MAY 05 1995

United States Department of the Interior

TAKE PRIDE IN AMERICA

BUREAU OF LAND MANAGEMENT
ELKO DISTRICT OFFICE
3900 E. IDAHO STREET
P.O. BOX 831
ELKO, NEVADA 89801

IN REPLY REFER TO:

4400/4120 (NV-015)

MAY -2 1995

Von L. and Marian Sorensen
HC 60 Box 165
Wells, NV 89835

Dear Mr. Sorensen:

The Spruce Allotment Evaluation is enclosed for your review. Please direct your comments, if any, to the following subjects:

A) Monitoring information that should be added to the evaluation, and

B) Other ideas to achieve the multiple use objectives, as alternatives to the technical recommendations already described in the enclosed evaluation.

Please provide me with your formal comments by June 2, 1995, and make your comments as clear and concise as possible.

Sincerely yours,

BILL BAKER, Manager
Wells Resource Area

Enclosure: As stated

cc: The Humane Society of the U.S.
Animal Protection Institute
Commission for the Preservation of Wild Horses
HTT Resource Advisors
Federal Land Bank
Nevada Department of Agriculture
American Horse Protection Association, Inc.
Nevada Wildlife Federation
Natural Resources Defense Council, Inc.
Kathryn Cushman
U.S. Fish and Wildlife Service
People for the West
Sierra Club, Toiyabe Chapter
Wild Horse Organized Assistance
Resource Concepts, Inc.
American Mustang and Burro Association
Well Resource Area Grazing Association
Nevada Division of Wildlife
Edie Wilson
The Nature Conservancy
Rutgers Law School
Bertrand Paris and Sons
Kenneth Jones

Subj: **land use plans**
Date: 3/1/2010 12:41:27 PM Eastern Daylight Time
From: mustangs@wildhorse.nv.gov
To: AMHRSEPROT@aol.com

Robin
Good morning, hope all is well with you.

I am taking Elko down to archives tomorrow, I worked there three days last week and will be there tomorrow all day. Its moving along.....

They have not received the land use plans for Battle Mountain and Carson, and also were asking about your external hard drive.

If you haven't shipped the plans yet, could you please add the ones for Elko. I have more of the newer ones here and a few of the old, but you have many more than we have here. It's a good thing for the archives that you have the older ones.

Please send.....

✓ Elko RMP Draft Alternatives #3
✓ Elko RMP Issues and Planning Criteria, no date, Rod Harris, DM 1601 (NV-010) #3
✓ Jarbridge Draft RMP/EIS August 1984 #6 + 11
✓ Elko Resource Area Drat RMP/EIS August 1985 #3
✓ Little Owyhee/Snowstorm HMAP 1986 #7
✓ Owyhee Canyon Lands Wilderness EIS Final (OR, ID, & NV) 1989 #9
Spruce Allotment Evaluation Summary Elko, Wells RA, NV April 1995 #8

I will rest much easier when all this is categorized and down to archives, don't know when we will be closing and they gave me a 2 month window?????? Hope its later than sooner but will feel much better when this project is done and making sure its before we close as I am using 2 inmates full time and we still have a big job ahead of us. Have had 2 since the end of Jan.....hey, $1 an hour is affordable, can you imagine how much it would be or how long it would take without them.....aaaahhhhhh.

Cathy

Spruce Allotment Evaluation Summary

Bureau of Land Management
Elko District Office
Wells Resource Area

SPRUCE ALLOTMENT EVALUATION SUMMARY

Table of Contents

APPENDICES

MAPS

SPRUCE ALLOTMENT EVALUATION SUMMARY
Wells Resource Area - FY95

I. INTRODUCTION

A. **Allotment Name/Number:** Spruce/4346

B. **Permittees:** Von L. and Marian Sorensen
Kenneth Jones
Bertrand Paris and Sons

C. **Evaluation Period:** 1973 - 1993

D. **Selective Management Category and Priority:**
"I" (improve) category. This allotment is ranked eighth on the current planning efforts in the Rangeland Program Summary (RPS).

E. **Allotment History:** Refer to the 1987 draft Spruce AMP and 1993 draft Spruce Interim Allotment Management Plan (AMP) for a complete history of the Spruce Allotment beginning in the 1930's.

II. INITIAL STOCKING LEVEL

A. Livestock Use

1. Land Use Plan Objective (AUMs):

The Wells Resource Management Plan and Final Environmental Impact Statement (RMP/FEIS) identified 35,565 active AUMs for the Spruce Allotment. These AUMs were all allocated as sheep AUMs. Table 1 outlines the AUM breakdown as identified in the Rangeland Program Summary (RPS).

Table 1. Active Preference by permittee as outlined in the Rangeland Program Summary.

PERMITTEE	ACTIVE PREFERENCE
Loyd Sorensen	14,494
Von L. and Marian Sorensen	7,154
Kenneth Jones	13,437
Total	**35,565**

Since 1988 there have been several transfers of grazing privileges from Loyd Sorensen to Von and Marian Sorensen. In 1993, Loyd Sorensen transferred all of his grazing privileges to Von L. and Marian Sorensen. In 1988, Kenneth Jones transferred a portion of his permit AUMs in the Medicine Range (Bald

Mountain Sheep Use Area) to Bertrand Paris and Sons. Table 2 outlines the AUMs by permittee as they are currently allocated.

Table 2. Active Preference by permittee as identified on the term grazing permits.

PERMITTEE	ACTIVE PREFERENCE	SUSPENDED	TOTAL PREFERENCE
Von L. and Marian Sorensen	22,128	395	22,523
Kenneth Jones	12,117	125	12,242
Bertrand Paris and Sons	1,320		1,320
Total	**35,565**	**520**	**36,085**

2. Season of Use/Grazing System:

As per the Wells RMP/FEIS, the season of use on the allotment is from 3/1 to 2/28 annually.

A complete summary of the Historical Grazing Use on the Spruce Allotment can be found in the 1993 Spruce Interim AMP. In addition, following the transfer of grazing privileges from Loyd to Von Sorensen in 1990, Loyd began to run a separate operation from Ken Jones. Following the 1991 transfer of grazing privileges from Loyd to Von, Von continued to run the second herd separate from Ken Jones. Bertrand Paris and Sons graze sheep on the Bald Mountain Sheep Use Area. Table 3 shows the permittees and the season of use that they currently operate under.

Table 3. Permittee and season of use as they currently graze on the Spruce Allotment.

Permittee	Season of Use
Von L. and Marian Sorensen[1]	
Spruce Mountain Herd	March 1 through February 28
Secret Herd	November 1 through April 15
Kenneth Jones[1]	November 1 through April 15
Bertrand Paris and Sons	May 1 through September 11

[1] Grazing permit for these two permittees shows period of use from March 1 through February 28 with sheep.

The following is a summary of the Ken Jones, Von Sorensen, and Bertrand Paris and Sons grazing use on the Spruce Allotment. Also, refer to Maps 1 and 2 for general location map of the Spruce Allotment within the resource area and subunit boundaries within the Spruce Allotment.

Ken Jones Cattle Operation

The first year, cattle are turned out into Subunits A-1 and A-2 around November and remain there through February. The first of March, the cattle are trailed across the highway to Subunits B-1 and B-2 for spring calving. The cows and calves remain there until early to mid May. Then they are trailed across the highway back towards A-1 and on to the Big Meadows Allotment.

During the second year, the calving area is rotated. Cattle trail through A-1 onto B-1 and B-2 until the end of February. Around the first of March, cattle are trailed back to A-1 and A-2 for calving. Once again, around the first to middle of May, cattle are moved into the Big Meadows Allotment.

The permittee has attempted to rotate use in A-1 and A-2 when used in the winter (November through February). Rotating use implies using A-1 and then A-2 and then A-2 and A-1. Three factors that have prevented a rotation from working are:

1. There is no interior fencing to keep cattle from drifting north when cattle are in A-2.

2. Use of existing waters is the only means of controlling livestock.

3. Increased wild horse use in Subunit A-2, especially around Delcer Buttes, north end of Medicine Range, and Ruby Wash, has led to decreased livestock use in these areas. For over 5 years, the permittee has not used Ruby Wash Well because of the high wild horse use occurring in this area. Levels are high enough, that no forage is left for livestock. Utilization levels of 70%+ have been recorded here. This is 20% over the allowable use level, and is wild horse use only.

Von Sorensen Cattle Operation

Von Sorensen runs two cattle operations. The Spruce Mountain herd grazes on the allotment year long. The Secret Pass herd grazes the allotment only in the winter and late spring. A summary of each grazing operation is as follows:

Spruce Mountain Herd:

This herd basically winters in Goshute and Antelope Valleys (subunits C-3 and 4). In late spring, cattle are moved into Sorensen's private seeding at Flowery Lake (subunit C-2). Movement into the private seeding has been based on range readiness. Weather conditions have played a critical role in start of growth and time of year cattle are moved into the seeding. Depending on conditions, cattle are moved into Independence Seeding (subunits D-1, 2, and 3) in May to June. Starting the first of July, cattle are moved onto Spruce

Mountain, the summer range (subunits E-1, 2, 3, and 4). Cattle remain on Spruce Mountain through the end of September. About the first of October, they start drifting down towards Independence Seeding (subunits D-1, 2, and 3). By mid to late October all of the cattle are gathered in the seedings. Around the first of November, cattle are moved toward Goshute and Antelope Valleys (subunits C-3 and 4) to start the cycle all over again.

This grazing system was first proposed in the 1987 draft Spruce AMP. Although the draft AMP was never signed, the permittee voluntarily followed the grazing system and developed some water projects to help with livestock distribution. Rotation of two critical use areas on Spruce Mountain, subunits E-3 and E-4, has been rotated annually. One of the subunits is totally rested annually. The 1987 draft AMP proposed two consecutive years of rest, however, the permittee has rested every other year. Rest was proposed because these areas are within crucial deer winter ranges.

Secret Pass Herd:

This herd previously grazed in common with Ken Jones, however, following the 1990 transfer of grazing privileges from Loyd to Von Sorensen, Ken Jones has operated separately.

Around the first of November, this herd is trailed from Secret Pass into Clover Valley (subunit H) and on to Steptoe Valley (subunits C-1 and C-1a). Spring use is rotated between the subunits in Clover Valley (subunit H) and Steptoe Valley (subunits C-1 and 1a) annually. This rotation is based on Ken Jones spring calving area. For example, when the Ken Jones herd is calving on subunits B-1 and B-2, the Secret Pass herd will graze in subunit H in the spring. When the Ken Jones herd is calving on subunits A-1 and A-2, the Secret Pass herd will graze in Subunits C-1 and C-1a in the spring. This rotation is coordinated between both operators because of the lack of interior fencing to control cattle drift. Cattle drift does occur and has resulted in higher utilization levels and inaccuracies in actual use reports in these subunits.

Bertrand Paris and Sons Sheep Operation

There is no grazing system for the sheep operation in the Bald Mountain Sheep Use Area (subunit G). The grazing season in this area is from 5/1 through 9/11 annually, as per their grazing permit.

The Paris sheep operation on the Spruce Allotment is associated with the West Cherry Creek Allotment sheep operation. The ewes and lambs graze in the West Cherry Creek Allotment while the dry ewes graze the Spruce Allotment.

3. **Kind of Livestock:** Sorensen/Jones - Cow/calf
   Paris - Sheep

4. **Percent Federal Range:** 100%

5. **Other Information:**

In 1987, the Bureau prepared a draft AMP for the Spruce Allotment and also initiated a change-in-kind of livestock environmental assessment (EA) in association with the draft AMP. However, there were disagreements between the permittees and BLM on certain issues in the draft AMP, thus the EA was not finalized because it included the proposal to implement the proposed draft AMP. The two major areas of disagreement at the time were the total numbers of acres proposed to be seeded and the sheep to cattle conversions. As per the existing policy directives concerning affected interests, only the permittee and Nevada Division of Wildlife (NDOW) were consulted during preparation of the 1987 draft Spruce AMP. Although the draft AMP was never finalized, the permittees began to follow the proposed grazing system.

In 1991, the permittees with cattle expressed their desire to complete projects proposed in the 1987 draft Spruce AMP. The Bureau's position still remained that proposed range improvements would not be implemented without a management plan. At this point, the Bureau decided to address the management issues for the Spruce Allotment through the allotment evaluation process and subesequent multiple use decision. Because the permittees wished to implement changes in management and asscociated range improvements sooner than the allotment evaluation process would be completed, the Bureau agreed to allow the permittees to prepare a draft Interim AMP to be reviewd and approved by the Bureau. This interim AMP would outline managment actions to be implemented until such time the allotment evaluation process was completed. The 1987 draft Spruce AMP was used as a guide for writing the interim AMP by the permittee's range consultant, RCI. At this point, Ken Jones decided that he would just wait for the allotment evaluation to be completed, therefore, the interim AMP covered only the Sorensen operation.

In the course of developing the Interim AMP, several issues arose. An Agreement on Certain Issues for the Spruce Interim AMP was signed on April 2, 1992. The three most important reasons for the agreement were that it stated the conversion ratio from sheep to cattle, acres of seeding, and that a final AMP would be completed following analysis of the multiple use objectives through the allotment evaluation process. This agreement was the first major step in reaching agreement with the permittees on this allotment.

