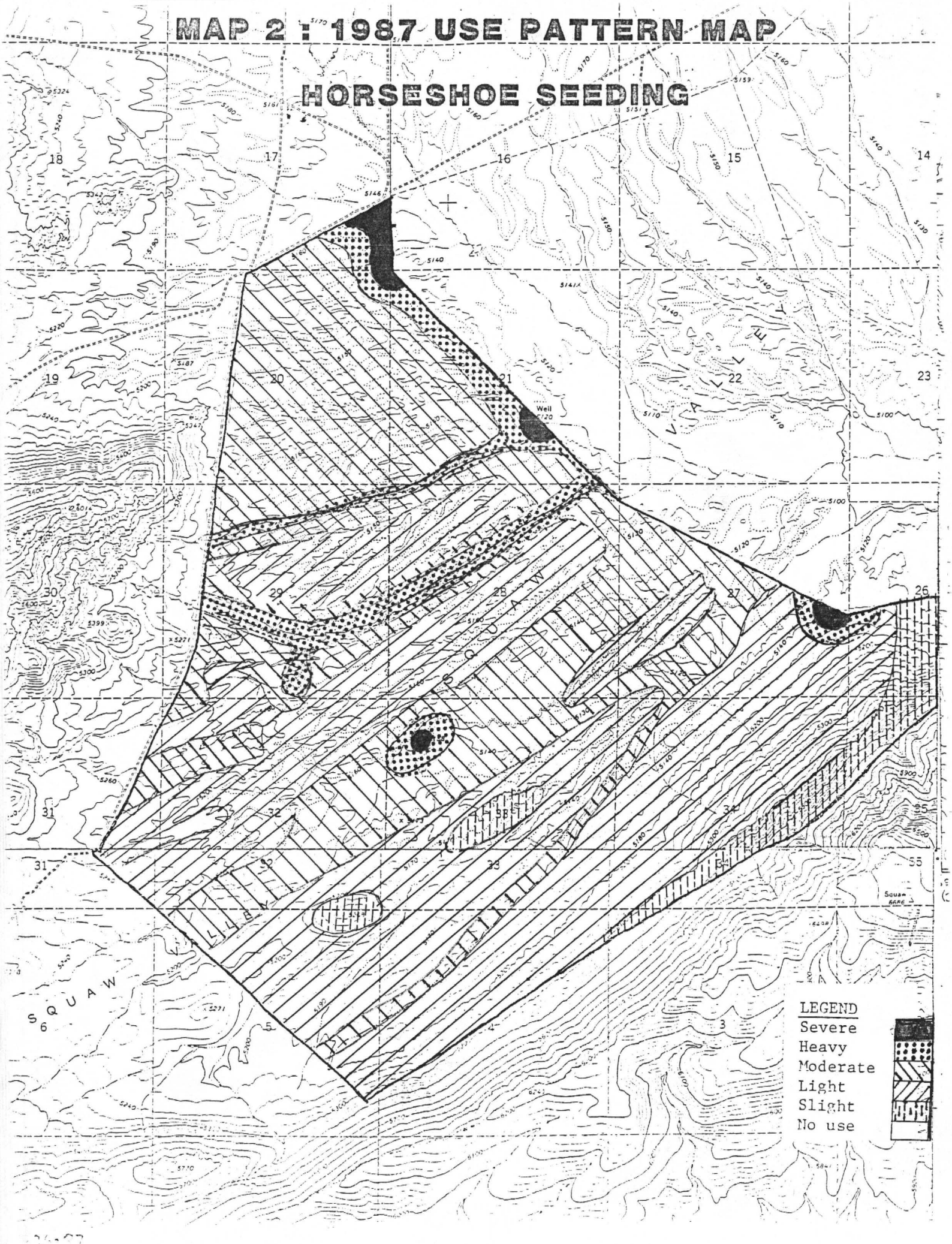
These values are not absolute and will be used for analysis purposes in conjunction with the other studies data.

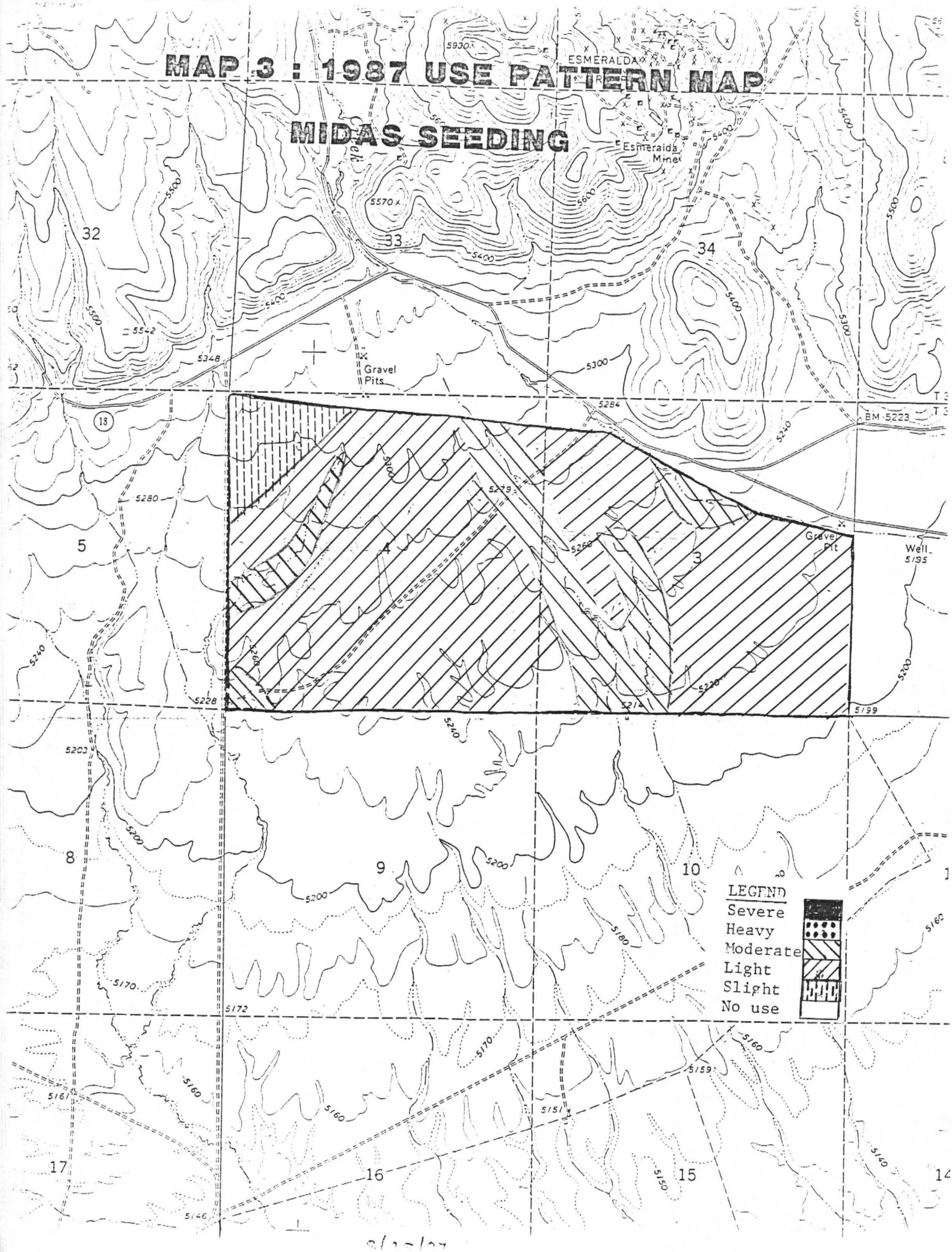
5. Trend

Eleven (11) key areas were established on the allotment in 1983 and have had frequency data collected on them in 1983 and 1988. Eight of the key areas have also had weight-estimate data collected on them in 1983 and 1988. The other three key areas are in crested wheatgrass seedings and weight-estimate data was only collected on them in 1988.

MAP 2 : 1987 USE PATTERN MAP

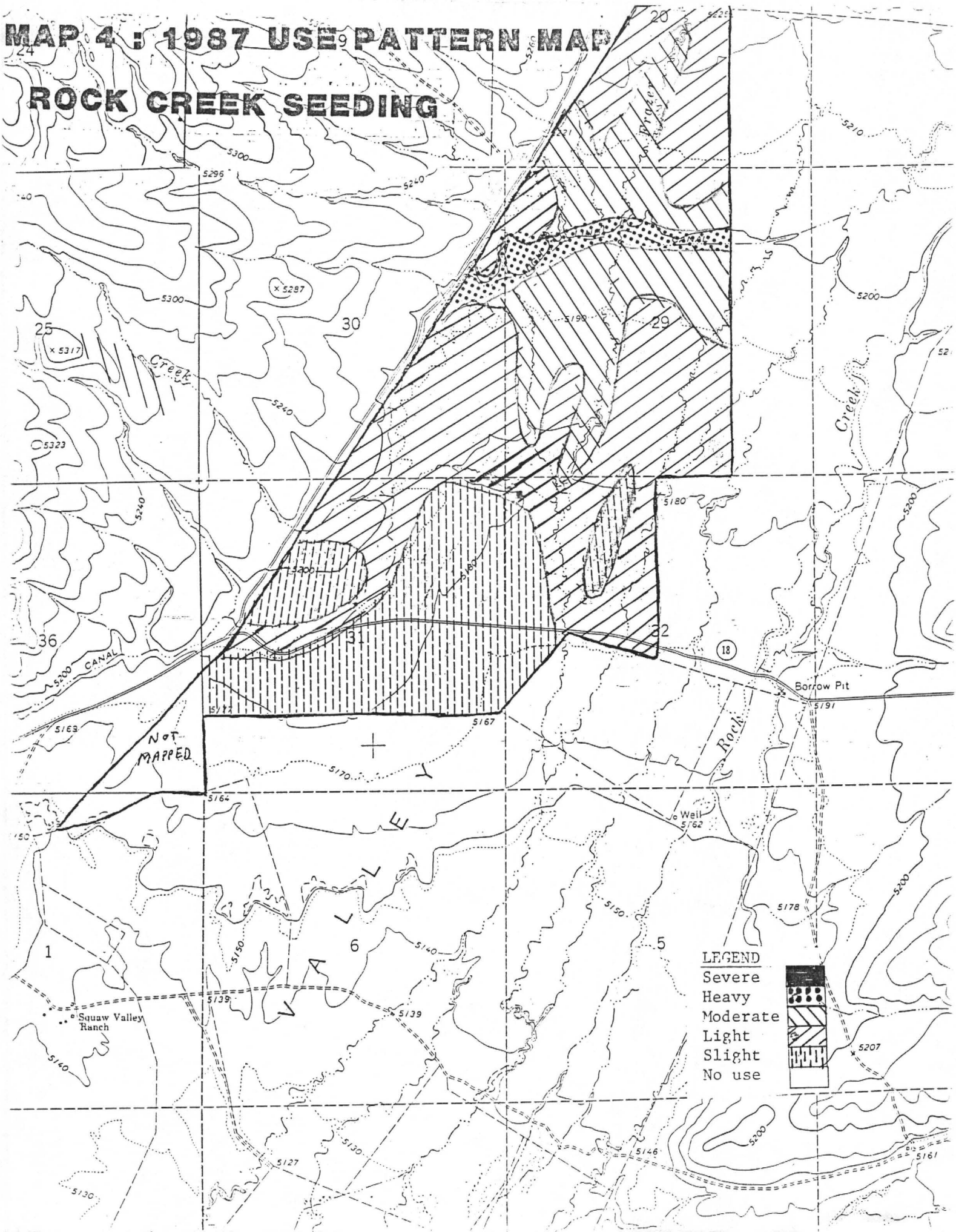
HORSESHOE SEEDING




MAP 3 : 1987 USE PATTERN MAP
MIDAS SEEDING
ESMERALDA
Esmeralda Mine
Gravel Pits
Gravel Pit
Well
BM 5223
LEGEND
Severe
Heavy
Moderate
Light
Slight
No use