The Interim AMP was reviewed by the Bureau and was approved on April 13, 1993. Because the interim AMP was viewed as a final version of the 1987 draft AMP, only the permittee, range consultants, and the Bureau were involved in the preparation and consultation. In conjunction with the approval of the Interim AMP, the Spruce and Valley Mountain Allotments Rangeline and Allotment Agreement was signed.

The rangeline agreement would divide the Spruce Allotment into two separate allotments. Von L. and Marian Sorensen would graze the east side (Spruce Allotment) and Kenneth Jones would graze the west side (Valley Mountain Allotment).

As per new policy guidelines for consultation, coordination, and cooperation, and in conjunction with the Bureau's monitoring and evaluation program, a list of affected interests for the Spruce Allotment was developed in 1991. The Interim AMP for the Spruce Allotment was mailed to all affected interests for their information in June, 1993.

In response to the mailing of the Spruce Interim AMP, the Wells Resource Area received four appeals to the signing of the Interim AMP. The appeals were filed by the Commission for the Preservation of Wild Horses, Wild Horse Organized Assistance (WHOA), and a combined appeal in the names of Natural Resources Defense Council (NRDC) and Sierra Club, Toiyabe Chapter. The appellants appealed the signing of the Spruce Interim AMP for the following reasons:

1. The BLM did not complete the EA, as required by the National Environmental Policy Act (NEPA), before approving the Interim AMP, and

2. The BLM did not consult with the appellants, as required by the Federal Land Policy and Management Act (FLPMA), before approving the Interim AMP.

In response to the appellants concerns, the Wells Resource Area Manager issued a letter to the permittees, appellants, and other affected interests on August 23, 1993, which rescinded approval of the Spruce Interim AMP, and Rangeline and Allotment Agreement. Along with this letter, the area manager mailed, for comment, a completed draft EA for the interim AMP, rangeline agreement, and change-in-kind of livestock.

Several phone calls and a meeting were held between the appellants and the Bureau in attempts to resolve the appeals. Sierra Club and NRDC indicated that they would withdraw their appeal upon written commitment from the Bureau that no decision on the Interim AMP would occur until completion of the allotment evaluation process.

On December 15, 1993, the EA for a Change-in-Kind of Livestock and Implementation of the Spruce Interim AMP was finalized and the Finding Of No Significant Impact/Decision Record (FONSI/DR) was sent to all affected interests.

As per the FONSI/DR, the No Action Alternative was selected. In summary, the alternative denied approval of both the Spruce/Valley Mountain Rangeline and Allotment Agreement and implementation of the Spruce Interim AMP, and allowed the Bureau to continue to license cattle use as "temporary" until the most current data could be analyzed through the completion of the allotment evaluation process.

On December 28, 1993, the permittee requested that if the Spruce Interim AMP was going to be rescinded, a proposed decision be issued as the Bureau was bound by the terms and conditions of the Interim AMP.

On January 12, 1994, the Elko District issued a Proposed Decision Rescinding Approval of the Spruce Interim AMP and Rangeline and Allotment Agreement for the Spruce and Valley Mountain Allotments both signed April 13, 1993. The proposed decision was to conform with the FONSI/DR dated December 15, 1993, for the Change-in-Kind of Livestock and Implementation of the Spruce Interim AMP EA.

No protests were received and the Proposed Decision became final on January 28, 1994.

On January 31, 1994, the Elko District received an appeal from the permittees, Von L. and Marian Sorensen. The appellants included nine points of appeal. They are as follows:

1. Appellant is the owner and holder of a grazing perference wihin the Spruce Allotment, Wells Resource Area, Elko District (Nevada) (hereafter referred to as "Bureau").

2. The Bureau has properly followed the law in approving the Spruce Interim AMP and Rangline Agreement, dated April 13, 1993.

3. The monitoring data supported the Bureau's implementing of the AMP and continues to support the implementing of the AMP. The Bureau erroneously and arbitrarily decided to deny implementation of the AMP and to select the no action alternative.

4. The monitoring data supported the Bureau's approving the rangeline agreeement and continues to support the approving of the rangeline agreement. The Bureau erroneously and arbitrarily decided to deny approving the rangeline agreement and to select the no action alternative.

5. The monitoring data supported the Bureau's converting from sheep to cattle and continues to support converting from sheep

to cattle. The Bureau erroneously and arbitrarily decided to not permanently convert from sheep to cattle and to select the no action alternative.

6. The Bureau erroneously and arbitrarily relied upon political pressure to select the no action alternative, to deny approval of the rangeline agreement, to deny implementation of the AMP, and to deny conversion from sheep to cattle.

7. The Bureau erroneously and arbitrarily decided that consultation with "affected interest" was a condition precedent to implementing the AMP.

8. The Bureau erroneously and arbitrarily decided that a multiple use decision was a condition precedent to implementing of the AMP, approving the rangline agreement, and converting the grazing use.

9. The Bureau erroneously and arbitrarily decided to ignore the available monitoring data in issuing its Decisions.

On January 3, 1995, the Elko District received notice from the Administrative Law Judge that a hearing date of March 21, 1995, had been set for the three appeals (Commission for the Preservation of Wild Horses, WHOA, and Von L. and Marian Sorensen).

Several phone conversations have been held with Sierra Club in reference to their appeal. In a letter dated March 21, 1994, the Bureau clarified to Sierra Club and NRDC that the Bureau had rescinded approval of the Spruce Interim AMP and rangeline agreement until completion of the allotment evaluation via the proposed decision dated January 12, 1994. The Bureau was waiting for a response from Sierra Club/NRDC on whether or not they were going to withdraw their appeal before submitting appeal files to the Office of Hearing and Appeals.

On January 26, 1995, the Bureau received a letter from Sierra Club stating that although the Bureau had rescinded approval of the Spruce Interim AMP and rangeline agreement through issuance of the January 12, 1994 decision, they would like for their appeal to remain on file until completion of the Spruce Allotment Evaluation.

On February 17, 1995, an order from the ALJ was received in the Elko District Office stating that Von L. and Marian Sorensen reqested a postponement of the hearing scheduled March 21, 1995, but would like to act as intervenors in the scheduled hearing for the Commission for the Preservation of Wild Horses and WHOA.

On March 16, 1995, the Elko District received notice from the ALJ that the Commission for the Preservation of Wild Horses and WHOA had withdrawn their appeals and the hearing was thereby cancelled. On March 27, 1995, the Elko District received notice from the ALJ that Sierra Club/NRDC had withdrawn their appeals and the proceedings were dismissed.

To date, the Elko District is awaiting rescheduling of the hearing for Von L. and Marian Sorensen by the ALJ.

B. Wild Horse Use

1. Historical Wild Horse Use in Spruce Allotment

The Wild and Free-Roaming Horse and Burro Act became law on December 15, 1971. With the passage of this act, the authority to manage wild horses and burros on public land was assigned to the BLM and U.S. Forest Service. The Act proclaims that wild and free-roaming horses and burros are protected from capture, branding, harassment or death. They are to be considered, in the area where they were found in 1971, as an integral part of the natural system.

Wild horses are currently found in 4 herd management areas (HMAs) in the Wells RA, established by the Wells RMP Wild Horse Amendment, (approved on August 2, 1993). These HMAs encompass all or part of grazing allotments. HMAs have been established based upon historical wild horse use areas and inventory data gathered from 1975 to 1981. No complete counts were made in the HMAs in 1971, the year the Act was passed. The first aerial census of wild horses occurred in 1975; however, this included numerous claimed horses that were gathered prior to 1978. The first true wild horse census, after the claiming period, occurred in March 1978. Table 4 below, shows the results of wild horse censuses within the Spruce Allotment from 1975 to 1994. It is important to note that some years display incomplete census counts due to the fact that not all of the HMAs were flown, and from 1991 through 1993, the number of horses is an average of horses counted during three or four census flights.

Table 4. Wild Horse Numbers Within the Spruce Allotment , 1975 through 1994.

YEAR	NO. WILD HORSES IN SPRUCE ALLOT.
1975	322
1978[1]	223
1980[2]	149
1981	245
1983[3]	280
1984[4]	158
1985	211
1987	412
1988[5]	319
1989[6]	222
1990[7]	220
1991[8]	315
1992[8]	443
1993[8]	540
1994	673

1 - Spruce Mountain, Pequops, and Wood Hills not flown, thus the allotment total is low.
2 - In 1980, the Goshute HMA was not flown thus the allotment total is low.
3 - In 1983, a fixed wing aircraft was used for the Mav-Med census. The count was not reliable and thus the allotment total is low.
4 - Only the Mav-Med HMA and the Goshute HMA were flown this year, thus the allotment total is low.
5 - The Goshute HMA was not flown this year, thus the allotment total is low.
6 - Only the Mav-Med HMA was censused in 1989, thus the allotment total is low.
7 - Mav-Med not flown in 1990, thus the allotment total is low.
8 - Average number of horses observed during several flights.

When the BLM first began censusing horse populations, detailed maps of horse locations were not kept, instead notes were taken during the flights and a memo was written to the files at a later date. Often the observers merely counted total numbers of horses within the HMAs and did not differentiate between allotments. To determine the number of horses in the Spruce Allotment for years when no maps are available, the total number of horses observed in the HMA were multiplied by the average percent of the particular HMA herd which inhabits the different allotments. The average percent figures were derived by analyzing the 1989-1993 intensive seasonal census flights. The average percent figures by HMA can be found in Tables 31 through 34.

2. **Appropriate Management Levels (AML)**

The initial management level for wild horses, as specified in the RPS, was to provide forage to sustain 2028 AUMs of wild horse use. This came from the Wells Record of Decision dated July 16, 1985. Under the preferred alternative of the RMP, wild horses were to be managed at existing numbers (March 11, 1981) as a starting point for monitoring purposes.

Since the RPS was issued, the Interior Board of Land Appeals (IBLA) rendered a decision (IBLA 88-591, 88-638, 88-648, and 88-679) which clarified that a wild horse herd size is to be established based on the concept of maintaining a thriving ecological balance. Therefore, the objective for managing wild horses has been reworded as follows:

> "Manage for a wild horse herd size which will maintain a thriving ecological balance consistent with other multiple uses while remaining within the wild horse herd management area."

As the Wells Resource Area began collecting data to establish thriving natural ecological balances within the Herd Areas (HAs), it became apparent that an amendment to the RMP was needed to establish wild horse HMAs, clarify boundaries, and to set initial herd sizes. The Wells RMP Wild Horse Amendment became final on August 2, 1993 and established initial herd sizes for the Goshute, Maverick-Medicine, Antelope Valley and Spruce-Pequop HMAs at 160, 389, 240, and 82 wild horses respectively. The AML for wild horses in the Spruce Allotment will be determined through this allotment evaluation process.

3. **Herd Management Areas (HMAs) Within the Allotment**

a. Antelope Valley
b. Spruce-Pequop
c. Maverick-Medicine
d. Goshute

Table 5 lists the approximate number of HMA acres which are within the boundaries of the Spruce Allotment.

Table 5. HMA Acres Within The Spruce Allotment		
HMA	ACRES	%[1]
Antelope Valley	46,354	10
Spruce-Pequop	138,000	100
Maverick-Medicine	108,855	38
Goshute	55,176	22

[1] This percent reflects the percent of acres within the HMA that are within the Spruce Allotment.

See Map 3 for the relationship of the HMAs to the allotment.

C. Wildlife Use

1. Mule Deer

a. existing numbers: 5,960 deer (4,613 AUMs)

b. reasonable numbers: 8,838 deer (6,510 AUMs)

c. key/critical mgmt. areas: The Wells RMP identified the following habitat areas: deer summer (DS-5), deer yearlong (DY-1), and deer winter (DW-2,5,10).

Based on updated information from the Nevada Division of Wildlife (NDOW), yearlong (DY), summer (DS), winter (DW), crucial winter (DW(C)), and spring (DSP) use areas are shown on Map 4. The summer areas are mainly at higher elevations of the Medicine Range, Spruce Mountain, and the Pequops. The majority of the deer migrate to lower elevations in the winter, utilizing the lower benches of Spruce Mountain and the Pequop Mountains. See Map 6 for seasonal mule deer habitat boundaries. Table 5 outlines the acres of each seasonal use area within the Spruce Allotment.

Table 6. Big Game Seasonal Use Areas.		
Seasonal Use Area	**General Location**	**Acres**
DW	Spruce/Pequop Mtns. Medicine Range	45,800
DW(C)	Spruce/Pequop Mtns.	25,810
DY	Dolly Varden Mtns. Goshute Mtns.	49,400
DS	Spruce Mtn. Medicine Range	40,100
DSP	Clover Valley	2,885
AY	Clover/Steptoe/Independence Valleys	591,970
AO	Spruce/Pequop Mtns. Dolly Varden Mtns. Medicine Range Lone Butte	182,400
AW	Medicine Spring	38,900

DS = Deer Summer
DW = Deer Winter
D-SP = Deer Spring
AY = Antelope Year Long
DY = Deer Year Long
DW(C) = Deer Crucial Winter
AW = Antelope Winter
AO = Antelope No Use

2. Pronghorn Antelope

a. existing numbers: 56 antelope (134 AUMs)

b. reasonable numbers: 180 antelope (432 AUMs)

c. key/critical mgmt. areas: antelope yearlong (AY-1,2,4,5) and antelope winter (AW). Almost the entire allotment below 6500 feet elevation is used by antelope yearlong (refer to Table 6 and Map 5 for acres and areas).