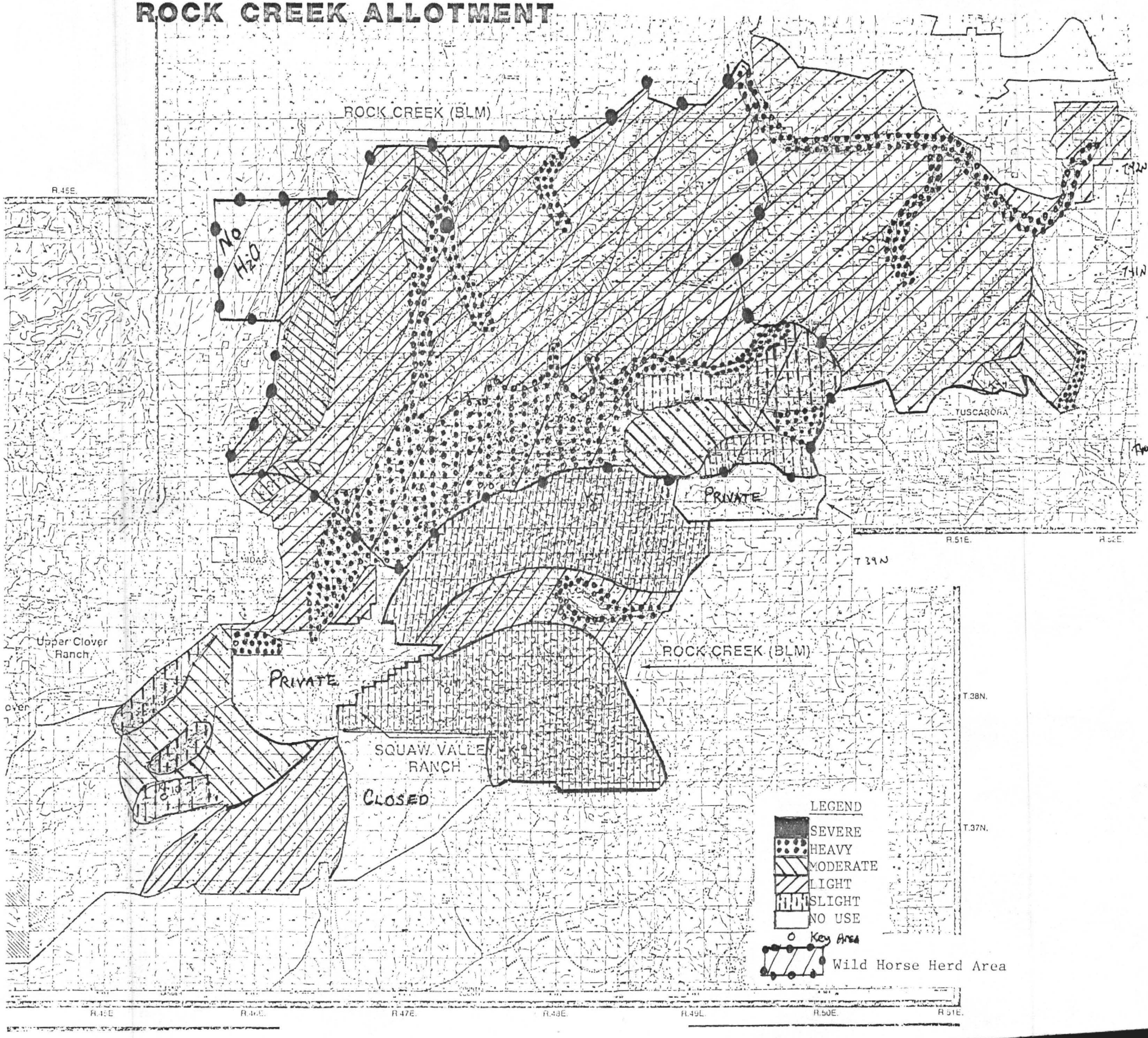
MAP 4 : 1987 USE PATTERN MAP

ROCK CREEK SEEDING



MAP 5 : 1986 USE PATTERN MAP

ROCK CREEK ALLOTMENT



Frequency data is presented by key area in Appendix D. The three key areas on crested wheatgrass seedings all had significant increases in crested wheatgrass frequencies between 1983 and 1988. On the eight key areas in the native pasture, bluebunch wheatgrass increased significantly on one plot and great basin wildrye increased significantly on another. No other significant changes in frequencies of key species were recorded.

Significant changes in frequencies of non-key species between 1983 and 1988 were as follows:

a. Big sagebrush decreased significantly on four of the eleven plots. This is due to improving condition at these key areas.

b. Low rabbitbrush decreased significantly on two plots. This is due to improving condition of these sites.

c. Sandberg bluegrass increased on five plots and decreased on three plots.

d. Bottlebrush squirreltail increased on six plots and decreased on one.

e. Cheatgrass brome increased on three plots and decreased on two plots.

f. Lupine increased on five plots and decreased on one plot.

g. Locoweed increased on three plots.

h. Hoods phlox increased on one plot.

i. Longleaf phlox increased on three plots and decreased on one plot.

j. Rockcress increased on one plot.

k. Pale agoseris increased on one plot.

l. Fleabane increased on one plot.

m. Hawksbeard increased on one plot.

n. Wild onion decreased on two plots.

Eight of the transects recorded more species of perennial forbs in 1988 than in 1983, two recorded fewer, and one had no change in the numbers recorded. In addition to the above changes, a few changes in annual forbs were recorded. Since they are affected more by yearly climate variation than by management they are not detailed here.

Weight-estimated data is presented in Appendix E. One of the plots has moved from mid-seral to late-seral status. None of the other plots have moved into a higher or lower seral stage since sampling in 1983. Of the plots that have not changed one is in early-seral, four are in mid-seral and one is in late-seral status. The remaining plots are in crested wheatgrass seedings and are not analyzed for seral condition.

6. Ecological Status Inventory

Thirty-six (36) different ecological sites were recorded on the Rock Creek Allotment during an ecological inventory in 1984 (Appendix F). Five percent (5%) of the allotment is in early-seral condition, 43% is in mid-seral, 39% is in late-seral, 6% is in PNC, 6% is unclassified (aspen woodlands and rock outcrops), and 2% is crested wheatgrass seedings. The apparent trend for vegetation condition on the allotment, as identified in the RMP, is "upward". The six ecological sites shown in Table 2 comprise 73% of the allotment.

TABLE 2. Major Ecological sites, condition of ecological sites, and percent of each within the Rock Creek Allotment based on the 1984 inventory.

Ecological Site (Number)	Condition	Percent of Allotment
Loamy 8-10" (25-19)	Early-Seral	2
	Mid-Seral	20
	Late-Seral	1
Claypan 12-16" (25-17)	Mid-Seral	2
	Late-Seral	9
	PNC	3
Claypan 10-12" (25-18)	Mid-Seral	8
	Late-Seral	5
Loamy Slope 10-16" (25-12)	Mid-Seral	1
	Late-Seral	7
	PNC	1
Loamy 10-12" (25-14)	Early-Seral	T*
	Mid-Seral	3
	Late-Seral	5
South Slope 12-14" (25-9)	Mid-Seral	1
	Late-Seral	5

*T = less than 1%

7. Wildlife Habitat

Wildlife habitat monitoring studies established in 1983 and 1988 rate mule deer habitat condition from fair to good throughout the allotment (12% = fair, 88% = good, Appendix G). These same studies rate existing and potential antelope habitat from fair to good throughout the allotment (88% = fair, 12% = good, Appendix H).

8. Riparian/Fisheries Habitat

Although objectives are established only for the public land portions of important stream habitat within the Rock Creek Allotment, the determination of a stream's condition should be based on an evaluation of its entire length. Habitat problems in any one portion may affect the ability of other areas to support trout or to respond to changes in management. Consequently, condition ratings are presented for both public and private land portions of important and high priority streams in the Rock Creek Allotment:

	% Habitat Optimum					
	Public Land			Private & Public		
Stream	1977-80	1986	1988	1977-80	1986	1988
High Priority Streams						
Rock Creek						
Upper	70.0	47.9		44.0	47.5	
Middle	33.4		22.5	30.8		23.1
Toe Jam Creek	59.8	54.6	64.2	48.4	44.0	
Red Cow Creek	42.6		38.6	45.8		39.0
Winter's Creek	57.2		56.1	45.7		46.8
Other Important Streams						
Willow Creek						
Upper	44.4	18.4		51.0	29.1	
Lower	(No BLM data)			33.2	32.0	
Big Cottonwood Canyon	37.9			45.2		

With the exception of the public land portion of Toe Jam Creek, habitat conditions for all streams are poor or have deteriorated over time. Survey results for each stream are discussed below:

Upper Rock Creek

Overall Stream Condition

Although the overall habitat condition rating improved slightly between 1977 and 1986, current condition is still considered poor. Major problems include a lack of pools, limited bank cover and poor bank stability. Severe flooding in 1983 and 1984 caused significant changes in individual habitat parameters. Most importantly flooding caused accelerated downcutting and a shortening and straightening of the stream channel resulting in loss of pools and bank stability. However the flooding also had the effect of "flushing" out pools and other areas of deposition thus decreasing sedimentation rates. Pool quality also increased as a result of newly constructed beaver dams.

Heavy use of riparian vegetation by livestock was identified as the primary cause of habitat problems on both surveys. Although substantial damage occurred as a result of the 1983/84 floods, the condition of the stream prior to the advent of high water determined its response.

Public Land Portion

Habitat conditions deteriorated substantially between 1977 and 1986 at the one survey station located on public land. Pool-riffle ratio and bank stability declined sharply while more minor declines occurred in desirable stream bottom substrates and bank cover. In general, current habitat conditions and problems on the public land portion of Upper Rock Creek parallel those found for the stream as a whole.

Middle Rock Creek

Overall Stream Condition

Current habitat conditions on the Middle Rock Creek are extremely poor and have deteriorated over the ten year period between 1977 and 1988. With the exception of percent desirable stream bottom materials and bank cover ratings which were already at or near the lowest level possible in 1977, significant decreases were recorded for pool-riffle ratio, pool quality and bank stability by 1988. Very heavy annual use of riparian vegetation by livestock is felt to be the primary cause of current deteriorated habitat conditions.

Although upper Rock Creek supports cutthroat, the middle section is more marsh like and unsuited for cold water fish species. Riparian vegetation is almost nonexistent, banks are totally unstable, the stream bottom is covered with sand, silt and algae, and stream flow is warm and sluggish. However, the area does support an abundance of wildlife. A family of river otters, over 18 species of birds including Canada geese, cinnamon teal, mallards, chukar, morning doves, great blue herons, swallows, king-fishers, shorebirds and others were seen during the 1988 survey.

Public Land Portion

Conditions on the public land portion of Middle Rock Creek are nearly identical to those described for the stream as a whole. Most of the data collected was derived from survey stations located on public land. Of seven stations, only one is located on private land.

Toe Jam

Overall Stream Condition

Current habitat condition of Toe Jam is considered poor and has deteriorated over the nine year period between 1977 and 1986. A lack of quality pools, unstable banks, a poor pool-riffle

ratio and limited bank cover have been defined as important limiting factors. During both surveys, heavy annual use of riparian vegetation by livestock was identified as the major cause of poor habitat conditions.

Public Land Portion

Of the 14 survey stations established on Toe Jam, only one is located on public land. At that one location, current habitat condition is considered good and has actually improved since surveys were read in 1986 and 1977. However, the data at this one location are not consistent with the results of more intensive sampling which shows substantial and ongoing habitat degradation.

Red Cow Creek

Overall Stream Condition

The situation for the redband rainbow trout in Red Cow Creek is critical. Habitat conditions have deteriorated to the extent that the stream is now probably only very marginally suitable for trout. Extensive rubble deposits have caused natural channelizing of the stream with a corresponding loss of pool habitat. Heavy season-long continuous grazing has prevented establishment of riparian species, while cutting and wasting

away of banks has resulted in the almost complete elimination of mature riparian vegetation. Perhaps most significant, poor habitat conditions have contributed to the development of water temperatures in excess of 77°F. Temperatures much above 70°F become prohibitive to trout survival.

Public Land Portion

Conditions on the public land portion of Red Cow Creek parallel those described for the stream as a whole.