3. Bighorn Sheep

a. existing numbers: 0 bighorn sheep (0 AUMs)

b. reasonable numbers: 120 bighorn sheep (288 AUMs)

c. key/critical mgmt. areas: bighorn sheep yearlong (BSY-4). The Wells RMP designates the Goshute Mountains as bighorn sheep yearlong area. Currently, no bighorn sheep inhabit the Spruce Allotment.

4. Elk

a. existing numbers: occasional sightings have been made on Spruce Mtn.

b. reasonable numbers: 0 elk (0 AUMs)

c. key/critical mgmt. areas: The Wells RMP did not identify elk habitat objectives or elk management areas within the Spruce Allotment. The Wells

RMP only identified Pilot Mountain and Jarbidge Mountains as elk habitat management areas. In recent years elk have "pioneered" into adjacent habitats within the Wells Resource Area from the Pilot and Jarbidge Mountain areas as well as immigrated into the resource area from Utah and Idaho. Occasional sightings of elk have been made on Spruce Mountain in recent years. However, elk have not established a viable population on Spruce Allotment to date. The Wells RMP is currently being amended to address the issue of pioneering elk in the Wells Resource Area. Several alternatives were analyzed in the proposed Wells RMP Elk Amendment and the proposed alternative has been selected, which included the establishment of elk management objectives and target populations for the Spruce Allotment. Until the RMP amendment is approved, there are no management objectives for elk in place. Under the current Wells RMP, elk are allowed to exist on Spruce Allotment so long as elk use does not prevent attainment of existing multiple use objectives.

5. **Sage grouse**

a. existing numbers: no data available for numbers

b. reasonable numbers: no data available for numbers

c. key/critical mgmt. areas: There are seventeen known historic or active sage grouse strutting grounds identified in the Spruce Allotment. Most of these strutting grounds are located in the northwest corner of the allotment along the upper valley benches of Clover Valley near Curtis Spring (Map 5).

6. **Blue grouse**

a. existing numbers: no data available for numbers

b. reasonable numbers: no data available for numbers

c. key/critical mgmt. areas: Blue grouse generally inhabit the upper north slopes of Spruce Mountain in conifer zones above 8,500 feet elevation.

7. **Endangered, Threatened and Candidate Species**

The following endangered, threatened, or candidate species are known to exist within the Spruce Allotment:

a. Bald eagle: uncommon - winter resident; spring/fall migrant. Status: Endangered.

b. Peregrine falcon: uncommon - spring/fall migrant.
Status: Endangered.

c. Ferruginous hawk: common - summer resident.
Status: Candidate-C2.

d. Relict dace: Known to occupy Quilici Spring.
Status: Category 2 (C-2) candidate for Federal listing.

8. **Other**

Various species of nongame mammals, birds, and reptiles

III. ALLOTMENT PROFILE

A. Description

The Spruce Allotment is located in the southeast corner of the Elko District, spanning across portions of Antelope, Steptoe, Independence, Clover, and Ruby Valleys with Spruce Mountain located near the center of the allotment. The crest of the Goshute Mountains form the eastern allotment boundary. The southern boundary is bordered by Alternate Highway 93 in Antelope Valley, the Dolly Varden Mountains, the Currie Hills, Palomino Ridge, West Buttes, and the Medicine Range. The east edge of the pluvial Franklin Lake in Ruby Valley and Valley Mountain make up the west boundary. The northern allotment boundary is bordered by Snow Water Lake in Clover Valley, the Union Pacific Railroad where it crosses the Pequop Mountains and Flowery Lake in Steptoe Valley. Highway 93 and the Nevada Northern Railroad run generally north-south through the west and east halves of the allotment respectively (See Maps 1 and 2).

B. Acreage

There are a total of 813,267 acres on the Spruce Allotment (797,142 public acres and 16,125 unfenced private acres).

C. Allotment Management Objectives

1. General Land Use Plan (LUP) Objectives

a. Provide for livestock grazing consistent with other uses.

LUP Objectives were modified as a result of the Wells RMP Wild Horse Amendment. The original land use plan objective read, "Continue management of the six existing wild horse herds consistent with other resource uses." The objective has been modified as stated in b through d below:

b. Manage wild horses outside of checkerboard areas where land ownership patterns are not a problem for management.

c. Manage wild horses within HMAs and to maintain a thriving natural ecological balance consistent with other resource needs.

d. Combine portions of the wild horse herd areas where horses intermix between herd areas.

e. Conserve and/or enhance wildlife habitat to the maximum extent possible.

f. Eliminate all of the fencing hazards in crucial big game habitat, most of the fencing hazards in non-crucial big game habitat.

g. Eliminate all of the high and medium priority terrestrial riparian habitat conflicts in coordination with other resource uses.

h. Prevent undue degredation of all riparian habitat due to other uses.

i. Lands with woodland products will be managed under the principle of sustained yield, manintaining an allowable harvest to provide a permanent source of wood products for future generations.

2. **Rangeland Program Summary (RPS) Objectives**

a. Improve livestock distribution in Ruby Valley (near Delcer Buttes), Steptoe Valley (north of Mizpah Point), Antelope Valley (north and east of Dolly Varden Spring), and Spruce Mountain (in the areas of Basco Spring, Spruce Spring, Latham Spring, and Coyote Basin).

b. Improve ecological status of whitesage and saltbush winter use areas in Antelope, Steptoe, Clover, and Ruby Valleys.

c. Maintain summer use areas on the upper elevations of Spruce Mountain (north and west sides), Medicine Range, and the Pequop Mountains (between Nine-mile Canyon and Brush Creek).

d. Consider formal conversions from sheep to cattle on portions of the allotment.

e. Periodically evaluate the monitoring data for the allotment to reinstate suspended non-use when they become permanently available.

f. Develop an allotment management plan (AMP) to be signed in fiscal year 1987.

g. Improve or maintain all seasonal big game habitat in the Spruce Allotment to good or excellent condition to provide forage and habitat capable of supporting the following reasonable numbers and forage demands:

Table 7. Reasonable numbers of Big Game on the Spruce Allotment.

Big Game Species	Reasonable Numbers	AUMs
Mule Deer	8,838	6,510
Antelope	180	432
Bighorn Sheep	120	288

h. Reintroduce bighorn sheep in the Goshute Mountains.

i. Facilitate big game movements by modifying existing fences to Bureau standards, where necessary (46 miles).

j. Improve crucial deer winter habitat by:
- cutting (thinning) within 16,000 acres of the pinyon/juniper forest type.
- chaining or burning and seeding 2,500 acres of sagebrush.

NOTE: The original RPS objective read, "Improve crucial deer winter habitat by cutting pinyon-juniper (thin 16,000 acres). Improve crucial big game habitat by chaining or burning and seeding (2,500 acres)." It was the intent of the original LUP objective to promote the sale and harvest of up to 75% canopy cover removal of woodland products on about 50,000 acres of crucial deer winter habitat. The RPS identified 16,000 acres of crucial deer winter range within the Spruce Allotment to be improved. The RPS was reworded, as stated above, to clarify the intent of the LUP objective.

k. Improve, enhance or develop 3 springs to good or excellent condition.

l. Manage for a wild horse herd size which will maintain a thriving ecological balance consistent with other multiple uses while remaining within the wild horse herd boundaries.

NOTE: The original RPS objective read "Manage rangeland habitat to provide forage to sustain 2,028 AUMs for wild horse use. Maintain current use and monitor." However, IBLA rendered a decision which clarified that a wild horse herd size is to be established based on the concept of maintaining a thriving ecological balance, thus the objective was reworded as stated above.

In addition, the original RPS objective which read, " Construct the Dolly Varden and Palomino Ridge water catchments for wild horses," was modifed as a result of the Wells RMP Wild Horse Amendment. The objective was modified as stated in m through q below:

m. Delineate and manage wild horses in four HMAs as follows:
-Antelope Valley HMA (includes 44% of the former Cherry Creek Herd Area);
-Goshute Valley HMA;
-Spruce-Pequop HMA; and
-Maverick-Medicine HMA (includes 56% of the former Cherry Creek Herd Area.

n. Remove wild horses from checkerboard areas, which includes all of the Toano Herd Area and portions of the Goshute and Spruce-Pequop Herd Management Areas and manage them as wild horse free areas.

o. Remove sufficient wild horses to attain the initial herd size and maintain populations at a level which will maintain a thriving natural ecological balance consistent with other resource values.

p. Develop eight water sources to improve wild horse distribution, modify approximately one mile of existing fence so as not to impede wild free-roaming behavior, and construct approximately eighteen miles of new fence to prevent the return of wild horses to checkerboard land pattern areas.

q. The 1971 Wild Horse Herd Areas will continue to be maintained.

3. Antelope Valley Herd Management Area Plan (HMAP) Objectives

a. Habitat Objectives

1. Vegetation

Manage for the most appropriate seral stages to provide for desired quantity, quality, and density of forage in order to meet the requirements of the wild horses and other foraging animals. In general, utilization levels will be maintained at approximately 45% on shrubs and 55% on grasses which is in accordance with the recommended utilization levels in the Nevada Rangeland Monitoring Handbook (1984).

2. Distribution and Water Availability

Improve distribution and provide water yearlong for wild horses throughout the HMA where possible.

b. Wild Horse Objectives

1. Multiple Use

The objective in the Antelope Valley HMA is to maintain a healthy, viable population of wild horses in a thriving natural ecological balance with all other resources and users.

2. Appropriate Management Level (AML)

When the allotment evaluations are complete, a total AML for the HMA will be determined. The number of horses will be maintained within a range of $\pm$ 15% of AML. Removals will be scheduled so that each HMA is gathered once every three years.

AML will be maintained using one or more of the following options: periodic removals with no selectivity, selective removals targeting specific age groups, or fertility control.

3. **Free-Roaming Characteristics**

The wild horses within the Antelope Valley HMA will be managed in a manner that maintains their wild free-roaming characteristics.

4. **Color and Conformation**

Wild horses within the Antelope Valley HMA which exhibit the Spanish Barb characteristics will be maintained within the population. Fertility control treatments and or removals in the future will exclude those horses that obviously exhibit those traits. No other characteristics or conformations will be selected.

4. Allotment Specific Objectives

a. Range Key Area Objectives

1. Show a static or upward trend in ecological status on all key areas. Upward trend will be identified by a significant increase in percent frequency of occurrence of each key species as defined by Duncan's Multiple Range Test.

2. Improve the ecological status of all key areas to (or maintain in) late seral stage.

3. Manage livestock use so that average annual utilization of key forage species does not exceed the allowable percentages outlined in Table 8.

NOTE: The Spruce Allotment Monitoring File identified the utilization objective of 50% on perennial grasses and shrubs. However, the Wells RMP Wild Horse Amendment established a utilization objective of 55% on the key forage species on the winter range. Therefore, this evaluation will analyze data using 55% utilization on the winter range and 50% on the summer range.

4. In areas grazed in common by wild horses and livestock, manage for an average of 10 percent use on key forage species by wild horses prior to entry by livestock on winter range (pre-livestock use).

Table 8. Average annual utilization Objectives on the Spruce Allotment.

Key Area	Key Spp.	Avg. Annual Util. (%)	Key Area	Key Spp.	Avg. Annual Util. (%)
SP-01	EULA5	55	SP-14	EULA5	55
	ORHY	55		ORHY	55
SP-02	EULA5	55	SP-15	EULA5	55
	ORHY	55	SP-16	EULA5	55
SP-03	EULA5	55		ORHY	55
	ORHY	55	SP-17	EULA5	55
SP-04	EULA5	55		ORHY	55
	ORHY	55	SP-18	EULA5	55
SP-05	EULA5	55		ORHY	55
	ORHY	55	SP-19	EULA5	55
SP-06	EULA5	55	SP-20	EULA5	55
	ORHY	55	SP-21	EULA5	55
SP-07	EULA5	55	SP-22	EULA5	55
	ORHY	55	SP-23	EULA5	55
SP-08	EULA5	55		ORHY	55
	ORHY	55	SP-24	EULA5	55
SP-09	ATNU2	55	SP-25	AGSP	50
SP-10	EULA5	55		PUTR2	50[1]
	ORHY	55	SP-26	AGSP	50
SP-11	EULA5	55		POA++	50
	ORHY	55		PUTR2	50[1]
SP-12	EULA5	55	SP-27	EULA5	55
	ARSP5	55		ORHY	55
	ORHY	55	SP-28	AGSP	50
SP-13	EULA5	55	SP-29	AGSP	50
	ARSP5	55	SP-30	EULAS	55
	ORHY	55			
	SIHY	55			

[1] Average annual utilization is 25% use by livestock and 25% use by wildlife.

b. **Wildlife Objectives**

1. Improve the crucial deer winter range in the Spruce Spring area from fair to good habitat condition, improve the crucial deer winter range in the Basco Spring area from poor to good habitat condition, and maintain the current good habitat conditions of crucial deer winter range in the Black Forest and Boone Springs areas.