Winter's Creek

Overall Stream Condition

Current condition of Winter's Creek is fair and has remained essentially unchanged since the stream was first surveyed in 1977. Although grazing has been heavy and season-long continuous, the high rubble content of the stream channel and the stream banks provides for some resistance to further deterioration. However, current habitat conditions cannot be expected to maintain trout over the long-term.

Public Land Portion

The public land portion has been fenced and treated as an exclosure. Although aspen regeneration has been fair and stream habitat conditions are better than on the private land, recovery is still below the stream's potential. Both in 1988 and in the past cattle have entered the exclosure and are currently jeopardizing the recovery achieved to date.

Upper Willow Creek

Overall Stream Condition

Habitat conditions have deteriorated substantially over the nine year period between surveys. Conditions were fair in 1977 but declined to poor by 1986. Current major limiting factors include an absence of quality pools, heavy sedimentation and extremely poor bank stability. Flooding in 1983 and 1984 accelerated the stream's deterioration, however, habitat

condition prior to the years of record flows was an important influence. Heavy grazing of riparian vegetation by livestock was identified as the primary cause of habitat problems both years of the survey.

Public Land Portion

Conditions on the public land portion of Upper Willow Creek parallel those found for the stream as a whole. Streambanks which were rated as being over 50% stable in 1977 were recorded as being totally unstable by 1986. Additionally, the stream bottom was found to contain mostly gravels and some rubble in 1977, but was found to be made up mostly of silt by 1986.

Lower Willow Creek

Overall Stream Condition

Habitat conditions remained essentially unchanged between 1977 and 1986. Conditions were recorded as poor for both surveys with major limiting factors including a lack of quality pools, excessive sedimentation and little or no bank cover or bank stability. Although cutthroat were believed to be present in the stream at one time, current conditions are totally prohibitive to survival of trout for any significant period of time. Very heavy annual use of riparian vegetation by livestock was felt to be the primary cause of habitat degradation on both surveys.

Public Land Portion

No survey stations were established on the very limited portion of public land on Lower Willow Creek.

Big Cottonwood Canyon

Overall Stream Condition

Good populations of rainbow trout were found throughout Big Cottonwood Canyon Creek when the stream was surveyed in 1977. Although taxonomic studies have never been conducted, the possibility exists that these fish may actually be redband rainbow trout. Big Cottonwood drains into the Owyhee River and lies within the area of the redband's historic range.

Overall stream condition was rated as poor in 1977. No second time surveys have been conducted. Major limiting factors were found to include a poor pool-riffle ratio, a lack of quality pools, and poor bank cover. Heavy use of riparian vegetation by cattle was evident all along the stream at the time of the survey.

Public Land Portion

Conditions on both public and private lands were found to be similar during the 1977 survey. Habitat condition was rated as poor with the most important limiting factors including a lack of pools and poor bank cover.

9. Wild Horse Habitat

There are no established habitat studies specifically for horses. However the habitat for horses in the allotment is good with adequate water, feed and cover.

V. CONCLUSIONS

A. RPS Objectives (Referred to by number shown in III.C.)

1. Livestock

a. This objective is not being met. The adjusted calculated carrying capacity for the allotment is 42,905 AUMs (see IV.B.3.c.). This is below the 57,550 AUMs identified in the RPS objective and below the active preference level of 48997 AUMs.

This is a result of using the 1986 utilization/actual use data for Key Areas No. 4 and 13 within the native pasture. These utilization values exceeded the objective level and were used as the limiting factor when estimating stocking rate. If all the key areas are considered, a stocking rate far above the objective level of 57,550 would have been attained. However, utilization levels on key species within these Key Areas (No. 4 and No. 13) would most likely exceed the proper use levels identified in the RPS and RMP.

b. This objective is not being met. The 1988 weight-estimate data shows one of the key areas has improved from mid-seral to late-seral and one has declined from mid-seral to early-seral. None of the other key areas changed in seral stage between 1983 and 1988. This is a long term objective and based on this data, we are not moving towards meeting this objective.

c. This objective is being met. The adjusted calculated carrying capacities (Appendix C) for all the seeded pastures are higher than their adjudicated levels of use. Also, crested wheatgrass frequencies on the seedings have increased between 1983 and 1988.

d. This objective has not been met. In 1986, utilization on two of the native range key areas exceeded the 50% goal. Also, use maps (Maps 2 through 5) in 1986 and 1987 showed areas of heavy (61-80%) and severe (81-100%) use.

2. Wildlife

Mule Deer

The following illustrates the percent occurrence of mule deer seasonal habitat found within the Rock Creek Allotment: Deer yearlong = 53%, deer winter = 7%, crucial deer winter = 14%, crucial deer summer = 19%, crucial deer yearlong = 7%, antelope summer = 6%.

a. This objective is not being met. Seven of eight big game monitoring studies rate big game habitat to be in good condition while the remaining study rates mule deer habitat in fair condition (Appendix G).

Five of the eight transects are located within crucial deer habitat. Of these five, one is located within crucial deer winter habitat representing 50% of the crucial winter habitat, two are located within crucial deer summer habitat representing 40% of the crucial summer habitat and two are located within crucial deer yearlong habitat representing 80% of the crucial yearlong habitat.

All five transects and represented portions of the crucial habitats are considered to be in good condition. The remaining three studies, one in fair condition located within deer winter represents 60% of the deer winter habitat and two in good condition located within deer yearlong habitat representing 50% of the deer yearlong habitat.

b. Two of the eight transects are located within key bitterbrush areas where bitterbrush averaged 35% species composition. One of these transects established in 1983 and again reread in 1988 show overutilization on bitterbrush (utilization = 63%) while the second transect, established in 1988 showed overutilization equaling 60%. The remaining transects throughout the allotment were predominantly dominated by Artemesia species averaging 42% composition and showed no evidence of overutilization (Appendix G). Therefore objective b. is considered as being met.

c. This objective is presently not being met throughout crucial summer habitat. However, the proposed development and protection of 18 springs, 7 reservoirs, 1 well and 2 miles of pipeline will help meet this objective within crucial summer habitat.

Sage Grouse

a. This objective is not being met. While present average forb diversity and composition (12%) are considered adequate upon the terrestrial habitat portion of the allotment, forb diversity and composition have decreased substantially within the riparian habitat as indicated by the overall poor riparian condition (see Riparian/Fisheries Habitat Condition Summary). Loss of riparian habitat (i.e. mesic meadows) is the primary cause for the decrease in forb diversity and composition. Average preferred shrub composition (39%) and total average cover (37%) are considered adequate to meet nesting and brood rearing requirements.

b. This objective has not been met. No springs have been improved.

Pronghorn Antelope

Overall habitat conditions throughout the allotment indicate antelope habitat to be in fair to good condition, (88% = Fair, 12% = Good). Excessive shrub height (greater than 26 inches), low vegetation quality, and low forage diversity are all considered limiting factors for antelope habitat suitability. Therefore this objective is not being met.

3. Riparian/Fisheries

a. On the public land portions of most streams within the Rock Creek Allotment, the short-term objective for improving stream condition by 30% above present levels is not being met. With the exception of Winter's and Toe Jam Creeks, condition of all remaining priority stream habitats has deteriorated. On Winter's Creek, the fair condition rating remained essentially unchanged, while the good condition rating shown for the public land portion of Toe Jam is inconsistent with the results obtained for the majority of the stream. Only one survey has been conducted on Big Cottonwood Canyon Creek, however in the absence of changes in livestock grazing practices, it is very unlikely conditions have improved since 1977.

b. The long-term objective for improving stream condition on the public land portions of high priority streams within the Rock Creek Allotment to a rating of good (60%+ of habitat optimum) is not being met. With the exception of less than one mile of Toe Jam Creek, none of the important and high priority stream habitats are in good condition

4. Wild Horses

This objective is being met and exceeded. The wild horse population in the Rock Creek Herd Management Area has exceeded the AML level of 119 horses in 1986 through 1988 (see B. 1. c.).

B. Key Area Objectives (Livestock)

Refer to by numbers shown in III.D.

1. Key Area No. 1 - Horseshoe Seeding

   a. This objective has been met for the years 1983, 1986, 1987, and 1988. Utilization levels were below the 55% for these years. No utilization data was collected in 1984 and 1985.

   b. This objective has been met. The frequency of crested wheatgrass increased from 57% in 1983 to 92% in 1988.

2. Key Area No. 2 - Midas Seeding

   a. This objective has not been met. Utilization levels reached 65% in 1986 however were below the 55% objective level in 1987 and 1988. No utilization studies were conducted for 1983 through 1985.

   b. This objective has been met. Frequency levels of crested wheatgrass have increased from 38% in 1983 to 55% in 1988.

3. Key Area No. 3 - Rock Creek Seeding

   a. This objective has been met. Utilization levels on the years data was collected (1983, 1986, and 1987) were below the 55% utilization level. No data was collected in 1984, 1985, and 1988.

   b. This objective has been met. The frequency of crested wheatgrass increased from 53% in 1983 to 81% in 1988.

4. Key Area No. 4 - Rock Creek Native

   a. This objective was met. Data collected in 1986 and 1988 showed utilization levels to be below the 50% objective level. No data was collected for 1983, 1984, 1985, and 1987.

   b. This objective is not being met. Weight-estimate production data collected in 1983 showed 6 percent composition of bluebunch wheatgrass versus only 2 percent in 1988.

   c. We have met the 5 year frequency objective levels for the key species thus we are moving to twenty year frequency objective levels.

A discrepancy exists between the weight-estimate production data and the frequency data at the key area. The methodology used for collecting production data would be more likely to give inconsistent results where as the methodologies used to collect frequency would be more accurate and should be used when assessing attainment of key area objectives.

d. This objective was not met in 1986 and met in 1988. No utilization data was collected for 1983, 1984, 1985, and 1987.

5. Key Area No. 7 - Rock Creek Native

a. Whether or not this objective has been met cannot be determined. There was only one utilization study conducted in 1986 showing 1% utilization on bluebunch wheatgrass.

6. Key Area No. 9 - Rock Creek Native

a. This objective was met. The utilization levels for the key species were below the 50% objective level for 1983 and 1986. No data was collected for 1984, 1985, 1987, and 1988.

b. This objective has been met. Weight-estimate data collected in 1983 showed 5% composition by weight of bluebunch wheatgrass versus 12% as shown in 1988 data. Therefore, we have met the 5 year objective level and are moving towards meeting the 20 year objective level.

7. Key Area No. 10 - Rock Creek Native

a. This objective was met. Utilization levels for the key grass species were below the 50% objective level for 1986 and 1987. No data was collected for 1983, 1984, 1985, and 1988.

8. Key Area No. 11 - Rock Creek Native

a. This objective has been met. Utilization levels on key species have ~~been be~~low the 50% objective level for 1986 and 1988. No data was collected for 1983, 1984, 1985, and 1987.

b. This objective was not met. Weight-estimate data collected in 1983 showed percent composition of bluebunch wheatgrass at 46% versus 12% as shown by 1988 data. This is a very dramatic decrease which would indicate severe overgrazing. These results are not supported by the other studies conducted at this key area indicating a problem with data gathering. These results should be disregarded.

c. This objective has been met. Frequency data collected in 1983 showed 19% frequency of bluebunch wheatgrass versus 22% in 1988.

9. Key Area No. 12 - Rock Creek Native

a. This objective has been met. Utilization studies have been below the proper use level of 50% for 1986 and 1988. No data was collected for 1983, 1984, 1985, 1987.

b. This objective was partially met. Frequency data collected in 1983 and 1988 showed an increase in bluebunch wheatgrass from 2% to 5%, a decrease in Idaho fescue from 26% to 22%, and an increase in antelope bitterbrush from 16% to 17%. The differences are slight and may be a result of methods used for data collection. If both utilization studies and frequency studies are considered, indications are that the short term objectives are being met and we are moving towards meeting the long term objectives.