NOTE: The original allotment specific objective read, "Maintain the current good habitat conditions of crucial deer winter range in the Spruce/Basco Spring and Black Forest areas and improve the crucial deer winter range in the Boone Springs areas from fair to good habitat condition within 10 years of full implementation of the grazing system. Habitat condition ratings will be monitored by the Wells Resource Area Wildlife Biologist." However, the wildlife habitat condition ratings were recalculated as a result of changes to the range site description, thus the objective was reworded as stated above.

2. Improve all yearlong antelope range within the Spruce Allotment to good habitat condition.

3. Improve three springs and/or wet meadow complexes located within the Spruce Allotment to good or excellent condition. An inventory of the spring and/or wet meadow complexes on the Spruce Allotment will identify the specific springs or riparian areas to be improved or developed.

4. Maintain good bighorn sheep habitat conditions in the Goshute Mountains (Subunit J).

D. Key Species Identification

Table 9. Key species within the Spruce Allotment.		
SPECIES CODE	**COMMON NAME**	**SCIENTIFIC NAME**
AGSP	Bluebunch Wheatgrass	*Agropyron spicatum*
ORHY	Indian ricegrass	*Oryzopsis hymenoides*
SIHY	Bottlebrush Squirreltail	*Sitanion hystrix*
POA++	Pine grass	*Poa spp.*
ARSP5	Budsage	*Artemisia spinescens*
ATNU2	Nuttal's Saltbush	*Atriplex nuttallii*
EULA5	White sage or Whitesage	*Eurotia lanata*
PUTR2	Antelope bitterbrush	*Purshia tridentata*

E. Riparian Habitat

The extent of riparian habitat in the Spruce Allotment is in the form of springs and seeps. There are approximately 23 surface waters on public lands within the Spruce Allotment. Most of the surface waters are located above 6500 feet elevation in Spruce Mountain and the Dolly Vardens. Four of the surface waters occur in the lower valley bottoms and upper valley benches (2 in Independence Valley and 2 in Clover Valley). Sixteen of the surface waters located on public lands in the Spruce Allotment have been developed. A spring box or dug-out pond are common improvement techniques utilized. Some of the water sources and associated riparian zones have been fenced, while others remain unprotected.

IV. MANAGEMENT EVALUATION

A. Purpose

The purpose of this evaluation is to:

1. summarize current management in the allotment,
2. determine whether or not adequate progress is being made toward achieving the multiple use objectives, and
3. provide recommendations for future management of the allotment.

B. Summary of Studies Data

Through the development of the 1987 draft AMP and 1993 draft Interim AMP, the allotment was divided into subunits. The subunits represented manageable units to allow for 1) deferred rotational use of desert shrub winter ranges, 2) deferred and/or rotational use of higher elevation summer ranges, and 3) increased (substantial) use of the existing seeding (and proposed seedings in the draft AMPs).

Actual use, utilization, use pattern maps (UPMs), weight-estimate production, ecological status, and frequency data will be summarized and analyzed by key areas within the subunits. Actual use, utilization, and UPMs are short-term indicators of long term trend objectives. Long-term monitoring is measured through production, frequency, and ecological status. Significant or insignificant changes in frequency data is based on the results of the PCMONITOR program. Utilization data on native grasses is combined use by livestock, wild horses, and wildlife and utilization by wild horses and wildlife (prior to livestock turnout). In the winter use areas within the wild horse HMAs, utilization was collected prior to livestock turnout, around 11/1, beginning in 1990.

Summary matrices have been completed for each key area (see Appendix 1). The matrices summarize actual use, utilization, UPM results, carrying capacity results, climatic adjustment factors, ecological status, production, and frequency data. The key areas were established in 1986 and 1987 hence the start of the monitoring program on the Spruce Allotment. Three key areas were established in 1992, SP-24, SP-27, and SP-30. These three key areas were established to monitor wild horse utilization. However, all of the key areas in the winter range, including the wild horse key areas, have been read prior to livestock turnout and again after livestock are removed to record combined use. Actual use data has been collected on the allotment since 1973.

Tables 10 through 13 identify the subunits by permittee and key areas within each subunit. Also refer to Map 6 for key area locations.

Table 10. Subunits and Key Areas within Subunits on the Spruce Allotment for the Ken Jones winter range.

SUBUNIT	KEY AREA
A-1 North Ruby Valley	SP-01
	SP-02
	SP-03
	SP-04
A-2 South Ruby Valley	SP-05
	SP-06
	SP-24[1]
	SP-27[1]
	SP-30[1]
B-1 South Steptoe Valley	SP-07
	SP-08
B-2 Currie Canyon	SP-10
	SP-11
F-1 West Dolly Vardens	-----[2]
K-2 South Valley Mountain	-----[2]

[1] The key areas are only used to monitor utilization.

[2] No key areas exist within these subunits.

Table 11. Subunits and Key Areas within Subunits on the Spruce Allotment for the Von L. and Marian Sorensen winter range.	
SUBUNIT	**KEY AREA**
C-1 North Steptoe Valley	SP-09
	SP-12
	SP-23
C-1a Mizpah Point	SP-20
C-2 West Goshute Valley	-----[1]
C-3 East Goshute Valley	SP-18
	SP-19
	SP-21
	SP-22
C-4 Antelope Valley	SP-14
	SP-15
	SP-16
	SP-17
F-2 East Dolly Vardens	-----[1]
H Clover Valley	SP-13
I Curtis Spring J Goshute Mountains K-1 North Valley Mountain	-----[1]
[1] No key areas exist within these subunits.	

Table 12. Subunits and Key Areas within Subunits on the Spruce Allotment for the Von L. and Marian Sorensen summer range.	
SUBUNIT	**KEY AREA**
D-1,2,3 Independence Valley Seeding	-----[1]
E-1 Spruce Mountain Ridge	SP-28
E-2 Coyote Basin	SP-25
	SP-26
E-3 Boone Springs	-----[1]
E-4 Ninemile Canyon	SP-29
[1] No key areas exist within these subunits.	

Table 13. Subunits and Key Areas within Subunits on the Spruce Allotment for the Paris Sheep Operation.	
SUBUNIT	**KEY AREA**
G Bald Mountain Sheep Use Area	-----[1]
[1] No key areas exist within these subunits.	

1. Livestock Grazing Use

a. Actual Use

Average actual use from 1986 through 1994 is described in Table 14 below.

Table 14. Average actual use by livestock from 1987 through 1993 in the Spruce Allotment.

Year	Von L. and Marian Sorensen (Cattle)	LoydSorensen/ Kenneth Jones (Cattle)	Kenneth Jones (Cattle)	Von and Loyd Sorensen (Sheep)	Betrand Paris and Sons (Sheep)	Total
1986-1987	7,768	4,864		4,038		16,670
1987-1988	7,289	3,967		4,182		15,438
1988-1989	7,410	4,623		2,273		14,306
1989-1990	6,698	4,974		2,126	1,081	14,879
1990-1991	7,880	465	2,775	3,741	921	15,782
1991-1992	8,400		3,491	844	1,139	13,874
1992-1993	9,006		3,666		846	13,518
1993-1994	9,232		4,988		984	15,204

Historical Use Summaries for the Spruce Allotment from 1935 through 1986 can be found Tables 1 through 8 of the Spruce Interim AMP.

In November 1990, Loyd Sorensen and Ken Jones began to run two separate cattle operations. With the completion of the 1991 transfer of grazing privileges from Loyd to Von Sorensen, Von began licensing for the second herd (Secret Pass Herd).

Both Von and Loyd Sorensen grazed sheep on the Spruce Allotment from 1986 to 1991 when the sheep were sold. Only the total actual use AUMs that grazed on the Spruce Allotment are shown in the above table.

Bertrand Paris and Sons began their sheep operation on the Spruce Allotment (Bald Mountain Sheep Use Area) following the 1988 transfer of grazing privileges from Ken Jones to Paris.

b. Utilization

Refer to the individual key area studies summary matrices in Appendix 1 for utilization results. In addition, refer to Tables 15 through 17 below for a summary of the high and low readings and averages of utilization data collected in 1987 and 1989 through 1993.

Table 15. Key area utilization results for the Ken Jones winter range on the Spruce Allotment.

Subunit	Key Area	Low Use Reading (%)	High Use Reading (%)	Average
A-1 North Ruby Valley	SP-01	28	67	48
	SP-02	36	68	50
	SP-03	30	64	46
	SP-04	41	66	54
A-2 South Ruby Valley	SP-05	28	68	48
	SP-06	36	85	58
	SP-24	73	75	74
	SP-27	48	54	51
	SP-30	52	54	53
B-1 South Steptoe Valley	SP-07	37	61	50
	SP-08	40	65	51
B-2 Currie Canyon	SP-10	27	70	50
	SP-11	52	62	59

Table 16. Key area utilization results for the Von L. and Marian Sorensen winter range on the Spruce Allotment.

Subunit	Key Area	Low Use Reading (%)	High Use Reading (%)	Average
C-1a Mizpah Point	SP-20	51	66	58
C-1 North Steptoe Valley	SP-09	48	59	54
	SP-12	26	57	45
	SP-23	31	53	45
C-3 East Goshute Valley	SP-18	40	57	50
	SP-19	32	55	42
	SP-21	45	63	54
	SP-22	40	63	52
C-4 Antelope Valley	SP-14	31	74	53
	SP-15	25	70	51
	SP-16	38	70	52
	SP-17	24	64	48
H Clover Valley	SP-13	38	68	49

Table 17. Key area utilization results for the Von L. and Marian Sorensen summer range on the Spruce Allotment.

Subunit	Key Area	Low Use Reading (%)	High Use Reading (%)	Average
E-1 Spruce Mtn. Ridge	SP-28	19	50[1]	38
E-2 Coyote Basin	SP-25	6	50[1]	32
	SP-26	36	50[1]	42
E-4 Ninemile Canyon	SP-29	50[1]	78	68

[1] These readings represent the average of the moderate use category from use pattern map results.

c. **Use Pattern Maps**

Tables 18 through 21 show the use pattern maps results completed from 1987 to 1993.

Table 18. Use Pattern Map Results on the Spruce Allotment for the Ken Jones Winter Range.

Year	Subunit	NO USE (0%)	SLT (1-20%)	LT (21-40%)	MOD (41-60%)	HVY (61-80%)	SV (81-100%)
5/87	A-1 to A-2[1]	48%	4%	4%	8%	4%	<1%
6/89	A-1, A-2, B-1, & B-2	10%	52%	6%	27%	4%	<1%
3/91	A-1, A-2, B-1, & B-2	20%	26%	18%	29%	7%	<1%
3/92	A-2[2]	Not Mapped	Not Mapped	Not Mapped	23%	22%	4%
3/93	A-2[2]	Not Mapped	Not Mapped	Not Mapped	53%	7%	<1%

[1] Subunits B-1 and B-2 were not use pattern mapped in 1987; they comprise the other 32%.

[2] Only Subunit A-2 was use pattern mapped in 1992 and 1993. These two years of use pattern maps reflect combined wild horse and livestock use. Only the moderate to severe use categories were mapped. The percent of moderate to severe use received indicates percent of use within the subunit only.

Use pattern maps on the Ken Jones winter range (Table 18) show most of the use around the wells. Areas that receive zero to slight use are areas that are further away from the waters. Additional waters and interior fencing may help with distribution problems.

Table 19. Use Pattern Map Results on the Spruce Allotment for Von Sorensen Winter Range.

Year	Subunit	NO USE (0%)	SLT (1-20%)	LT (21-40%)	MOD (41-60%)	HVY (61-80%)	SV (81-100%)
Secret Pass Herd							
6/89	C-1, C-1a, H, K-1, & I	26%	38%	8%	26%	2%	<1%
3/91	C-1, C-1a, H, K-1, & I	55%	20%	10%	14%	<1%	<1%
4/93	C-1a[1]	Not Mapped	Not Mapped	Not Mapped	Not Mapped	18%	Not Mapped
Spruce Mountain Herd							
6/89	C-2 to C-4[2]	11%	38%	24%	24%	3%	<1%
3/91	C-2 to C-4[2]	12%	40%	29%	17%	2%	<1%
4/93	C-2 to C-4[2]	18%	57%	1%	10%	14%	<1%

[1] Only the heavy use area in Subunit C-1a was use pattern mapped in 1993. The percent of heavy use received indicates percent of heavy use within the subunit only.

[2] Subunit C-2 was not use pattern mapped. This subunit has historically been used with the private seedings in Flowery Lake. Use in this subunit was categoried in the slight use category.

Use pattern maps for the Von Sorensen winter range (Table 19) are similar to those as Ken Jones winter range. Addition waters would help in better livestock distribution in some areas. Interior fencing in these areas may not be practical.