10. Key Area No. 13 - Rock Creek Native

a. This objective is not being met. In 1984, utilization level of great basin wildrye was 60%, exceeding the 50% objective level. Utilization levels for bluebunch wheatgrass was at or below 50% for 1986 and 1987. No data was collected for 1983, 1984, 1985, and 1987.

b. This objective was not met. Frequency data collected in 1983 and 1988 showed a decrease in frequency of bluebunch wheatgrass form 3.00 to 1.0 and indian ricegrass from 2.50 to .50. Since we fell short of meeting the short term objective, we would not expect to meet the long term objective.

11. Key Area No. 14 - Rock Creek Native

a. This objective was met. In 1986, utilization data for the key species was below the 50% objective level. No other utilization has been collected.

b. This objective was not met. Weight-estimate data collected in 1983 and 1988 showed a decrease in composition of bluebunch wheatgrass from 5% to 2%. Since we fell short in meeting our short term objective, we don't expect to meet our long term objective.

c. This objective was not met. Frequency data collected in 1983 and 1988 showed a decrease in frequency of bluebunch wheatgrass from 11% to 7%. Since we fell short of meeting our short term objective, we don't expect to meet our long term objective.

The utilization objective for the key areas within the seeding portion of the allotment has been met for every year data was collected except for one year (1986) within Midas Seeding.

The high utilization level in Midas Seeding is probably due to the below average precipitation during the 1986 crop year and the actual use being higher this year than any other during the evaluation period. The frequency level objectives for all the seedings indicate stable to upward trend and improving condition.

The utilization objective was not met for bitterbrush at Key Area No. 4 in 1986 and for great basin wildrye at Key Area No. 13 in 1986. This may have been due to the below normal precipitation for this year and the higher than average actual use. The remaining utilization levels were below the objective level of 50% for those years data was collected.

The percent composition by weight objective levels were not met for Key Areas No. 4, 11, 13, and 14. This objective was met for Key Area No. 9, partially met for Key Area No. 12, and no studies were conducted for Key Areas No. 7 and 10. Composition data results for Key Areas No. 4 and 11 contradict the utilization and/or frequency studies. Frequency and/or utilization data for these indicate a stable to upward trend. These studies would be more reliable than the production studies and should be used to assess range condition and trend. Key Areas No. 13 and 14 showed a decrease in composition

by weight and a decline in percent frequency of key species thus not meeting the frequency objectives. Two out of the 3 key species in Key Area No. 12 met the objective level for composition by weight and met the percent frequency objective.

In summary, the utilization objective for the majority of the Key Areas have been met. The percent composition by weight and percent frequency objectives are not being met for Key Areas No. 5, 13, and 14 indicating a downward trend in condition. Frequency for the remaining Key Areas would indicate at least a stable if not an increase in percent frequency.

C. Key Area Objectives (Wildlife)

Refer to by numbers shown in III.E.

1. Presently, objective III.E.1. for mule deer and antelope is not being met. While percent composition for key areas CDY-T-88-33 (53%), DW-T-88-34 (45%), CDS-T-88-35 (69%) and DY-T-88-37 (59%) are considered adequate to meet specific key area objectives, key areas CDW-2-T-02 (41%), CDS-T-88-31 (18%), DY-T-88-36 and CDY-T-88-38 (22%) are considered inadequate to meet those specific key area objectives.

2. Objective III.E.2. is currently being met. Present water distribution around key areas falls within the 2 to 4 mile apart objective which presently provides adequate water for mule deer, antelope and sage grouse demands.

3. Objective III.E.3. is currently not being met. Excessive shrub height occurs within 50% of the key areas. Specifically, CDW-2-T-02 (22"); CDS-T-88-31 (56"); DW-T-88-34 (33") and CDY-T-88-38 (29").

4. Objective III.E.4. is currently not being met. While total forb composition is adequate within key areas CDY-T-88-33 (9%); DY-T-88-37 (8%) and CDY-T-88-38 (26%) total forb composition within key areas CDW-2-T-02 (0.3%); CDS-T-88-31 (6.7%); DW-T-88-34 (3%); CDS-T-88-35 (3%) and DY-T-88-36 (7%) are considered inadequate to meet key area objectives for sage grouse.

In summary, 87% of the allotment is considered to be in good condition for mule deer with the remaining 13% in fair condition. Presently the limiting factors for the 13% of the allotment in fair condition are the lower than average forage diversity index rating and the poor browse vigor rating. However, a slight increase in both ratings will attain good condition within the 13% of the allotment. Pronghorn antelope habitat condition ratings show 87% of the allotment to be in fair condition while 13% is considered to be in good condition. Low forage diversity and excessive shrub height are the dominant limiting factors for present antelope habitat condition.

D. Key Area Objectives (Riparian/Fisheries)

Refer to V.A.3., Rangeland Program Summary Objectives

VI. TECHNICAL RECOMMENDATIONS

A. Reduce active preference on the allotment from 48,997 AUMs to 42,905 AUMs. The active preferences recommended for each pasture are as follows:

Pasture	AUMs
Horseshoe Seeding	2,875
Midas Seeding	1,061
Rock Creek Seeding	993
Native Range	37,547
Fenced Federal Range	429
Total	42,905

Utilization levels on key species would not exceed 50 percent on native range and 55 percent on crested wheatgrass seedings.

The active preference for each permittee would be:

Ellison Ranching Co. and Stanley C. Ellison Corp. (combined as of 7/88 and considered as one permittee) = 42,857 AUMs with grazing use in all pastures.

Nelo Mori = 48 AUMs with grazing use in the native pasture only.

Preference in the native pasture for each operator was based on the percent active preference each operator has within the native pasture. Ellison Ranching CO. and Stanley C. Ellison Corp. has 99.872% of the active preference within the native pasture with Nelo Mori having .128% of the preference.

99.872% x 37,547 = 37,498.9 AUMs

.128% x 37,547 = 48.06 AUMs

B. Ensure seedings are used up to capacity during the spring and delaying use within the native range to improve ecological status as identified in the RPS objectives.

C. Present management seems to be adequately maintaining forage condition on non-native range. There is opportunity to further improve forage condition through brush beating. This would allow either more use to be made on the seedings and less on the native range or a later turnout on native range.

D. To improve utilization levels on native range, livestock management practices need to be changed on the allotment. Salting should be moved out of the drainage bottoms, additional waters should be developed and livestock should be moved to fresh feed when utilization nears 50%. Implementing a deferred rotation system would also help meet this objective, and help improve terrestrial wildlife habitat and reduce pressure upon riparian habitat.

The development and protection (fencing) of 18 springs and associated meadow areas and the implementation of riparian management techniques will help achieve desired results by increasing desirable forbs and limiting livestock utilization within riparian areas to 50% of current year production.

E. Consider brush beating within existing antelope habitat to enhance habitat suitability for antelope and sage grouse. This would reduce shrub height and improve forb composition.

F. Poor stream habitat conditions within the Rock Creek Allotment are the result of livestock grazing practices which have prevented the growth and establishment of riparian vegetation. However, options for changing livestock use are limited by land ownership patterns. Most of the public land portions of the streams are small and surrounded by private holdings. Specific opportunities and/or recommendations by stream are presented below:

1. Upper Rock Creek

Although the upper portion of Rock Creek supports Lahontan cutthroat trout, few options are available for improving stream condition without the cooperation of the land owner. Only about 0.5 miles of the stream is public.

2. Middle Rock Creek

Because of its high wildlife values and because six continuous miles of the stream are public, the middle portion of Rock Creek should be considered an excellent candidate for restoration. Much of the stream is boarded by steep, rocky canyon walls which could possibly used as natural barriers in conjunction with gap fencing.

3. Toe Jam Creek

The public land portion of Toe Jam Creek is currently in good condition based on the results of one survey station. Even if future surveys indicate poor or deteriorating conditions, the value of initiating a restoration project is diminished by the fact that Toe Jam is almost entirely private. Unless cooperation from the landowner can be obtained, it is unlikely that protecting less than one mile of 14 total miles of badly deteriorated stream habitat will maintain or restore cutthroat populations.

4. Red Cow Creek

Based on current habitat conditions, the continued survival of redband rainbow trout in Red Cow Creek is seriously threatened. Priority consideration should be given to restoring habitat conditions on the approximate 1.5 to 2.0

miles of continuous public land in the headwaters. Although this represents only a limited portion of the total stream length, fencing headwaters has advantages over fencing downstream areas. If upstream areas are in good condition, water temperatures can be better maintained and flood damage to downstream areas is reduced. Additionally, headwater areas do not have the disadvantage of being impacted by poor land use practices upstream.

5. Winter's Creek

The one mile of public land present on Winter's Creek has already been fenced. Recovery has been fair although problems with cattle entry continue. The exclosure needs to be repaired and better maintained.

6. Upper and Lower Willow Creek

Although Willow Creek supports Lahontan cutthroat trout in its upper reaches, very little of the stream is on public land. Additionally, Willow Creek was not identified as a high priority stream in the Land Use Plan. Restoration should be considered a low priority.

7. Big Cottonwood Canyon Creek

There is a good possibility the trout in Big Cottonwood Canyon may be redband rainbow trout. This gives the stream added significance since redbands occur only in three other streams in Nevada all of which are mostly private and in fair to poor condition. However, the limited areas of public land on Big Cottonwood are mostly less than ¼ mile long and the stream was not identified as a high priority in the Land Use Plan. Therefore restoration should be considered a low priority.

G. Monitor wild horse herd areas to assess whether or not resource damage is occurring as a direct result of excess wild horse numbers.

H. Continue to conduct monitoring studies and reevaluate this allotment in 1994 to determine if changes in grazing practices recommended above are indeed leading to accomplishment of the land use objectives.

APPENDIX A

ACTUAL USE

Appendix A. Rock Creek Allotment actual use (AUMs) by pasture for 1983 through 1988.

Pasture	1983	1984	1985	1986	1987	1988	Average
Midas Seeding	345	380	444	550	510	510*	457
Horseshoe Seeding	1507	1985	1592	1692	1575	1575*	1654
Rock Creek Seeding	587	340	70*	340	438	338*	352
Native Range	32714	28011	30264	39072	34930	45406*	35066
Fenced Federal Range	429	429	429	429	429	429*	429
Allotment Total	35582	31145	32799	42083	37882	48258	37958

* No data available - Billed AUMs used.

APPENDIX B

Tuscarora Station Precipitation Records
1969 through 1988

APPENDIX C

Calculated Carrying Capacities

TUSCARORA PRECIPITATION RECORDS

	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL	CROP YEAR	PI	YI
1958	1.59	1.63	1.22	0.97	0.52	1.93	0.4	0.91	0.25	0.05	1.72	0.54	11.73			
1959	1.07	1.11	0.53	0.28	1.89	1.48	0.3	0.31	2.13	0.3	0.02	0.48	9.9	8.92	0.8	75
1960	1.61	2.5	1.88	0.74	0.65	0.06	0.3	0.79	0.45	1.22	1.79	0.88	12.87	10.37	0.93	91
1961	0.06	1	1.46	0.18	0.82	1.62	0.24	1.93	0.39	1.78	0.5	0.86	10.84	9.48	0.85	82
1962	0.95	1.83	1.5	0.93	2.74	0.59	0.29	0.2	0.05	0.33	1.06	0.15	10.62	12.07	1.08	110
1963	1.9	1.58	1.18	1.94	2.36	4.78	0	0.39	0.74	1.51	1.8	0.73	18.91	15.33	1.37	146
1964	1.67	0.21	0.93	0.68	0.67	1.54	0.08	T	0.4	0.83	1.49	5.17	13.67	10.48	0.94	93
1965	0.92	0.59	0.2	1.7	2.42	1.09	0.35	1.88	0.35	0.35	1.29	1.24	12.38	14.81	1.32	139
1966	0.42	0.99	0.86	0.25	0.18	0.61	0.43	0.07	0.51	0.05	0.79	2.04	7.2	6.54	0.58	48
1967	2.19	0.07	1.19	1.33	1.88	2.2	0.93	0.06	0.3	0.77	0.36	1.18	12.46	12.25	1.1	112
1968	0.48	1.55	0.44	0.22	1.05	1.79	0.1	3.05	0.04	0.18	3.22	2.49	14.61	8.14	0.73	67
1969	1.48	0.9	0.33	0.27	0.97	2.93	0.68	0	0.55	1.08	0.1	2.32	11.61	12.81	1.15	118
1970	1.95	0.15	1.35	0.72	1.08	3.54	1.17	0.35	0.8	0.43	2.1	1.42	15.06	12.84	1.15	118
1971	1.18	0.61	0.92	0.68	1.81	1.7	T	0.16	0.4	0.49	1.1	1.64	10.69	11.65	1.04	105
1972	0.58	0.59	1.01	0.45	0.88	1.58	T	0.03	1.47	1.55	1.16	1.13	10.43	8.72	0.78	73
1973	1.09	0.3	0.66	0.4	0.68	0.49	1.68	0.53	1	0.37	1.63	1.2	10.03	8.93	0.8	75
1974	0.95	0.17	0.51	0.46	T	0	0.7	T	0					6.29	0.56	46
1975	1.7	0.81	1.58	1.7	0.57	1.05	1.09	0.04	0.28	2.49	0.92	0.56	12.79			
1976	0.26	0.83	0.45	0.31	0.76	0.67	1.09	1.6	3.17	0.54	0.31	T	9.99	7.53	0.67	59
1977	0.6	0.37	0.75	0.41	1.17	1.17	0.73	0.64	0.48	0.06	1.92	1.66	9.96	8.49	0.76	70
1978	1.16	1.28	1.33	2.68	0.62	0.13	2.49	0.02	3.09	0.11	0.94	0.75	14.6	11.32	1.01	101
1979	2.37	1.47	0.85	0.89	1.55	0.53	1.22	1.08	0.32	2.56	1.53	0.18	14.55	12.55	1.12	115
1980	3.21	1.67	1.12	0.97	3.29	1.53	0.31	0.19	0.94	0.65	0.95	0.71	15.54	16.38	1.47	158
1981	0.83	0.43	1.77	0.33	2.15	0.16	T	0.1	0.48	1.75	2.64	4.4	15.04	8.92	0.8	75
1982	2.13	0.93	2.41	1.09	0.89	1.36	1.26	0.41	2.44	2.53	2.35	1.39	19.19	18.08	1.62	175
1983	1.9	2.05	2.02	1.52	1.32	1.1	0.1	1.16	1.52	1.36	3.76	4.51	22.32	18.62	1.67	182
1984	0.28	1.5	1	1.14	0.9	1.61	1.03	0.69	0.16	1.54	2.49	0.71	13.05	17.58	1.57	170
1985	0.45	0.21	1.43	0.4	1.21	0.43	1.44	0	1.76	1.12	1.26	1.33	11.04	9.03	0.81	77
1986	0.49	1.56	1.18	0.79	0.66	0.06	0.7	0.1	1.09	0.46	0.57	0.01	7.67	10.21	0.91	89
1987	0.46	0.95	1.23	0.22	3.01	0.94	0.17	0	0	0.69	1.52	1.15	10.34	8.94	0.8	75
1988	1.08	0.02	0.1	0.51	0.97	1.02	0.01	T						7.06	0.63	54
AVERAGE	1.19	0.96	1.08	0.81	1.28	1.28	0.62	0.54	0.85	0.94	1.51	1.41	12.73	11.18		

4.66 6.25 6.96 4.58 8.07
.77 1.04 1.16 0.76 1.34

Appendix C. Calculated carrying capacities (CC) and adjusted carrying capacities (CCC) for key areas on the Rock Creek Allotment.

CALCULATED CARRYING CAPACITIES (CC)

Pasture / Key Area	Year	Actual Use	Actual Utilization	Desired Utilization	CC
Horseshoe Seeding					
01	1983	1507	8%	55%	*
	1986	1692	50%	55%	1861
	1987	1575	40%	55%	2166
	1988	1575	44%	55%	1969
					Ave=1999
Midas Seeding					
02	1986	550	65%	55%	465
	1987	510	38%	55%	738
	1988	510	31%	55%	905
					Ave= 702
Rock Creek Seeding					
03	1983	587	20%	55%	1614
	1986	340	26%	55%	719
	1987	438	25%	55%	964
					Ave=1099
Native Range					
04	1986	39072	57%	50%	34274
	1988	45406	34%	50%	66774
07	1986	39072	1%	50%	*
09	1983	32714	37%	50%	44208
	1986	39072	12%	50%	163625
10	1986	39072	2%	50%	*
	1987	34930	7%	50%	*
11	1983	32714	3%	50%	*
	1986	39072	16%	50%	122100
12	1986	39072	32%	50%	61050
	1988	45406	24%	50%	94596
13	1986	39072	60%	50%	32560
	1988	45406	26%	50%	87319
14	1986	39072	13%	50%	150277
					Ave=85678

* Utilizations too low to use in calculations.

CORRECTED CARRYING CAPACITIES (CCC)

Pasture	Key Area	Year	CC	YI	CCC
Horseshoe Seeding	01	1983	*	1.82	*
		1986	1861	.89	2091
		1987	2166	.75	2888
		1988	1969	.54	3646
	Average				2875
Midas Seeding	02	1986	465	.89	522
		1987	738	.75	984
		1988	905	.54	1676
	Average				1061
Rock Creek Seeding	03	1983	1614	1.82	887
		1986	719	.89	808
		1987	964	.75	1285
	Average				993
Native Range	04	1986	34274	.89	38510
		1988	66774	.75	89032
	07	1986	*	.89	*
	09	1983	44208	1.82	24290
		1986	163625	.89	183848
	10	1986	*	.89	*
		1987	*	.75	*
	11	1983	*	1.82	*
		1986	122100	.89	137191
	12	1986	61050	.89	68596
		1988	94596	.75	126128
	13	1986	32560	.89	36584
		1988	87319	.75	116425
	14	1986	150277	.89	168851
	Average				98946

* Utilization too low to use in calculations.

APPENDIX D

Frequency Data
1983-1988

ROCK CREEK ALLOTMENT FREQUENCY DATA
Key Area #1025-01 - Crested Wheatgrass Seeding

SPECIES	1983 DATA	1988 DATA	SIGNIFICANT CHANGE
Crested wheatgrass	56.50	92.00	*
Great basin wildrye	1.50	2.50	
Sandberg bluegrass	24.50	84.00	*
Cheatgrass brome	57.00	40.00	*
Lupine	70.50	50.50	*
Wild buckwheat	0.50		
Hoods phlox		0.50	
Locoweed		0.50	
Annual forb	1.00		
Mustard	2.00		
Big sagebrush	26.50	24.50	

Species with significant (P< 0.10) change in frequency between 1983 and 1988.

ROCK CREEK ALLOTMENT FREQUENCY DATA
Key Area #1025-02 - Crested Wheatgrass Seeding

SPECIES	1983 DATA	1988 DATA	SIGNIFICANT CHANGE
Crested wheatgrass	38.00	54.50	*
Thickspike wheatgrass	4.50		
Sandberg bluegrass	1.50	11.50	*
Cheatgrass brome	7.50		
Sedge		19.00	
Wild buckwheat	1.0		
Locoweed	1.50	2.50	
Annual forb	1.00		
Mustard	3.50		
Pepperweed	1.50		
Big sagebrush	53.00	49.00	
Low rabbitbrush	0.50	1.50	

Species with significant (P< 0.10) change in frequency between 1983 and 1988.

ROCK CREEK ALLOTMENT FREQUENCY DATA
Key Area #1025-03 - Crested Wheatgrass Seeding

SPECIES	1983 DATA	1988 DATA	SIGNIFICANT CHANGE
Crested wheatgrass	52.50	81.00	*
Great basin wildrye	1.50	1.50	
Sandberg bluegrass		2.50	
Cheatgrass brome	7.50		
Lupine	9.00	21.50	*
Hoods phlox		0.50	
Pepperweed	0.50		
Big sagebrush	20.50	20.00	
Low rabbitbrush	5.00	5.00	
Rubber rabbitbrush		0.50	

Species with significant (P< 0.10) change in frequency between 1983 and 1988.

ROCK CREEK ALLOTMENT FREQUENCY DATA
Key Area #1025-04 - South Slope 12-14"

SPECIES	1983 DATA	1988 DATA	SIGNIFICANT CHANGE
Bluebunch wheatgrass	6.00	14.00	
Idaho fescue	0.50	1.50	
Great basin wildrye	7.50	11.00	
Needlegrass		2.00	
Bluebunch X Squirreltail	8.50		
Sandberg bluegrass	51.50	49.50	
Bottlebrush squirreltail	38.00	71.50	*
Cheatgrass brome	23.50	62.00	*
Lupine	53.50	71.00	*
Rockcress	2.50	5.00	*
Hoods phlox	29.50	53.50	*
Wild onion	23.50	34.50	
Aster	2.00		
Locoweed	2.00	15.00	*
Stoneseed	1.50	5.50	
Desert globemallow	1.50		
Waterleaf	0.50		
Fleabane		2.00	
Tapertip hawksbeard		2.00	
Pale agoseris		4.00	
Blue-eyed Mary	13.00		
Annual forb #1	1.50		
Annual forb #2	0.50		
Annual forb #3	2.00		
Mountain big sagebrush	46.50	34.00	*
Low sagebrush	0.50	2.00	
Low rabbitbrush	41.50	47.00	
Antelope bitterbrush	6.50	10.00	
Serviceberry	9.50	7.00	
Snowberry		1.00	

Species with significant (P< 0.10) change in frequency between 1983 and 1988.

ROCK CREEK ALLOTMENT FREQUENCY DATA
Key Area #1025-07 - Claypan 10-12"

SPECIES	1983 DATA	1988 DATA	SIGNIFICANT CHANGE
Bluebunch wheatgrass		1.50	
Webbers needlegrass		1.00	
Sandberg bluegrass	43.00	50.50	
Bottlebrush squirreltail	30.50	56.50	*
Cheatgrass brome		0.50	
Longleaf phlox	52.50	22.50	*
Wild buckwheat	2.50	2.50	
Perennial forb	0.50		
Nevada lomatium		3.00	
Crag aster		71.50	
Rock cress		3.50	
Pale agoseris		2.00	
Silene		11.50	
Larkspur		0.50	
Locoweed		1.00	
Bluebells		3.00	
Annual forb #1	18.00	0.50	*
Alkali sagebrush	30.00	24.50	

Species with significant (P< 0.10) change in frequency between 1983 and 1988.

ROCK CREEK ALLOTMENT FREQUENCY DATA
Key Area #1025-09 - Loamy 10-12"

SPECIES	1983 DATA	1988 DATA	SIGNIFICANT CHANGE
Bluebunch wheatgrass	23.50	28.00	
Idaho fescue		26.50	
Webber needlegrass		0.50	
Great basin wildrye	16.00	23.50	*
Kentucky bluegrass	0.50	0.50	
Sandberg bluegrass	44.00	18.50	*
Bottlebrush squirreltail	26.50	48.00	*
Cheatgrass brome	6.00	8.00	
Hoods phlox	31.00	40.50	
Lupine	31.50	32.50	
Lambstongue groundsel	4.50	3.50	
Pale agoseris	10.50	73.50	*
Wild onion	3.50	3.50	
Fleabane	7.00	14.50	
Locoweed	4.50	7.50	*
Rock cress		1.00	
Aster		0.50	
Longleaf phlox		43.50	
Desert parsley		0.50	
Bluebells		6.00	
Tapertip hawksbeard		0.50	
Stoneseed		1.00	
Penstemon		1.00	
Annual forb	21.50		
Mountain big sagebrush	44.00	0.50	*
Low rabbitbrush	45.50	30.50	*
Horsebrush	1.00		

Species with significant (P< 0.10) change in frequency between 1983 and 1988.

ROCK CREEK ALLOTMENT FREQUENCY DATA
Key Area #1025-10 - Loamy 8-10"

SPECIES	1983 DATA	1988 DATA	SIGNIFICANT CHANGE
Bluebunch wheatgrass		2.00	
Great basin wildrye	1.50	1.50	
Sandberg bluegrass	45.00	62.50	*
Bottlebrush squirreltail	4.00	11.50	*
Annual fescue	3.00		
Cheatgrass brome	43.00	63.00	*
Lupine	17.00	42.00	*
Aster	1.50		
Fleabane	5.00	35.00	*
Locoweed	1.00	15.00	*
Wild onion	1.50	2.00	
Longleaf phlox		8.50	
Pale agoseris		1.00	
Dusty maiden		20.50	
Rock cress		0.50	
Death camas		1.00	
Penstemon		1.00	
Perennial forb	1.5		
Annual forb	21.50		
Mustard	4.0		
Tumblemustard	0.50		
Mountain big sagebrush	27.00	20.50	
Low rabbitbrush	25.50	24.50	
Rubber rabbitbrush	4.00	1.00	

Species with significant (P< 0.10) change in frequency between 1983 and 1988.