Table 20. Use Pattern Map Results on the Spruce Allotment for Von Sorensen Summer Range.

Year	Subunit	NO USE (0%)	SLT (1-20%)	LT (21-40%)	MOD (41-60%)	HVY (61-80%)	SV (81-100%)
10/87	E-1 to E-4	53%	42%	1%	3%	<1%	<1%
10/89	D-1,2,3	19%	38%	15%	13%	13%	2%
	E-1 to E-4[1]	53%	35%	5%	6%	<1%	<1%
10/90	E-1 to E-3[2]	53%	37%	5%	4%	<1%	<1%
11/91	D-1,2,3	16%	46%	13%	15%	9%	<1%
10/92	E-1 to E-4	53%	32%	3%	8%	3%	<1%
10/93	E-1 to E-4[1]	53%	36%	7%	2%	2%	<1%

[1] In 1989 and 1990, Subunit E-4 was not used by livestock. Use by category were included in totals as this area receives wild horse use.

[2] In 1990, Subunit E-4 was used by livestock, but was not use pattern mapped.

Use in the summer range (Table 20) is primarily in the canyons. Use patterns for the summer range mainly show areas of light to severe use. Professional judgment was used in determining areas of no use and slight use. Good use of the canyons is accomplished as a result of the intensive water hauling practices by the permittee.

Table 21. Use Pattern Map Results on the Spruce Allotment for Paris Sheep Operation.

Year	Subunit	NO USE (0%)	SLT (1-20%)	LT (21-40%)	MOD (41-60%)	HVY (61-80%)	SV (81-100%)
10/89	G	0	91%	2%	6%	<1%	<1%
11/91	G	0	80%	11%	8%	2%	<1%

Areas of no use were not mapped in Subunit G (Table 21). Although only light to severe use areas were mapped, a great deal of this subunit is used by wild horses. Further, the areas not mapped may also be suitable for sheep, if water was hauled to these areas.

d. Frequency

Refer to the individual key area studies summary matrices in Appendix 1 for frequency results. In addition, refer to Tables 22 through 24 below for a summary of frequency results by key area and significant or non-significant changes. Frequency data was collected in 1986, 1987, 1988, 1990 and 1993.

Table 22. Frequency results (expressed in %) for Ken Jones winter range (subunits A-1 through B-2) in the Spruce Allotment.

SUBUNIT	KEY AREA	KEY SPECIES (FRAME SIZE) (inches)	FIRST READING (1986)	SECOND READING (1990)	CHANGE
A-1 North Ruby Valley	SP-01	ORHY (10)	40.5	32.5	-,S
		EULA5 (10)	72.5	48.5	-,S
	SP-02	ORHY (10)	11.5	12.0	+,NSC
		EULA5 (10)	75.5	69.0	-,NSC
	SP-03	ORHY (30)	52.0	39.0	-,NSC
		EULA5 (10)	69.O	64.5	-,NSC
	SP-04	ORHY (30)	49.5	41.0	-,S
		EULA5 (10)	65.0	58.0	-,NSC
A-2 South Ruby Valley	SP-05	ORHY (30)	16.5	16.0	-,NSC
		EULA5 (30)	65.0	60.5	-,NSC
	SP-06	ORHY (30)	21.0	14.5	-,S
		EULA5 (10)	33.0	17.0	-,S
B-1 South Steptoe Valley	SP-07	ORHY (10)	42.5	34.0	-,S
		EULA5 (10)	33.0	25.5	-,NSC
	SP-08	ORHY (30)	62.0	49.0	-,S
		EULA5 (10)	50.5	41.5	-,NSC
B-2 Currie Canyon	SP-10	ORHY (10)	38.0	11.0	-,S
		EULA5 (10)	42.5	26.5	-,S
	SP-11	ORHY (30)	35.5	19.0	-,S
		EULA5 (10)	87.0	81.0	-,NSC

(-) decrease
(+) increase
(=) no change

(S) Significant Change
(NSC) No Significant Change

Example: (-,NSC) This implies that there was a slight decrease in the frequency of occurrence of the species, however, it was not a significant change.

(-,S) This implies that there was a significant decrease in the frequency of occurrence of the key species.

Table 23. Frequency results (expressed in %) for the Von L and Marian Sorensen winter range (subunits C-1 through C-4 and H) in the Spruce Allotment.

SUBUNIT	KEY AREA	KEY SPECIES (FRAME SIZE) (inches)	FIRST READING (1987)	SECOND READING (1990)	CHANGE
C-1 North Steptoe Valley	SP-09[1]	ATNU2 (10)	48.5	25.5	-,S
	SP-12[1]	ORHY (10)	17.5	17.0	-,NSC
		EULA5 (30)	4.0	6.0	+,NSC
		ARSP5 (10)	15.5	15.5	=,NSC
	SP-23	ORHY (30)	58.5	53.5	-,NSC
		EULA5 (3)	37.0	30.0	-,NSC
C-1a Mizpah Point	SP-20	ORHY (30)	63.0	44.5	-,S
		EULA5 (3)	43.5	28.5	-,S
C-3 East Goshute Valley	SP-18	ORHY (30)	4.5	1.0	-,S
		EULA5 (10)	71.0	78.0	+,S
	SP-19	EULA5 (10)	64.5	62.5	-,NSC
		EULA5 (3)	43.5	28.5	-,S
	SP-21	EULA5 (10)	62.5	59.0	-,NSC
	SP-22	EULA5 (10)	55.5	77.0	+,S
C-4 Antelope Valley	SP-14	ORHY (10)	23.5	27.5	+,NSC
		EULA5 (10)	28.5	16.0	-,S
	SP-15	EULA5 (3)	32.0	19.0	-,S
	SP-16	ORHY (10)	39.5	33.5	-,NSC
		EULA5 (10)	29.0	20.0	-,S
	SP-17	ORHY (10)	35.0	39.5	+,NSC
		EULA5 (10)	47.5	37.5	-,S
H Clover Valley	SP-13	ORHY (30)	10.5	7.0	-,NSC
		SIHY (10)	28.5	6.5	-,S
		EULA5 (10)	40.0	37.5	-,NSC
		ARSP5 (30)	54.5	38.0	-,S

[1] Key Areas SP-09 and SP-12 were read in 1986 and 1990.

(-) decrease (S) Significant Change
(+) increase (NSC) No Significant Change
(=) no change

Example: (-,NSC) This implies that there was a slight decrease in the frequency of occurrence of the species, however, it was not a significant change.

(-,S) This implies that there was a significant decrease in the frequency of occurrence of the key species.

Table 24. Frequency results (expressed in %) for Von L and Marian Sorensen summer range (subunits E-1, 2, and 4) on Spruce Allotment.

SUBUNIT	KEY AREA	KEY SPECIES (FRAME SIZE) (inches)	FIRST READING (1988)	SECOND READING (1993)	CHANGE
E-1 Spruce Mtn. Ridge	SP-28	AGSP (3)	29.5	32.0	+,NSC
		ARARN (10)	59.5	49.5	-,S
E-2 Coyote Basin	SP-25	AGSP (10)	34.0	52.5	+,S
		PUTR2 (30)	33.5	32.0	-,NSC
	SP-26	AGSP (30)	22.5	19.0	-,NSC
		PUTR2 (30)	37.5	35.5	-,NSC
E-4 Ninemile Canyon	SP-29	AGSP (10)	73.5	62.5	-,S

(-) decrease (S) Significant Change
(+) increase (NSC) No Significant Change
(=) no change

Example: (-,NSC) This implies that there was a slight decrease in the frequency of occurrence of the species, however, it was not a significant change.

(-,S) This implies that there was a significant decrease in the frequency of occurrence of the key species.

e. **Weight-Estimate Production Data**

Refer to the individual key area studies summary matrices in Appendix 1 for weight-estimate production results. In addition, refer to Tables 25 through 27 below for a summary of production results by key area and changes between the years. Production data was collected in 1986, 1987, 1988, 1990 and 1993.

Table 25. Weight-estimate production data summary for Ken Jones winter range (subunits A-1 through B-2) in the Spruce Allotment. Production figures (expressed as dry weight in lbs./ac.) are unadjusted to the climatic adjustment factor (CAF).

SUBUNIT	KEY AREA	FIRST READING (1986)	SECOND READING (1990)	CHANGE
A-1 North Ruby Valley	SP-01	525	325	-200
	SP-02	349	465	+116
	SP-03	422	295	-127
	SP-04	382	334	-48
A-2 South Ruby Valley	SP-05	514	263	-251
	SP-06	572	245	-327
B-1 South Steptoe Valley	SP-07	364	248	-116
	SP-08	420	110	-310
B-2 Currie Canyon	SP-10	403	336	-67
	SP-11	367	143	-224

Table 26. Weight-estimate production data summary for Von L. and Marian Sorensen winter range (subunits C-1 through C-4 and H) in the Spruce Allotment. Production figures (expressed as dry weight in lbs./ac.) are unadjusted to the climatic adjustment factor (CAF).

SUBUNIT	KEY AREA	FIRST READING (1987)	SECOND READING (1990)	CHANGE
C-1 North Steptoe Valley	SP-09	751[1]	703	-48
	SP-12	545[1]	104	-441
	SP-23	560	400	-160
C-1a Mipzah Pt.	SP-20	1156	217	-939
C-3 East Goshute Valley	SP-18	839	321	-518
	SP-19	467	475	+8
	SP-21	629	240	-389
	SP-22	1396	618	-778
C-4 Antelope Valley	SP-14	700	148	-552
	SP-15	751	144	-607
	SP-16	1107	170	-937
	SP-17	911	280	-631
H Clover Valley	SP-13	841	414	-427

[1] Key areas SP-09 and SP-12 were read in 1986 and 1990.

Table 27. Weight-estimate production data summary for Von L. and Marian Sorensen summer range (subunits E-1, 2, and 4) in the Spruce Allotment. Production figures (expressed as dry weight in lbs./ac.) are unadjusted to the climatic adjustment factor (CAF).

SUBUNIT	KEY AREA	FIRST READING (1988)	SECOND READING (1993)	CHANGE
E-1 Spruce Mtn. Ridge	SP-28	1296	451	-845
E-2 Coyote Basin	SP-25	2529	1730	-799
	SP-26	4395	1478	-2917
E-4 Ninemile Canyon	SP-29	702	577	-125

f. Ecological Condition

Refer to the individual key area studies summary matrices in Appendix 1 for ecological condition results. In addition, refer to Tables 28 through 30 below for a summary of ecological condition results by key area and changes between the years. Ecological condition is represented as a percent of the potential natural community (PNC). Ecological condition data was collected in 1986, 1987, 1988, 1990 and 1993.

Table 28. Ecological status summary for Ken Jones winter range (subunita A-1 through B-2) in the Spruce Allotment.

SUBUNIT	KEY AREA	RANGE SITE	ECOLOGICAL CONDITION (% OF PNC)[1]		CHANGE[2]
			1986	1990	
A-1 North Ruby Valley	SP-01	Silty 8-10	44	61	-
	SP-02	Silty Clay 8-10	75	58	=
	SP-03	Coarse Silty 6-8	57	47	-
	SP-04	Coarse Silty 6-8	52	49	-
A-2 South Ruby Valley	SP-05	Coarse Gravelly Loam 6-8	41	28	=
	SP-06	Coarse Gravelly Loam 6-8	43	61	+
B-1 South Steptoe Valley	SP-07	Silty 8-10	49	75	+
	SP-08	Silty 8-10	77	65	-
B-2 Currie Canyon	SP-10	Coarse Gravelly Loam 6-8	36	37	=
	SP-11	Silty 8-10	64	50	-

[1] Seral stages of ecological condition represented as % of PNC:
Early (0-25), Mid (26-50), Late (51-75), PNC (76-100)

[2] The change represents a change in seral stage;
(+) = increase in seral stage, (-) = decrease in seral stage, (=) = no change in seral stage.

Table 29. Ecological status summary for Von L. and Marian Sorensen winter range (subunits C-1 through C-4 and H) in the Spruce Allotment.

SUBUNIT	KEY AREA	RANGE SITE	ECOLOGICAL CONDITION (% OF PNC)[1]		CHANGE[2]
			1987	1990	
C-1 North Steptoe Valley	SP-09	Saline Terrace 5-8	65[3]	65	=
	SP-12	Coarse Gravelly Loam 6-8	37[3]	43	=
	SP-23	Coarse Silty 6-8	32	38	=
C-1a Mizpah Pt.	SP-20	Silty 8-10	62	53	=
C-3 East Goshute Valley	SP-18	Silty Clay 8-10	51	51	=
	SP-19	Silty Clay 8-10	60	57	=
	SP-21	Silty Clay 8-10	52	52	=
	SP-22	Silty Clay 8-10	52	56	=
C-4 Antelope Valley	SP-14	Coarse Gravelly Loam 6-8	27	26	=
	SP-15	Silty 8-10	53	53	=
	SP-16	Coarse Gravelly Loam 6-8	30	35	=
	SP-17	Coarse Gravelly Loam 6-8	31	42	=
H Clover Valley	SP-13	Coarse Gravelly Loam 6-8	35	48	=

[1] Seral stages of ecological condition represented as % of PNC:
Early (0-25), Mid (26-50), Late (51-75), PNC (76-100)

[2] The change represents a change in seral stage;
(+) = increase in seral stage, (-) = decrease in seral stage, (=) = no change in seral stage.