ROCK CREEK ALLOTMENT FREQUENCY DATA
Key Area #1025-12 - Loamy Slope 10-16"

SPECIES	1983 DATA	1988 DATA	SIGNIFICANT CHANGE
Bluebunch wheatgrass	1.50	4.50	*
Idaho fescue	25.50	22.00	
Sandberg bluegrass	53.00	25.00	*
Bottlebrush squirreltail	71.00	56.00	*
Cheatgrass brome	25.00	16.50	*
Wild onion	11.50	11.50	
Lupine	1.00	2.00	
Longleaf phlox	14.00	13.00	
Locoweed	2.00	1.50	
Nevada lomatium		4.80	
Pale agoseris		35.00	
Bluebells		0.50	
Hawksbeard	0.50	10.50	*
Indian paintbrush	2.00		
Rockcress	4.00		
Larkspur		0.50	
Fleabane		0.50	
Stoneseed		0.50	
Perennial Forb	0.50		
Annual forb	8.50		
Birdbeak	3.50		
Mustard	14.00		
Mountain big sagebrush	49.00	36.00	*
Antelope bitterbrush	15.50	16.50	
Low rabbitbrush	4.50	3.00	

Species with significant (P< 0.10) change in frequency between 1983 and 1988.

ROCK CREEK ALLOTMENT FREQUENCY DATA
Key Area #1025-11 - Claypan 12-16"

SPECIES	1983 DATA	1988 DATA	SIGNIFICANT CHANGE
Bluebunch wheatgrass	19.00	22.00	
Idaho fescue		18.50	
Sandberg bluegrass	33.50	17.50	*
Bottlebrush squirreltail	11.00	47.50	*
Cheatgrass brome	1.50		
Wild onion	4.00	2.00	
Lupine	15.00	53.00	*
Hawksbeard	16.00	24.50	
Longleaf phlox	14.00	50.50	*
Locoweed	1.00	1.50	
Nevada lomatium		2.50	
Pale agoseris		18.50	
Bluebells		1.00	
Annual forb	6.00		
Low sagebrush	37.50	42.00	
Low rabbitbrush	10.50	6.00	

Species with significant (P< 0.10) change in frequency between 1983 and 1988.

ROCK CREEK ALLOTMENT FREQUENCY DATA
Key Area #1025-13 - Loamy 8-10"

SPECIES	1983 DATA	1988 DATA	SIGNIFICANT CHANGE
Bluebunch wheatgrass	3.00	1.00	
Thurber's needlegrass		7.50	
Great basin wildrye	1.00	1.00	
Indian ricegrass	2.50	0.50	
Sandberg bluegrass	59.00	76.00	*
Bottlebrush squirreltail	35.00	38.50	
Cheatgrass brome	6.50		
Wild onion	20.00	10.00	*
Aster	44.50		
Longleaf phlox	4.00	39.50	*
Locoweed		15.00	
Nevada lomatium	3.50	7.50	
Pale agoseris		2.50	
Hoods phlox	2.50		
Wild buckwheat	0.50		
Rockcress	4.50	5.50	
Low pussytoes		2.00	
Fleabane		64.00	
Dusky maiden		13.50	
Penstemon		4.50	
Annual forb #1	8.50		
Annual forb #2	1.50		
Blue-eyed Mary	32.00		
Mustard	6.00		
Wyoming big sagebrush	57.50	45.50	*
Spiny hopsage		0.50	
Low rabbitbrush		0.50	

Species with significant (P< 0.10) change in frequency between 1983 and 1988.

ROCK CREEK ALLOTMENT FREQUENCY DATA
Key Area #1025-14 - Loamy 8-10"

SPECIES	1983 DATA	1988 DATA	SIGNIFICANT CHANGE
Bluebunch wheatgrass	10.50	7.00	
Thickspike wheatgrass		8.50	
Great basin wildrye	7.50	11.50	
Idaho fescue		0.50	
Sandberg bluegrass	40.50	52.00	*
Bottlebrush squirreltail	11.00	56.00	*
Cheatgrass brome	14.50	36.00	*
Wild onion	11.00	3.50	*
Longleaf phlox	7.50	16.00	*
Locoweed		3.00	
Hoods phlox	1.00		
Wild buckwheat	1.00	2.50	
Rockcress	8.00	4.50	
Aster	4.50		
Lupine	0.50	15.50	*
Annual forb	7.00		
Blue-eyed Mary	17.50		
Big sagebrush	25.50	28.50	
Low rabbitbrush	26.00	15.00	*

Species with significant (P< 0.10) change in frequency between 1983 and 1988.

APPENDIX E

Weight-Estimate (Production) Data
1983-1988

ROCK CREEK PRODUCTION DATA Key Area #1025-01 - Crested Wheatgrass Seeding

SPECIES	1983 DATA				1988 DATA			
	LBS/AC	%COMP	CLIMAX	ALLOWABLE	LBS/AC	%COMP	CLIMAX	ALLOWABLE
Crested wheatgrass					406.13	42		
Great basin wildrye					17.27	2		
Sandberg bluegrass					29.81	3		
Bottlebrush squirreltail					10.44	1		
Cheatgrass brome					410.77	42		
Lupine					15.37	2		
Hoary aster					.69	T		
Annual forb					3.53	T		
Big sagebrush					74.01	8		
TOTAL					968.02			

GRASS TOTAL	90
FORB TOTAL	2
SHRUB TOTAL	8

ROCK CREEK PRODUCTION DATA Key Area #1025-02 - Crested Wheatgrass Seeding

SPECIES	1983 DATA				1988 DATA			
	LBS/AC	%COMP	CLIMAX	ALLOWABLE	LBS/AC	%COMP	CLIMAX	ALLOWABLE
Crested wheatgrass					652.38	82		
Sandberg bluegrass					T	T		
Cheatgrass brome					T	T		
Lupine					2.97	T		
Annual forb					10.93	1		
Big sagebrush					116.65	15		
Low rabbitbrush					16.17	2		
TOTAL					799.10			
GRASS TOTAL						83		
FORB TOTAL						1		
SHRUB TOTAL						17		

ROCK CREEK PRODUCTION DATA Key Area #1025-03 - Crested Wheatgrass Seeding

SPECIES	1983 DATA				1988 DATA			
	LBS/AC	%COMP	CLIMAX	ALLOWABLE	LBS/AC	%COMP	CLIMAX	ALLOWABLE
Crested wheatgrass					426.41	97		
Unk. brome					1.92	T		
Cheatgrass brome					T	T		
Lupine					2.85	1		
Prickly phlox					1.26	T		
Tumblemustard					1.23	T		
Low rabbitbrush					3.74	1		
TOTAL					437.41			
GRASS TOTAL						98		
FORB TOTAL						1		
SHRUB TOTAL						1		

ROCK CREEK PRODUCTION DATA Key Area #1025-04 - South Slope 12-14" Ecological Site

SPECIES	1983 DATA				1988 DATA			
	LBS/AC	%COMP	CLIMAX	ALLOWABLE	LBS/AC	%COMP	CLIMAX	ALLOWABLE
Bluebunch wheatgrass	38.19	6	30-50	6	14.46	2	30-50	2
Sandberg bluegrass	75.98	11	2	2	46.35	5	2	2
Bottlebrush squirreltail	45.79	7	2	2	122.38	13	2	2
Cheatgrass brome	14.82	2	0		163.33	17	0	
Lupine	18.57	3	2-5	3	69.64	7	2-5	5
Hoods phlox	11.14	2	2	2	109.11	12	2	2
Tapertip hawksbeard					1.08	T	2-5	T
Wild onion	T	T	2	T	1.79	T	2	T
Stoneseed	1.93	T	2	T	1.56	T	2	T
Locoweed					8.93	1	2	1
Pale agoseris					T	T	2	T
Goatsbeard					7.59	1	0	
Groundsel	1.76	T	2	T				
Rock cress					T	T	2	T
Annual forb					T	T	0	
Big sagebrush	78.40	11	5-10	10	141.25	15	5-10	10
Low sagebrush	46.25	7	2	2				
Antelope bitterbrush	39.27	6	2-15	6	80.06	9	2-15	9
Serviceberry					4.60	1	2	1
Low rabbitbrush					162.75	17	2	2
Rubber rabbitbrush	320.59	46	2	2				
TOTAL	692.69			35	934.88			36
GRASS TOTAL		25	70	25		37	70	37
FORB TOTAL		5	10	5		21	10	10
SHRUB TOTAL		70	20	20		42	20	20
				50				67

MID

ROCK CREEK PRODUCTION DATA Key Area #1025-07 - Claypan 10-12" Ecological Site

SPECIES	1983 DATA				1988 DATA			
	LBS/AC	%COMP	CLIMAX	ALLOWABLE	LBS/AC	%COMP	CLIMAX	ALLOWABLE
Sandberg bluegrass	31.34	22	5-10	10	30.70	5	5-10	5
Bottlebrush squirreltail	5.28	4	2-5	4	37.70	6	2-5	5
Cheatgrass brome	T	T	0					
Longleaf phlox	26.41	19	2	2				
Annual forb	12.29	9	0		T	T	0	
Wild buckwheat	17.66	13	2	2				
Unk legume					T	T	2	T
Pale agoseris					T	T	2	T
Crag aster					6.10	1	2	1
Silene					8.80	1	2	1
Nevada lomatium					T	T	2	T
Rock cress					T	T	2	T
Low sagebrush	47.13	34	15-25	25	511.23	86	15-25	25
TOTAL	140.11			43	594.53			36 ← 37 ? MSO
GRASS TOTAL		26	65	26		11	65	11
FORB TOTAL		40	10	10		3	10	3
SHRUB TOTAL		34	25	25		86	25	25
				61				39

ROCK CREEK PRODUCTION DATA Key Area #1025-11 - Claypan 12-16" Ecological Site

SPECIES	1983 DATA				1988 DATA			
	LBS/AC	%COMP	CLIMAX	ALLOWABLE	LBS/AC	%COMP	CLIMAX	ALLOWABLE
Bluebunch wheatgrass	97.00	46	15-30	30	61.81	12	15-30	12
Idaho fescue					8.97	2	30-50	2
Sandberg bluegrass	17.33	8	10	8	50.95	10	2-10	10
Bottlebrush squirreltail					10.64	2	2-5	2
Cheatgrass brome	1.52	1	0					
Tapertip hawksbeard					8.79	2	1-3	2
Longleaf phlox					4.89	1	1-3	1
Nevada lomatium					T	T	2	T
Lupine	T	T	2	T	17.90	4	2	2
Locoweed					5.12	1	2	1
Death camas					1.33	T	2	T
Pale agoseris					T	T	2	T
Wild onion	T	T	2	T				
Groundsel	10.54	5	2	2				
Annual forb					T	T	0	
Low sagebrush	75.72	36	10-25	25	320.60	64	10-25	25
Low rabbitbrush					12.48	2	5	2
Rubber rabbitbrush	9.52	4	5	4				
TOTAL	211.63			69	503.48			59
GRASS TOTAL		55	55	55		26	55	26
FORB TOTAL		5	20	5		8	20	8
SHRUB TOTAL		40	25	25		66	25	25
				85				59

ROCK CREEK PRODUCTION DATA Key Area #1025-10 - Loamy 8-10" Ecological Site

SPECIES	1983 DATA				1988 DATA			
	LBS/AC	%COMP	CLIMAX	ALLOWABLE	LBS/AC	%COMP	CLIMAX	ALLOWABLE
Great basin wildrye					20.49	2	5-15	2
Sandberg bluegrass	26.33	11	10	10	91.56	10	2-10	10
Bottlebrush squirreltail					8.67	1	5	1
Cheatgrass brome	30.46	13	0		642.26	69	0	
Locoweed					2.14	T	1	T
Lupine	.63	T	1	T	8.07	1	1	1
Tumblemustard					11.97	1	0	
Dusty maiden					1.27	T	1	T
Groundsmoke					77.89	8	0	
Fleabane					9.75	1	1	1
Penstemon					2.92	T	1	T
Annual forb					1.15	T	0	
Sowthistle					.88	T	0	
Aster	.49	T	1	T				
Tapertip hawksbeard	T	T	1	T				
Big sagebrush	168.73	74	10-15	15				
Rubber rabbitbrush					43.29	5	2	2
Low rabbitbrush					2.48	T	2	T
TOTAL	229.14			25	924.79			17
GRASS TOTAL		25	65	25		83	65	65
FORB TOTAL		1	10	1		12	10	10
SHRUB TOTAL		74	25	25		5	25	5
				51				80

ROCK CREEK PRODUCTION DATA — Key Area #1025-09 - Loamy Slope 10-16" Ecological Site

SPECIES	1983 DATA				1988 DATA			
	LBS/AC	%COMP	CLIMAX	ALLOWABLE	LBS/AC	%COMP	CLIMAX	ALLOWABLE
Bluebunch wheatgrass	26.86	5	15-30	5	99.61	12	15-30	12
Idaho fescue					89.44	11	15-40	11
Great basin wildrye	75.07	13	2-10	10	195.51	23	2-10	10
Nevada bluegrass					11.77	1	2-5	1
Sandberg bluegrass	88.67	16	2	2	28.34	3	2	2
Bottlebrush squirreltail					141.81	17	2	2
Cheatgrass brome					3.25	T	0	
Lupine	15.63	3	2	2	94.60	11	2	2
Pale agoseris					13.77	2	2	2
Hoods phlox	10.36	2	2	2	40.49	5	2	2
Longleaf phlox					9.41	1	2	1
Stoneseed					4.94	1	1-2	1
Groundsel					2.88	T	2	T
Locoweed					T	T	2	T
Wild onion					T	T	2	T
Annual forb	17.22	3	0					
Big sagebrush	307.12	54	10-15	15				
Low rabbitbrush	22.78	4	5	4	96.38	12	5	5
TOTAL	563.71			40	832.20			51
GRASS TOTAL		34	70	34		68	70	68
FORB TOTAL		8	10	8		20	10	10
SHRUB TOTAL		58	20	20		12	20	12
				62				90

MID to LATE

ROCK CREEK PRODUCTION DATA Key Area #1025-12 - Claypan 12-16" Ecological Site

SPECIES	1983 DATA				1988 DATA			
	LBS/AC	%COMP	CLIMAX	ALLOWABLE	LBS/AC	%COMP	CLIMAX	ALLOWABLE
Bluebunch wheatgrass					14.06	1	15-30	1
Idaho fescue	53.82	5	30-50	5	23.02	2	30-50	2
Sandberg bluegrass	114.73	12	2-10	10	43.60	4	2-10	4
Bottlebrush squirreltail	15.49	2	2-5	2	24.85	2	2-5	2
Cheatgrass brome	19.50	2	0		58.72	5	0	
Locoweed					6.39	1	2	1
Wild onion	T	T	2	T	3.72	T	2	T
Tumblemustard	1.27	T	0		T	T	0	
Tapertip hawksbeard	1.76	T	1-3	T	2.20	T	1-3	T
Thistle					T	T	0	
Lupine					T	T	2	T
Pale agoseris					4.39	T	2	T
Longleaf phlox					1.63	T	2	T
Larkspur					T	T	2	T
Nevada lomatium					T	T	2	T
Annual forb	T	T	0		2.13	t	0	
Blue-eyed Mary	T	T	0					
Low sagebrush	712.45	72	10-25	25	837.53	74	10-25	25
Antelope bitterbrush	39.27	4	0-10	4	116.03	10	0-10	10
Low rabbitbrush	30.45	3	5	3				
TOTAL	988.74			49	1138.27			45
GRASS TOTAL		21	55	21		14	55	14
FORB TOTAL		T	20	T		2	20	2
SHRUB TOTAL		79	25	25		84	25	25
				46				41

MID

ROCK CREEK PRODUCTION DATA Key Area #1025-13 - Loamy 8-10" Ecological Site

SPECIES	1983 DATA				1988 DATA			
	LBS/AC	%COMP	CLIMAX	ALLOWABLE	LBS/AC	%COMP	CLIMAX	ALLOWABLE
Needlegrass					.95	T	5	T
Great basin wildrye	4.42	1	5-15	1				
Sandberg bluegrass	172.76	24	2-10	10	42.52	12	2-10	10
Bottlebrush squirreltail	58.36	8	5	5	24.53	7	5	5
Cheatgrass brome	305.76	43	0		T	T	0	
Wild onion	T	T	1	T	T	T	1	T
Dusky maiden					7.00	2	1	1
Fleabane	10.80	2	1	1	33.49	10	1	1
Penstemon					.98	T	1	T
Nevada lomatium					T	T	1	T
Longleaf phlox					3.91	1	1	1
Tumblemustard	T	T	0		2.40	1	0	
Locoweed					1.41	T	1	T
Thistle					T	T	0	
Globemallow	2.35	T	2-5	T				
Annual forb	T	T	0		T	T	0	
Wyoming big sagebrush	163.68	23	10-15	15	231.31	66	10-15	15
TOTAL	718.13			32	348.50			32
GRASS TOTAL		75	65	65		20	65	20
FORB TOTAL		2	10	2		14	10	10
SHRUB TOTAL		23	25	23		66	25	25
				90				55

MID

ROCK CREEK PRODUCTION DATA Key Area #1025-14 - Loamy 8-10" Ecological Site

SPECIES	1983 DATA				1988 DATA			
	LBS/AC	%COMP	CLIMAX	ALLOWABLE	LBS/AC	%COMP	CLIMAX	ALLOWABLE
Bluebunch wheatgrass	14.82	5	10-40	5	20.40	2	10-40	2
Thickspike wheatgrass					6.74	1	5	1
Great basin wildrye	77.08	25	5-15	15	18.87	2	5-15	2
Sandberg bluegrass	7.32	2	2-10	2	43.16	5	2-10	5
Bottlebrush squirreltail	1.96	1	5	1	31.50	3	5	3
Cheatgrass brome	15.20	5	0		134.07	14	0	
Fleabane					T	T	1	T
Longleaf phlox	T	T	1	T	.98	T	1	T
Lupine					1.88	T	1	T
Rock cress					T	T	1	T
Locoweed	2.60	1	1	1	.47	T	1	T
Wild onion	T	T	1	T				
Tansy mustard	6.36	2	0		T	T	0	
Annual forb	T	T	0					
Big sagebrush	112.71	37	10-15	15	340.76	36	10-15	15
Low sagebrush	66.44	22	2	2	327.60	35	2	2
TOTAL	304.49			41	940.45			30
GRASS TOTAL		38	65	38		27	65	65
FORB TOTAL		3	10	3		2	10	2
SHRUB TOTAL		59	25	25		71	25	25
				66				82

APPENDIX F

Ecological Inventory Summary
1984

ROCK CREEK ALLOTMENT - ECOLOGICAL SITE INVENTORY

Ecological Site Name	Site #	PERCENT OF PUBLIC ACRES IN ALLOTMENT					
		EARLY	MID	LATE	PNC	UNCL	TOTAL
Dunes 6-10"	24-1	0.15	0.1	0	0	0	0.26
Loamy 5-8"	24-2	0.62	0.39	0	0	0	1.02
Sodic Terrace 6-8"	24-3	0.01	0	0	0	0	0.01
Loamy 8-10"	24-5	1.01	1.16	0	0	0	2.17
Dry Floodplain 6-10"	24-6	0.27	0.2	0.02	0	0	0.49
Loamy 10-12"	24-13	0	0.01	0	0	0	0.02
Droughty Loam 4-8"	24-20	0.63	0.75	0	0	0	1.38
Sodic Terrace 8-10"	24-22	0.02	0.02	0	0	0	0.04
Moist Floodplain 6-10"	25-1	0	0.01	0	0	0	0.01
Loamy Bottom 8-14"	25-3	0.07	2.05	0.33	0	0	2.45
Loamy Slope 16+"	25-4	0	0.38	0.26	1.08	0	1.72
Wet Meadow 10-16"	25-5	0.02	0.84	0.01	0	0	0.88
Dry Meadow 10-16"	25-6	0	0.16	0	0	0	0.16
South Slope 12-14"	25-9	0	1.23	4.71	0	0	5.94
Steep North Slope 16+"	25-10	0.05	0.03	1.48	0.05	0	1.61
Loamy Slope 10-16"	25-12	0	1.25	6.85	1.19	0	9.28
Churning Clay 8-12"	25-13	0	0.19	0.05	0	0	0.24
Loamy 10-12"	25-14	0.16	2.63	4.83	0	0	7.62
South Slope 8-12"	25-15	0.01	0.79	0.09	0	0	0.89
South Slope 14-18"	25-16	0	0	0.53	0.01	0	0.53
Claypan 12-16"	25-17	0	1.83	8.72	3.46	0	14.01
Claypan 10-12"	25-18	0	7.61	5.33	0	0	12.94
Loamy 8-10"	25-19	2.04	19.59	0.9	0	0	22.53
Cobbly Claypan 8-12"	25-22	0	0	0.1	0	0	0.1
Mountain Ridge 16+"	25-24	0	0.01	3.5	0	0	3.52
Chalky Knoll 8-10"	25-25	0	0.02	1.11	0	0	1.12
Channery Hill 8-10"	25-26	0	0	0	0	0	0
Loamy 12-16"	25-27	0	0.01	0.09	0	0	0.1
Snow Pocket 16+"	25-28	0	0	0.04	0	0	0.04
Deep Loamy 16+"	25-29	0	0	0.13	0	0	0.13
Dry Floodplain 6-10"	25-31	0.02	0.01	0.09	0	0	0.12
Loamy 5-8"	25-38	0	0.02	0	0	0	0.02
Fractured Stony Loam 12-16"	25-46	0	0.01	0	0	0	0.01
Stony Bottom 8-10"	25-50	0	0.09	0	0	0	0.09
Eroded Claypan 12-16"	25-51	0	1.08	0.04	0	0	1.11
Ceanothus Thicket 16+"	25-52	0	0.03	0.01	0	0	0.05
Crested Wheatgrass	Seedings	0	0	0	0	1.72	1.72
Rock Outcrops, etc.	MISC	0	0	0	0	5.67	5.67
	TOTAL	5.08	42.5	39.22	5.79	7.39	100

APPENDIX G

Mule Deer Habitat Condition

Transect Number	Monitoring Location	Condition	Habitat Suitability Rating	Percent Composition of Preferred Shrubs	% Utilization of Preferred Shrubs
CDW-2-T-02	T.42N., R.50E. Sec. 25 SWNE	1983=Good 1988=Good	75 66	46% 41%	70% (PUTR) 55% (PUTR)
CDS-T-88-31	T.40N., R.51E. Sec. 26 NENW	1988=Good	62	18%	60% (PUTR)
CDY-T-88-33	T.39N., R.48E. Sec. 11 NENW	1988=Good	67	53%	----(ARLO)
DW-T-88-34	T.38N., R.47E. Sec. 14 SWNE	1988=Fair	57	45%	----(ARTRW)
CDS-T-88-35	T.40N., R.49E. Sec. 4 SESE	1988=Good	65	69%	----(ARLO)
*DY-T-88-36	T.37N., R.45E. Sec. 2 SESE	1988=Good	72	1%	----(ARTRW)
DY-T-88-37	T.41N., R.47E. Sec. 23 SWNE	1988=Good	62	59%	----(ARTRW)
CDY-T-88-38	T.40N., R.50E. Sec. 20 NESW	1988=Good	67	22%	----(SYMPH)

* - Monitoring plot established within Rock Creek Burn.