[3] Key areas SP-09 and SP-12 were read in 1986 and 1990.

Table 30. Ecological status summary for Von L. and Marian Sorensen summer range (subunits E-1, 2, and 4) in the Spruce Allotment.

SUBUNIT	KEY AREA	RANGE SITE	ECOLOGICAL CONDITION (% OF PNC)[1]		CHANGE[2]
			1988	1993	
E-1 Spruce Mtn. Ridge	SP-28	Mountain Ridge 14+	74	69	=
E-2 Coyote Basin	SP-25	Stony Mahogany Savanna	41	47	=
	SP-26	Calcareous Loam 14-16	42	50	=
E-4 Ninemile Canyon	SP-29	Calcareous Mountain Ridge	68	33	-

[1] Seral stages of ecological condition represented as % of PNC:
Early (0-25), Mid (26-50), Late (51-75), PNC (76-100)

[2] The change represents a change in seral stage;
(+) = increase in seral stage, (-) = decrease in seral stage, (=) = no change in seral stage.

2. Wild Horse Use

a. Actual Use Data

Wild horse actual use data for the Spruce Allotment is derived from the total number of horses (adults and foals) observed in the allotment multiplied by the number of months they inhabit the area. Tables 31 through 34 present horse numbers observed in each HMA beginning in 1989.

Table 31. Wild Horse Census Results - Maverick-Medicine Herd Management Area

Mon./Yr.	Total Horses Observed	Total in Spruce Allot.	% of Total in Spruce Allot.
3/89	358	222	62.0%
9/91	507	94	18.5%
3/92	ND	ND	ND
6/92	580[1]	109	18.8%
9/92	589[1]	165	28.0%
1/93	610[1]	439	72.0%
5/93	401[1,2]	267	66.6%
8/93	390[1]	71	18.2%
1/94	406	238	58.6%
Avg. % in Allotment			**42.8%**

[1] - West half of formerly designated Cherry Creek HA included in total for HMA.

[2] - The hard winter of 1993 resulted in some migration out of the HMA and some death loss.

ND = No Data

Table 32. Wild Horse Census Results - Antelope Valley Herd Management Area			
Mon./Yr.	**Total Horses Observed**	**Total in Spruce Allot.**	**% of Total in Spruce Allot.**
3/90	418	200	47.8%
2/91	366	226	61.7%
9/91	350	157	44.9%
3/92	545	287	52.7%
6/92	446[1]	232	52.0%
9/92	576[1]	197	34.2%
11/92	543[1,2]	232	42.7%
1/93	327[1,3]	170	52.0%
5/93	312[1]	140	44.9%
8/93	279[1]	128	45.9%
12/93	427[1,4]	212	49.6%
Avg. % in Allotment			**48.0%**

[1] - East half of formerly designated Cherry Creek HA included in total for HMA.

[2] - Pre-gather census. No other HMA was censused at this time.

[3] -100 horses were removed during the fertility control project.

[4] -Censused for fertility control study. No other HMA was censused at this time.

Table 33. Wild Horse Census Results - Goshute Herd Management Area			
Mon./Yr.	**Total Horses Observed**	**Total Horses in Spruce Allot.**	**% of Total in Spruce Allot.**
3/90	229	20	8.7%
9/91	194	0	0%
3/92	303	74	24.4%
6/92	404	16	4.0%
9/92	201[1]	26	12.9%
1/93	434	196	45.2%
5/93	330	45	13.6%
8/93	251	22	8.8%
1/94	256[2]	137	53.5%
Avg. % in Allotment			**19.0%**

[1] - As a result of very different distribution patterns between the 6/92 and 9/92 flights, the number of horses within the Spruce Allotment is much lower.

[2] - Post gather census.

Table 34. Wild Horse Census Results - Spruce-Pequop Herd Management Area			
Mon./Yr.	**Total Horses Observed**	**Total in Spruce Allot.**	**% of Total in Spruce Allot.**
6/91	193	64	33.2%
3/92	77	33	42.9%
6/92	231	90	39.0%
9/92	129	55	42.6%
1/93	110	28	25.4%
5/93	107	52	48.6%
8/93	171	51	29.8%
1/94	102[1]	86	84.3%
Avg. % in Allotment			**43.2%**

[1] - Post gather census

Prior to 1991, only annual census flights were conducted versus the current seasonal census of HMAs. The best available data for the years 1989-1990 on actual use by horses within the Spruce allotment is the total number of horses observed within the allotment during one flight, then multiplied by 12 months. More accurate distribution data is available for 1991-1994 for each of the 23 subunits within the Spruce Allotment. Based on seasonal census information, subunits were classified as receiving either winter, summer, yearlong, or incidental use by wild horses. This allowed for more accurate actual use data. Table 35 outlines annual actual use by AUMs for wild horses for those years where data was most accurate and used in the carrying capacity calculations.

Table 35. Actual Use Breakdown - Spruce Allotment

Year	Wild Horses(AUMs)
1989-1990[1]	2,832
1990-1991[2]	5,358
1991-1992[3]	4,705
1992-1993	6,178
1993-1994	5,727

[1] Maverick-Medicine HMA was the only HMA flown in 1989 (3/89).

[2] Spruce-Pequop HMA was not flown with the other HMA's during the 3/90 census.

[3] Mavrick-Medicine HMA was not flown with the other HMA's during the 3/92 census.

b. Key Area Utilization Data

Within the Spruce Allotment, there are 19 key areas that receive wild horse use. Collection of utilization data for key species at these 19 key areas prior to livestock turnout began in 1990.

Appendix 2 lists the HMA, subunit, key area, season of use, and the utilization made by wild horses prior to livestock turnout.

c. Removals

Claiming Period

In February 1974, the BLM opened the claiming period allowing those with branded horses and off-spring of branded horses to claim and gather their animals. Claimants were notified that any animals left on

the range after the claiming period ended would be declared wild and free-roaming horses protected under The Wild Horse and Burro Act of 1971. The claiming period came to a close on Febuary 28, 1978. A total of 3,936 claims were filed by various parties with the Elko District Office, and 1,020 of these claims were in the Spruce Allotment and surrounding area. .

In March, 1978, the first complete helicopter census after the closure of the claiming period was conducted. In the four herd areas falling partially in the Spruce Allotment, 647 horses were counted. If a herd area was found to contain wild horses after the claiming period ended and also had documented wild horse use in 1971, it retained its' status as a herd area and was formally recognized in the Wells RMP in 1985. As previously stated, the Wells RMP Wild Horse Amendment, approved August 2, 1993, delineated four herd management areas in the resource area.

BLM Removals

Over the ensuing years, the BLM conducted periodic removals in all the HAs/HMAs falling in the Spruce Allotment. A total of 464 have been removed from the Goshute HMA, 255 from the Maverick-Medicine HMA, 757 from the Antelope Valley HMA, 151 from the Spruce-Pequop HMA, and 48 removed from the previously designated Cherry Creek HA, for a total of 1,421 animals removed. Once the AML is established for an HMA, policy states that removals will be conducted on a three-year rotational basis to keep the numbers within a range of the designated AML.

Two removals were conducted in the Fall of 1993 and two in the Fall of 1994. At the conclusion of these gathers, all four HMAs in the Wells Resource Area were near initial herd size as per the Wells RMP Wild Horse Amendment.

3. Big Game Habitat Conditions

a. Mule Deer

Nine big game habitat condition studies have been established within mule deer winter range, representing approximately 107,288 acres of habitat. No studies have been established in deer summer or yearlong range. See Map 6 for key area locations. Data from the studies indicate the most limiting factor on mule deer winter range in the Spruce Allotment is the unsatisfactory age structure of bitterbrush. The combined percentage of bitterbrush seedlings and young plants is far exceeded by the percentage of older age/decadent plants, i.e. there are too few seedlings and young plants to ensure the long-term survival of the bitterbrush population. Two of the studies located in the Spruce/Basco Spring and Black Forest areas were first read in 1982,

and re-read in 1983, 1986, and 1992. Data from the studies indicate winter habitat conditions ranged from fair to excellent, with the Black Forest area showing somewhat of an upward trend. One key area exists in the Medicine Range (DW-5-T-O1) which was rated fair in 1982 and excellent in 1985 and 1992. The Honeymoon Chaining area (D(C)W-2-T-O3) has improved from fair condition in 1982 to excellent in 1992. The chaining was completed in April, 1970. The Boone Spring transect (D(C)W-2-T-O4) was rated as good in 1986 and fair in 1992 showing a slight downward trend. There are two studies established on the Dolly Varden Mountains which represent a deer winter/yearlong area. Based on these key areas, habitat conditions range from fair to good. Table 36 outlines the results of habitat condition studies in the winter mule deer range within the Spruce Allotment. In the past several years, bitterbrush and other vegetation growth and vigor overall was poor, although some precipitation was gained through high snow levels in 1993. The effects of prolonged drought on the winter range were evident. Tables 37 and 38 outline existing bitterbrush cole browse and canopy cover data collected on the Spruce Allotment.

Table 36. Mule Deer Winter Range Habitat Condition Summary.

HERD USE AREA	TRANSECT NUMBER	HABITAT CONDITION[1]	HABITAT RATING[1]	% OF AREA[2]
DW-1	DW/DY-1-T-01 Dolly Varden	1982-Good	65	50%
		1983-FAIR	54	
		1993-GOOD	69	
	DW/DY-1-T-02 Dolly Varden	1982-FAIR	60	50%
		1983-GOOD	63	
		1992-FAIR	60	
DW-2	D(C)W-2-T-01 Spruce Spring	1982-FAIR	52	10%
		1983-FAIR	57	
		1986-EXCELLENT	93	
		1992-FAIR	57	
	D(C)W-2-T-O2 Black Forest	1982-GOOD	65	10%
		1983-FAIR	57	
		1986-EXCELLENT	87	
		1992-EXCELLENT	81	
	D(C)W-2-T-O3 Honeymoon Chaining	1982-FAIR	51	5%
		1986-GOOD	78	
		1992-GOOD	75	
	D(C)W-2-T-O4 Boone Springs	1986-GOOD	63	50%
		1992-FAIR	60	
	D(C)W-2-T-SP25 Basco Spring	1989-POOR	45	15%
		1993-POOR	45	
	D(C)W-2-T-SP26 Black Forest	1989-GOOD	75	10%
		1993-GOOD	69	
DW-5	DW-5-T-O1 Medicine Range	1982-FAIR	54	50%
		1985-EXCELLENT	82	
		1992-EXCELLENT	88	

[1] 10-50=POOR; 51-60=FAIR; 61-80=GOOD; 81-100=EXCELLENT

[2] %of Area = Percent of herd use area represented by the key area.

Table 37. Mule Deer Winter Range Bitterbrush Cole Browse Data.			
Herd Use Area	**Key Area**	**Year**	**% seedlings & young plants**
DW-1	DW/DY-1-T-01 Dolly Varden	1983	8
		1993	5
	DW/DY-1-T-02 Dolly Varden	1979	9
		1983	8
		1993	15
DW-2	D(C)W-2-T-01 Spruce Spring	1983	2
		1986	14
		1992	0
	D(C)W-2-T-02 Black Forest	1980	0
		1983	36
		1986	8
		1992	0
	D(C)W-2-T-03 Honeymoon Chaining	1980	0
		1986	10
		1992	0
	D(C)W-2-T-04 Boone Springs	1986	14
		1992	0
	D(C)W-2-SP25 Basco Spring	1988	24
	D(C)W-2-SP26 Black Forest	1988	22
		1993	5
DW-5	DW-5-T-O1 Medicine Range	1979	3
		1985	19
		1993	5

Table 38. Bitterbrush Percent Canopy Cover Data.

KEY AREA	Canopy Cover (%)						
	YEAR						
	1979	1980	1983	1985	1986	1988	1992
DW/DY-1-T-01 Dolly Varden	8.8		9				9.5
DW/DY-1-T-O2 Dolly Varden	4.7		5.8				4.2
DW-2-T-O1 Spruce Spring		16.1	18.3		18.7		3.2
DW-2-T-O2 Black Forest		22	20.7		21.5		11.9
DW-2-T-O3 Honeymoon Chaining		2.8			2.5		1.3
DW-2-T-O4 Boone Springs					5.5		3.3
DW-2-SP25 Basco Spring						8.1	1.7
DW-2-SP26 Black Forest						30.4	22
DW-5-T-01 Medicine Range	40.2			46.2			22.8

Beginning in 1987, utilization of bitterbrush has been measured annually in the fall (following removal of livestock and prior to the influx of migrant deer herds) and spring (after deer leave and prior to spring growth and cattle use). Seven key areas exist within the Spruce Allotment, however, only six have been read in the spring and fall since 1987. Average utilization by livestock and deer within these six key areas was 41%. Key area DW-5-T-01, Medicine Range, has not been read periodically. The Spruce Allotment key area objectives for DW-2-T-O1, DW-2-T-O4, DW-2-T-SP25, and DW-2-T-SP26 have been set at 25% maximum utilization by livestock. From 1987-1993, livestock use (measured in fall) has averaged 12% for the Spruce Spring area, 14% for Boone Spring, 21% for the Basco Spring area, and 15% for the Black Forest area. Total livestock and deer use (measured in spring) for all utilization studies has averaged 35%. Table 39 below outlines the bitterbrush utilization data collected at winter range key areas on the Spruce Allotment.