ROCK CREEK ALLOTMENT - ECOLOGICAL SITE INVENTORY

Ecological Site Name	Site #	PUBLIC ACRES WITHIN ALLOTMENT					
		EARLY	MID	LATE	PNC	UNCL	TOTAL
Dunes 6-10"	24-1	543	367				910
Loamy 5-8"	24-2	2212	1387				3599
Sodic Terrace 6-8"	24-3	22					22
Loamy 8-10"	24-5	3569	4125				7694
Dry Floodplain 6-10"	24-6	963	721	66			1750
Loamy 10-12"	24-13	17	43				60
Droughty Loam 4-8"	24-20	2244	2641				4885
Sodic Terrace 8-10"	24-22	54	88				142
Moist Floodplain 6-10"	25-1		21				21
Loamy Bottom 8-14"	25-3	232	7276	1169			8677
Loamy Slope 16+"	25-4		1336	915	3830		6081
Wet Meadow 10-16"	25-5	65	2984	51	1		3101
Dry Meadow 10-16"	25-6		581	1			582
South Slope 12-14"	25-9	6	4371	16674			21051
Steep North Slope 16+"	25-10	190	107	5235	183		5715
Loamy Slope 10-16"	25-12		4432	24251	4202		32885
Churning Clay 8-12"	25-13		665	184			849
Loamy 10-12"	25-14	567	9303	17122			26992
South Slope 8-12"	25-15	42	2805	319			3166
South Slope 14-18"	25-16			1871	20		1891
Claypan 12-16"	25-17		6488	30875	12252		49615
Claypan 10-12"	25-18		26970	18878			45848
Loamy 8-10"	25-19	7222	69381	3191			79794
Cobbly Claypan 8-12"	25-22			366			366
Mountain Ridge 16+"	25-24		37	12413			12450
Chalky Knoll 8-10"	25-25		54	3915			3969
Channery Hill 8-10"	25-26	6					6
Loamy 12-16"	25-27		35	312			347
Snow Pocket 16+"	25-28			128			128
Deep Loamy 16+"	25-29			464			464
Dry Floodplain 6-10"	25-31	71	48	321			440
Loamy 5-8"	25-38		63				63
Fractured Stony Loam 12-16"	25-46		19				19
Stony Bottom 8-10"	25-50		326				326
Eroded Claypan 12-16"	25-51		3812	130			3942
Ceanothus Thicket 16+"	25-52		120	44			164
Crested Wheatgrass	Seedings					6095	6095
Rock Outcrops, etc.	MISC					20082	20082
	TOTAL	18025	150606	138895	20488	26177	354191

APPENDIX H

Pronghorn Antelope Habitat Condition

Transect Number	Monitoring Location	Condition	Habitat Suitability Rating	Habitat Limiting Factor
CDW-2-T-02	T.42N., R.50E. Sec. 25 SWNE	1988=Fair	44	Low forage diversity and quality.
CDS-T-88-31	T.40N., R.51E. Sec. 26 NENW	1988=Fair	48	Excessive shrub height.
CDY-T-88-33	T.39N., R.48E. Sec. 11 NENW	1988=Fair	58	Excessive percent shrub composition
DW-T-88-34	T.38N., R.47E. Sec. 14 SWNE	1988=Fair	40	Excessive percent shrub composition and shrub height
CDS-T-88-35	T.40N., R.49E. Sec. 4 SESE	1988=Fair	43	Low vegetation quality
*DY-T-88-36	T.37N., R.45E. Sec. 2 SESE	1988=Good	67	Increase in water distribution needed.
DY-T-88-37	T.37N., R.45E. Sec. 23 SWNE	1988=Fair	55	Excessive shrub height.
CDY-T-88-38	T.40N., R.50E. Sec. 20 NESW	1988=Fair	55	Excessive shrub height.

* - Monitoring plot established within Rock Creek Burn.


ROCK CREEK ALLOTMENT
CRUCIAL DEER SUMMER
DEER WINTER
CRUCIAL DEER WINTER
DEER YEARLONG
CRUCIAL DEER YEARLONG
PRONGHORN ANTELOPE
SAGE GROUSE STRUTTING LEK
MONITORING PLOT
Public
Private
BLM 347,477.27
PVT 133,880.73
ELKO
COUNTY
SILVER CLOUD MINE
SHEEP
CREEK
RANGE

12/19/89

BOB MILLER
Acting Governor

STATE OF NEVADA

TERRI JAY
Executive Director

COMMISSIONERS

Deloyd Satterthwaite, *Chairman*
Spanish Ranch
Tuscarora, Nevada 89834

Dawn Lappin
15640 Sylvester Road
Reno, Nevada 89511

Michael Kirk, D.V.M.
P.O. Box 5896
Reno, Nevada 89513

COMMISSION FOR THE PRESERVATION OF WILD HORSES
Stewart Facility
Capitol Complex
Carson City, Nevada 89710
(702) 885-5589

December 19, 1989

Les Sweeney, Area Manager
Elko Resource Area
3900 E. Idaho Street
P.O. Box 831
Elko, Nevada 89801

Dear Mr. Sweeney,

Thank you for the opportunity to review and provide comments on the Rock Creek Allotment Evaluation.

Under the RPS Objectives, 4.a., this section must be amended as well as the RPS itself, to comply with the IBLA decision. The objective should reflect maintaining sufficient habitat; managing wild horses to achieve a thriving, natural ecological balance; and providing sufficient cover, forage and water.

IV. Management Evaluation

B. Summary of Studies Data

1. Actual Use

a. Livestock - Where are horses licensed? Are they in, or adjacent to the herd area? Why is this permitted? To the best of my knowlegde, this is not permitted in any other district. Are the domestic horses branded to avoid confusion?

c. Wild Horses & Burros - What is the census method used? Are the numbers actual data?

Table 1

Where is your key species utilization data for 1984 and 1985?

Riparian - It is apparent from the data presented that the riparian areas are being hit very hard. It also appears that if it were not for the heavy and severe utilization of the riparian areas, the general overall condition of the allotment would be good.

With protection of the watershed an important factor to protection of habitat for all users, is it possible to work with the private landowners to implement riparian protection?

Since portions of the riparian areas are on public lands and in a wild horse herd area, it may be possible to obtain Commission funding for exclosures and other improvements in this area.

VI. Technical Recommendations

A. Are you proposing to reduce actual use or preference? If a reduction in actual use is necessary, reducing AUM's on paper will have little effect on the desired result.

G. Even though the document is in draft form, it may prove beneficial to use the Draft Wild Horse and Burro Habitat Evaluation Procedure Users Guide. Since wild horse habitat is sometimes different than livestock "habitat," pinpointing key wild horse areas may enable you to successfully determine wild horse use versus wildlife use versus livestock use.

Thank you for the opportunity to provide comments on this allotment evaluation.

If the Commission can provide funds for any of the proposed habitat improvements in the HMA, please let me know so I can forward a grant application to you. The Commission may be interested in assisting in this matter. I look forward to hearing from you.

Sincerely,

TERRI JAY
Executive Director

TJ/cb

12/10/89

Wild Horse Organized Assistance, Inc.
P.O. Box 555
Reno, Nevada 89504

December 10, 1989

Mr. Les Sweeney, Area Manager
Bureau of Land Management
Elko District Office
P.O. Box 831
Elko, Nevada 89801

Dear Mr. Sweeney:

Thank you very much for your extension of time to permit WHOA to comment on the Rock Creek Allotment Evaluation.

I am not sure this is the proper place to raise this issue, but nowhere in the allotment evaluation, even though it is considered an "I" allotment, do I find mention of an AMP, nor any future plans for an AMP, did I miss something. How can the BLM improve the grazing on an allotment without some idea as to what the grazing system will be? How do you know now and/or how will you know in the future, based on monitoring, if you don't know where the livestock will be, what is eating the forage?

As stated in previous documents to the District we do not support the use of "yield indexing" to set grazing capacity. Is this consistent with NSO policy? Despite the fact that I understand the legal reason behind a reduction from preference, which will probably mean a paper cow reduction, we continue to point out the inconsistency when the BLM applies its' "management" techniques towards wild horses...reduction in actual animals. There is no earthly reason, unless monitoring shows otherwise, why you should not use the same principles on management of wild horses in the future, and I'm positive when the time arrives, we will remind the District of the "other alternatives" open for wild horse management so long as the leniency continues to the livestock industry when the evidence points to a real need to reduce real cows.

Enclosed is a copy of the "yield indexing" as used by Oregon; I am told there appears to be a step missing in the system used by Elko, are they different? WHOA wants to support the BLM's monitoring, but we have to be able to understand the inconsistencies.

Most sincerely,

Dawn Y. Lappin

Dawn Y. Lappin (Mrs.)
Director

cc: Board of Trustees
API

P.S. Please see highlights on page 64 of attachments

12/10/89

December 10, 1989

Mr. Rodney Harris, District Manager
Bureau of Land Management
Elko District Office
P.O. Box 831
Elko, Nevada 89801

Dear Mr. Harris:

Thank you very much for your letter (4700-NV 013), not dated, capture plan and envirnonmental assessment NV 010-90-007.

I checked the Final Elko EIS (1986), and Elko RMP (1987), and nowhere can I find where there was an amendment to those documents that allows for the removal of wild horses from their herd area. It was my understanding the 1971 herd areas as described in the Land Use Plan the Bureau would manage wild horses in those areas. Nothing was said about checkerboard lands as being part of their herd area in the LUP, nor do we find any place where the "checkerboard" Spruce/Pequop horses are delineated out from the entire herd. I believe that the removal on this basis constitutes an "amendment" to the LUP which must go out for public comment in the form of an amendment, not a capture plan.

Our records show a draft Spruce/Pequop EA and capture plan dated April 1987, our response comments of May 1987, a final EA and capture plan in August 1987, a 28 day notice in Septemner of 1987. None of those documents refer to the "checkerboard" Spruce/Pequop horses. Some questioning ascertained that roundup was cancelled due t o weather and then later perhaps because of IBLA.

In the case of Big Spring-Wood Hills, formally Big Spring and Chase Spring Allotment, we cannot ascertain by the EA whether the use is incidental, migration, or a permanent establishment outside their herd area. Are all the horses there all the time?

The current "checkerboard" Spruce/Pequop 1989 EA (pg. 13, III B) states, "The alternatives have been discussed and determined not to be feasible for the reasons mentioned in I.C. 1-3 (pg.2). Upon checking I.C. 1-3 (pg 3) we find "stipulations." "Alternatives" are I.D. 1-3 (pg.3) of which none are actual alternatives to capture, but rather, alternative "methods" of capture. Despite what BLM may believe, there are alternatives to capture 1) relocation, 2) driving the horses back to their normal ranges, simple removal of offending animals, elimination of the attractions to the area, or even fencing.

Wild Horse Organized Assistance, Inc.
P.O. Box 555
Reno, Nevada 89504

December 10, 1989

Mr. Les Sweeney, Area Manager
Bureau of Land Management
Elko District Office
P.O. Box 831
Elko, Nevada 89801

Dear Mr. Sweeney:

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I am not sure this is the proper place to raise this issue, but nowhere in the allotment evaluation, even though it is considered an "I" allotment, do I find mention of an AMP, nor any future plans for an AMP, did I miss something. How can the BLM improve the grazing on an allotment without some idea as to what the grazing system will be? How do you know now and/or how will you know in the future, based on monitoring, if you don't know where the livestock will be, what is eating the forage?

As stated in previous documents to the District we do not support the use of "yield indexing" to set grazing capacity. Is this consistent with NSO policy? Despite the fact that I understand the legal reason behind a reduction from preference, which will probably mean a paper cow reduction, we continue to point out the inconsistency when the BLM applies its' "management" techniques towards wild horses...reduction in actual animals. There is no earthly reason, unless monitoring shows otherwise, why you should not use the same principles on management of wild horses in the future, and I'm positive when the time arrives, we will remind the District of the "other alternatives" open for wild horse management so long as the leniency continues to the livestock industry when the evidence points to a real need to reduce real cows.

Enclosed is a copy of the "yield indexing" as used by Oregon; I am told there appears to be a step missing in the system used by Elko, are they different? WHOA wants to support the BLM's monitoring, but we have to be able to understand the inconsistencies.

Most sincerely,

Dawn Y. Lappin

Dawn Y. Lappin (Mrs.)
Director

cc: Board of Trustees
API

P.S. Please see highlights on page 64 of attachments