Table 39. Spruce Allotment Deer Winter Range Bitterbrush Utilization Studies.

YEAR	DW2T01 Spruce Spring	DW2TO2 Black Forest	DW2TO3 Honeymoon Chaining	DW2TO4 Boone Springs	DW2SP25 Basco Spring	DW2SP26 Black Forest	DW5TO1 Medicine Range	AVE
SPG-87	N/D	N/D	N/D	N/D	N/D	N/D	2	2
FLL-87	28	28	2	52	43	30	N/D	31
SPG-88	36	49	15	63	51	35	N/D	42
FLL-88	18	8	4	7	45	10	N/D	15
SPG-89	50	68	44	62	47	47	N/D	53
FLL-89	20	4	4	4	35	14	N/D	14
SPG-90	66	79	35	47	63	33	N/D	54
FLL-90	9	13	6	18	6	21	N/D	12
SPG-91	47	54	22	49	22	33	N/D	38
FLL-91	2	8	1	9	6	10	N/D	6
SPG-92	*	60	22	25	*	64	N/D	43
FLL-92	8	4	4	4	9	18	N/D	8
SPG-93	8	13	4	19	13	N/D	10	11
FLL-93	1	7	4	2	0	2	1	2
Ave. Annual Lvstk Use	12	10	4	14	21	15	1	13
Ave. Total Use (Lvstk & Deer)	41	54	24	44	40	42	4	35
Ave. Annual Deer Use	29	44	20	30	20	27	3	22

SPG = Utilization recorded in the spring after deer leave the area and prior to start of plant growth and iivestock use. The recorded use is total livestock and deer use for the previous years growing season.

FLL = Utilization recorded following removal of livestock and prior to infulx of migrant deer herds. The recorded use is livestock use of the current years growing season.

N/D = No Data

* Annual growth and vigor too poor to accurately record meaningful utilization data. Bitterbrush severely drought stressed.

b. Pronghorn Antelope

Sixteen big game habitat studies have been established within antelope yearlong range, representing 224,669 acres of habitat (see Map 6). One study is located within crucial winter habitat. Data from these studies indicate antelope habitat conditions range from poor to fair. The most common limiting factor is lack of forage diversity. In addition, water is a key limiting factor within yearlong antelope ranges. Tables 40 and 41 outline study results and compares existing percent composition and diversity data for all studies. Tables 42 and 43 summarize antelope habitat conditions.

Table 40. Forage Composition on Antelope Range (AY-1 and CAW-1) within the Spruce Allotment.

Herd Use Area	Transect	Year	% Optimum					
			Grasses[1]		Forbs[1]		Shrubs	
			% comp.	# spp.	% comp.	# spp.	% comp.	# spp.
			40-60	5-10	10-30	20-40	5-20	5-10
AY-1	SP-01 N. Ruby Valley	1986	24%	4	2%	3	70%	4
		1990	15%	3	2%	1	68%	2
	SP-02 N. Ruby Valley	1986	19%	2	1%	1	80%	3
		1990	2%	1	0%	0	98%	3
	SP-03 N. Ruby Valley	1986	29%	3	5%	1	66%	3
		1990	12%	3	1%	1	87%	3
	SP-04 N. Ruby Valley	1986	13%	2	1%	1	85%	4
		1990	13%	2	0%	0	87%	3
	SP-06 S. Ruby Valley	1986	24%	2	0%	0	76%	4
		1990	4%	2	1%	1	94%	4
CAW-1	SP-05 S. Ruby Valley	1986	26%	2	0%	0	73%	2
		1990	2%	2	3%	1	62%	3
AVG.		**1986**	**23%**	**3**	**2%**	**1**	**75%**	**3**
		1990	**8%**	**2**	**1%**	**0.6**	**83%**	**3**

AY = Antelope Yearlong5
CAW = Crucial Antelope Winter

[1] Cheatgrass and halogeton (noxious weed) were not included as part of the total forage composition, thus totals do not equal 100%.

Table 41. Forage Composition on Antelope Range (AY-2 and AY-5) within the Spruce Allotment.

Herd Use Area	Transect	Year	% Optimum					
			Grasses[1]		Forbs[1]		Shrubs	
			% comp.	# spp.	% comp.	# spp.	% comp.	# spp.
			40-60	5-10	10-30	20-40	5-20	5-10
AY-2	AY-2-T-02 Mizpah Point	1984	2%	3	.2%	1	86%	4
	SP-07 S. Steptoe Valley	1986	13%	2	3%	3	82%	3
		1990	22%	1	2%	2	76%	3
	SP-08 S. Steptoe Valley	1986	32%	2	1%	2	67%	3
		1990	9%	2	1%	1	89%	3
	SP-09 Mizpah Point	1986	0%	0	0%	0	100%	1
		1990	9%	2	1%	1	89%	3
	SP-10 Currie Canyon	1986	15%	2	3%	2	82%	3
		1990	15%	2	2%	1	83%	4
	SP-11 Currie Canyon	1986	10%	1	1%	1	89%	2
		1990	0%	0	0%	0	100%	2
	SP-12 N. Steptoe Valley	1986	31%	3	2%	1	68%	4
		1990	8%	2	0%	0	89%	4
	SP-14 Antelope Valley	1987	11%	1	2%	2	81%	2
		1990	15%	1	0%	0	85%	2
	SP-16 Antelope Valley	1987	9%	3	3%	4	82%	4
		1990	7%	3	0%	0	88%	5
AY-5	SP-13 Clover Valley	1987	9%	1	0%	1	19%	4
		1990	2%	2	0%	0	98%	4
AVG.		**1990**	**10%**	**2**	**0.7%**	**0.6**	**89%**	**3**

AY = Antelope Yearlong

[1] Cheatgrass and halogeton (noxious weed) were not included as part of the total forage composition, thus totals do not equal 100%.

Table 42. Antelope Habitat Condition Summary FOR AY-1 AND CAW-1.

Herd Use Area	Transect Number	Habitat Condition[1]	Habitat RATING[1]	% of Area[2]
AY-1	SP-01 N. Ruby Valley	1986-FAIR	35	10%
		1990-FAIR	39	
	SP-02 N. Ruby Valley	1986-POOR	28	30%
		1990-POOR	21	
	SP-03 N. Ruby Valley	1986-FAIR	31	20%
		1990-POOR	25	
	SP-04 N. Ruby Valley	1986-POOR	21	20%
		1990-POOR	20	
	SP-06 S. Ruby Valley	1986-FAIR	37	20%
		1990-POOR	20	
CAW-1	SP-05 S. Ruby Valley	1986-FAIR	48	100%
		1990-POOR	29	

[1] 5-30=POOR; 31-60=FAIR; 61-105=GOOD

[2] % of Area = Percent of herd use area represented by key area.

Table 43. Antelope Habitat Condition Summary FOR AY-2 AND AY-5.

Herd Use Area	Transect Number	Habitat Condition[1]	Habitat RATING[1]	% of Area[2]
AY-2	AY-2-T-02 Mizpah Point	1984-FAIR	36	15%
	SP-07 S. Steptoe Valley	1986-FAIR	33	10%
		1990-POOR	28	
	SP-08 S. Steptoe Valley	1986-POOR	21	10%
		1990-POOR	16	
	SP-09 Mizpah Point	1986-FAIR	39	10%
		1990-POOR	25	
	SP-10 Currie Canyon	1986-FAIR	37	10%
		1990-FAIR	32	
	SP-11 Currie Canyon	1986-FAIR	35	10%
		1990-POOR	15	
	SP-12 N. Steptoe Valley	1986-FAIR	35	15%
		1990-POOR	11	
	SP-14 Antelope Valley	1987-FAIR	41	10%
		1990-POOR	29	
	SP-16 Antelope Valley	1986-FAIR	39	10%
		1990-POOR	29	
AY-5	SP-13 Clover Valley	1987-FAIR	35	50%
		1990-POOR	27	

[1] 5-30=POOR; 31-60=FAIR; 61-105=GOOD

[2] % of Area = Percent of herd use area represented by key area.

c. **Bighorn Sheep**

The Goshute Mountains, which are historical bighorn sheep range, were investigated by BLM biologists for bighorn reintroduction potential. The Nevada Division of Wildlife (NDOW), in cooperation with the Bureau, conducted an air and ground reconnaissance of portions of the range outlined as good to excellent habitat. A summary of their findings indicate that, topographically, the range has areas of good to excellent escape terrain. Water availability is adequate and available all year. Vegetation composition is fair to good, though density values are low.

The major problem with the area is the dense pinyon-juniper forests which are often located in otherwise good bighorn escape terrain. Additional problems are potential competition with wild horses, domestic sheep, and cattle. Currently the west benches of the Goshute Mountains are grazed by cattle in the winter. The NDOW included the reintroduction of bighorn sheep into the Goshute Mountains in their Big Game Release Plan up until 1989, at which time the habitat suitability evaluation was conducted. The Goshute Mountains have also been identified by the Wells RMP as a potential reestablishment area.

d. **Elk**

No data exists to evaluate habitat conditions for elk on the Spruce Allotment.

4. **Riparian Habitat**

In 1980 and 1981, the Elko District conducted a wildlife habitat and water inventory. Other water inventories have been conducted within the Wells Resource area between 1979 to 1981. Some springs in the Dolly Vardens were inventoried in 1992. Habitat conditions of these mesic sites generally range from poor to fair. The wildlife habitat and water inventory data and field inspections will be used to prioritize spring developments and enhancements in the Spruce Allotment.

5. Ecological Site Inventory

Table 44 shows the summary of the ecological status inventory (ESI) completed between 1989 and 1991.

Table 44. Summary of Ecological Site Inventory

Total Acres Surveyed and Classified

Description	Acres	% of Total Acres Surveyed	% of Total Acres in Allotment
Early Seral	158,751	27	20
Mid Seral	236,546	40	30
Late Seral	165,555	28	21
PNC	31,571	5	4
Total	592,423	100	75

Total Acres Unclassified

Description	Acres	% of Total Acres Unclassified	
Woodland	65,185	33	8
Seedings	3,336	2	<0.55
Rock Outcrop	13,780	7	2
Barren	1,229	<0.7	<0.15
Burn	303	<0.2	<0.15
Water	41	<0.1	<0.15
Inclusions	113,041	57	14
Total	196,915	100	25
Total Classified and Unclassified	789,338		100

6. Precipitation

The normal growing season is from April through mid June. However, the growing season in the lower elevations may start as early as March and may extend through late June in the higher elevations (possibly even later around springs). This may vary slightly from year to year depending on weather conditions and riparian conditions.

The precipitation data from September of one year to June of the following year is used to calculate the "yield index" or "climatic adjustment factor" (CAF). This information is used to adjust current years production data to that which would be expected to occur during an average precipitation year. A "yield index" or "CAF" of 1 is considered to be an average precipitation year, above 1 is above average, and below 1 is below average.

Because the Spruce Allotment spans over 3 major valleys (Ruby Valley, Goshute Valley and Antelope Valley) and 6 major mountain ranges (Medicine Range, Cherry Creek Mountains, Spruce Mountain Ridge, Pequop Mountains, Dolly Varden Mountains, and Goshute Mountains), there are major influences on weather patterns throughout the allotment. It was necessary to use three weather stations to determine the CAF. The available data indicates that the precipitation is similar in all three weather stations.

In January, 1993, an extreme winter storm moved through Elko County leaving about three feet of snow or more in most of the valleys in the Spruce Allotment. This resulted in having to initiate emergency feeding of hay to livestock. These heavy deep snows resulted in an extremely wet spring and above normal CAF for 1992-1993. This in turn resulted in an abundance of grasses and forbs for the 1993 grazing season.

Table 45 summarizes the climatic adjustment factors (CAF) from 1980 to 1993.

Table 45. Climatic Adjustment Factors (CAF) from 1980 through 1993 from Ruby Lake, Montello, and Wells Weather Stations.

YEAR[1]	RUBY LAKE	MONTELLO	WELLS
1980	1.58	1.69	1.87
1981	0.64	0.43	0.62
1982	1.34	1.06	1.49
1983	1.73	2.00	1.73
1984	1.97	1.62E	2.00
1985	0.98	0.56E	0.75
1986	1.17	0.61	0.96
1987	0.88	0.90	0.86
1988	0.63	1.10	0.63
1989	0.94	0.95	0.90
1990	0.82	0.89	0.70
1991	0.61	0.68	0.56
1992	0.75	0.72	0.80
1993	1.42	1.28	1.05

[1] The year representing the CAF is actually data from September through June. Therefore, 1980 is representing data from September 1979 through June 1980.

E = Estimate

V. CONCLUSIONS

A. Allotment Management Objectives

This section examines whether or not the allotment objectives have been met.

1. General Land Use Plan (LUP) Objectives

Attainment or non-attainment of these objectives is included under conclusions for allotment, RPS, HMAP, and allotment specific objectives (range and wildlife).

2. Rangeland Program Summary (RPS) Objectives

a. Improve livestock distribution in Ruby Valley (near Delcer Buttes), Steptoe Valley (north of Mizpah Point), Antelope Valley (north and east of Dolly Varden Spring), and Spruce Mountain (in the areas of Basco Spring, Spruce Spring, Latham Spring, and Coyote Basin).

Evaluation of existing data indicates that sufficient progress has not been made toward the attainment of this objective. In general, livestock distribution in the Spruce Allotment has been poor. This is the result of lack of water and interior fencing. Von Sorensen, permittee on the east side, has completed some water developments to help improve livestock distribution. Water hauling practices and salting are also done in an attempt to improve livestock distribution. However, some problems still exist.

Most all of the existing water wells are located in whitesage flats. Additional proposed stockwater wells should be developed in adjacent range sites to reduce some of the pressure on the whitesage areas.

When there is snow cover in the valleys in the winter, livestock distribution is good. However, because snow is not dependable, especially in the past few years, the permittees have had to rely on existing stockwater wells for watering livestock and achieving maximum livestock distribution.

A summary of problems/accomplishments by valley are identified below.

Ruby Valley (Subunits A-1, A-2, and G)

Livestock control in subunits A-1 and A-2 has been through the use of existing waters, however, livestock distribution continues to be a problem due to the lack of water and interior fencing. Heavy wild horse use in the Ruby Wash area and north to the Delcer Buttes area has also resulted in adjustments in livestock use patterns, increasing use elsewhere in the subunit. Wild horse numbers in the Maverick-Medicine HMA were reduced to initial herd size in November 1994, as per the Wells RMP Wild Horse Amendment. Monitoring data gathered in 1995 will determine the effects of the gather.

Sheep graze Subunit G beginning around May and use snow runoff for water. However, when water is lacking, water is hauled to two watering locations, Bald Mountain Sheep Troughs and Mud Spring. Additional water locations need to be developed to ensure good sheep distribution when snow is lacking.

Steptoe Valley (Subunits B-1, B-2, C-1, and C-1a)

As mentioned above in Ruby Valley, livestock control has been through the use of existing waters. Here again, livestock distribution continues to be a problem due to the lack of water and interior fencing. The permittee developed a water well in Subunit C-1a (Goshute Well), in 1988. This project had been proposed in the 1987 draft Spruce AMP. Additional waters and/or fencing are needed for improved livestock distribution in subunits C-1 and B-2.

Antelope Valley (Subunits C-2, C-3 and C-4)

Subunit C-2 is currently part of the private lands owned by Von Sorensen in Flowery Lake. Water on the public land portion is provided by 3 wells. The larger portion of the private lands are seeded and are also watered by 3 wells. Distribution in this area is poor. Because the private seeded area is not fenced, the surrounding public land receives annual use during the growing season without rest.

Subunit C-3 is watered by 4 wells along the upper valley benchs adjacent to the Goshute Mountains and 2 wells in the valley bottom. Subunit C-4 is watered by 3 wells and a spring on private land. One of the wells was developed by the permittee (Von Sorensen) in 1988 (Dolly Varden Well). This project had also been proposed in the 1987 draft Spruce AMP.

This area has several water sources that have helped in livestock movements in this subunit. However, two additional stockwater wells, one in each subunit (C-3 and C-4), are needed to further improve livestock distribution.

Spruce Mountain (Subunits E-1, E-2, E-3, and E-4)

Extensive water hauling and salting practices have been done to improve livestock distribution in the summer range. The construction of Spruce, Basco, and Latham Spring pipelines began in 1986 and has improved livestock distribution. However, these projects have not been completed as proposed. Once all water troughs are installed as proposed, particularly on the Spruce Spring pipeline, livestock distribution on the east side of Spruce Mountain should improve.

Although not specifically identified in the objective, the following areas are analyzed here: Independence Valley (subunits D-1,2,3), Clover Valley (subunit H, I, K-1, and K-2), and Dolly Varden Mountains (subunits F-1 and F-2).

Independence Valley (Subunits D-1,2-3)

Independence valley consists of a combination of seeded and native range. There are 4 wells, 2 springs, a pipeline/trough, and several water hauling locations within this subunit that are used in attempts to improve livestock distribution. Despite these measures, interior fencing is needed to further improve livestock distributions.

In July 1985, a 4700-acre lightning fire burned approximately 1300 acres of crested wheatgrass seeding. Field inspections have shown that crested wheatgrass production improved in the burned area as a result of sagebrush removal. About 375 acres of whitesage and other salt desert shrub range sites was also burned and has converted to annual vegetation (halogeton and cheatgrass). Because of the nature of these range sites and their proximity to water, natural recovery is impossible. The areas on the upper benches containing big sagebrush and pinyon/juniper woodland which burned in the 1985 fire were never seeded. Natural recovery of this area has been good. Visual observations indicate the presence of native grasses and a fair to good rate of successional response.

Additional waters and interior fencing would benefit this area. Fencing would allow for deferred or rest-rotation grazing use of the seeded areas.

Clover Valley (Subunits H, I, K-1 and K-2)

Subunit H was historically grazed by sheep annually in the winter and spring and is now grazed by cattle every other spring. Now it is used by cattle. This area is watered by 4 wells. Livestock use in this area is primarily along the upper valley benches. There are extensive areas of whitesage in this valley.

Subunit I is on the northern end of Clover Valley. This area has been used as a trail area. There are currently two water sources in subunit I; Government Spring and Curtis Spring. The permittee unsuccessfully attempted to drill a well in this area.

Subunits K-1 and K-2 receive very little use by cattle. Most the use by cattle is on the lower benches. Historically, these areas received more use by sheep in the winter. These areas contain pinyon/juniper woodlands with understorys of black sage.

Dolly Varden Mountains (Subunits F-1 and F-2)

The Dolly Varden Mountains are primarily used by wild horses and wildlife. Generally, cattle graze the valleys in winter and snow usually prevents them from getting up into the higher country. There are several springs in the Dolly Vardens that benefit wild horses and wildlife. Additional water developments in this area would primarily benefit wild horses and wildlife. Because of the steep terrain, any attempt to graze cattle in this area would result in poor distribution.

b. Improve ecological status of whitesage and saltbush winter use areas in Ruby, Steptoe, Antelope, and Clover Valleys.

Evaluation of existing data indicates that significant progress has been made toward attaining the trend objective and some progress has been made in the ecological and utilization objectives. This objective will be evaluated under Section V.A.4.a (Range Key Area Objectives).

c. Maintain summer use areas on the upper elevations of Spruce Mountain (north and west sides), Medicine Range, and the Pequop Mountains (between Nine-mile Canyon and Brush Creek).

Evaluation of existing data indicates that this objective has been attained. Refer to discussion under Section V.A.4 (Allotment Specific Objectives) for an evaluation of Subunits E-1, E-2, and E-4. In summary, conclusions of these three subunits are as follows:

E-1 (Spruce Mountain Ridge)
Trend, ecological condition, and utilization objectives have been attained. Key area SP-28 indicates that range condition has remained in late seral and trend is static to downward.

E-2 (Coyote Basin)
Trend and uitilization objectives have been attained and progress has been made toward attaining the ecological condition objective. Key area SP-25 indicates that range condition has remained in mid seral and trend is static to upward. Key area SP-26 indicates that range condition has remained in mid seral and trend is static.

E-4 (Ninemile Canyon)
Trend and ecological condition have been attained and progress has been made toward attaining the utilization objective. Key area SP-29 indicates that range condition has remained in late seral and trend is static to upward.

In addition, no range key areas exist for Subunits E-3 and G. However, the following conclusions can be made:

E-3 (Boone Springs)
A wildlife key area (DW-2-T-04) exists in Subunit E-3. Although the data indicates that mule deer winter range habitat condition ratings declined from good in 1986 to fair in 1992, the result of the decline was not due to livestock grazing. The decline was attributed to unsatisfactory age structure of bitterbrush which has resulted from the prolonged drought.

The objective level for livestock grazing on bitterbrush in this key area is 25%. Average use by livestock from 1987 to 1993 was 14%.

As with the rest of the summer range on Spruce Mountain and the Pequop Mounatins, it is concluded that range condition and trend in this subunit is improving. With the removal of sheep from this area and only cattle use remaining, there is likely to be less use on bitterbrush.

Subunit G (Bald Mountain Sheep Use Area)
A wildlife key area (DW-5-T-01) exists in Subunit G. Wildlife data indicates that mule deer winter range habitat condition ratings increased from fair in 1982 to excellent in 1985 and 1992. In 1985, a increase in bitterbrush seedlings and canopy cover was recorded. By 1992, declines were observed. Again, the declines could be attributed to the effects of prolonged drought.

Although utilization by livestock has not been collected periodically, available data indicates an average of 1% use by livestock from 1987 to 1993.

This subunit is used by sheep. Sheep do not normally use the area in the vicinity of the key area and thus the wildlife key area is not representative of sheep grazing in this subunit. Sheep depend on snow for water. When the snow is gone, water is hauled to the Bald Mountain Sheep Troughts and Mud Springs. Most of the sheep use occurs on the east side of this subunit. Use on the west side of this subunit could occur in the summer if water was hauled.

d. Consider formal conversions from sheep to cattle on portions of the allotment.

Evaluation of existing data indicates that this objective has been attained. The permittees, Von L. Sorensen and Kenneth Jones, have requested that all of their current active preference (sheep AUMs) be converted to cattle AUMs. The only active sheep AUMs that would remain in the Spruce Allotment would be in subunit G, Bald Mountain Sheep Use Area. This area is suitable for sheep use only and is currently grazed by Bertrand Paris and Sons sheep operation. Based on available monitoring data, this evaluation has condisdered the results of historic cattle use and has made conclusions and technical recommendations relative to a conversion from sheep to cattle. Refer to Appendix 3 for Carrying Capacity Analysis and Livestock Conversions.

e. Periodically evaluate the monitoring data for the allotment to reinstate suspended non-use when they become permanently available.

Evaluation of existing data indicates that this objective has been attained. The current suspended AUMs are sheep AUMs placed in suspension for trail use at the time the allotment was adjudicated. Because these are sheep AUMs they would be eliminated as per the conversion. Based on analysis of the monitoring data, sheep AUMs would be converted to cattle AUMs. The difference is AUMs as a result of this conversion would be eliminated. Future monitoring would determine whether any adjustments, either up or down, in authorized cattle use would be appropriate. Refer to Appendix 3 for Carrying

Capacity Analysis and Livestock Conversions.

f. Develop an allotment management plan (AMP) to be signed in fiscal year 1987.

Evaluation of existing data indicates that progress has been made toward the attainment of this objective. Draft Spruce AMPs were prepared in 1987 and 1993, however, neither was finalized or formally implemented. Implementation of a final AMP will be included in the technical recommendations for this allotment evaluation.

g. Improve or maintain all seasonal big game habitat in the Spruce Allotment to good or excellent condition to provide forage and habitat capable of supporting the following reasonable numbers and forage demands:

Big Game Species	Reasonable Numbers	AUMs
Mule Deer	8,838	6,510
Antelope	180	432
Bighorn Sheep	120	288

Evaluation of existing data indicates that some progress has been made in attaining mule deer objectives, no progress has been made in attaining the antelope objectives, and no data is available for bighorn sheep. Seasonal mule deer habitat conditions vary from fair to excellent. Available data indicates approximately 50% of the available yearlong/winter habitat in the Dolly Varden Mountains is currently in good condition and has shown a static trend from good measured in 1982. The remaining 50% of the available habitat also shows a static trend, currently rated in fair condition. Habitat on Spruce Mountain, within the winter range, varies from fair to excellent. The Boone Springs area is rated in fair condition and has shown a downward trend from good in 1986. Approximately 20% of the winter habitat, the Black Forest area, ranges from good to excellent with static trends. The remaining 50% of winter habitat in the Medicine Range is in excellent condition, which has improved from fair condition in 1982. Studies indicate the most limiting factor on mule deer winter range in the Spruce Allotment is unsatisfactory age structure of bitterbrush.

Available data throughout yearlong antelope habitats in the Spruce Allotment indicate habitat conditions are poor to fair. The most common limiting factors are lack of vegetation diversity and water availability.

h. Reintroduce bighorn sheep in the Goshute Mountains.

Evaluation of existing data indicates that no progress has been made toward attainment of this objective. The Goshute Mountains were identified as a potential reintroduction site in the Wells RMP. The NDOW has included the reintroduction of bighorn sheep into the Goshute Mountains in their Big Game Reintroduction Plans up until 1989. In the early 1980's, a habitat suitability evaluation was conducted by the NDOW and BLM. The most limiting factors associated with bighorn sheep habitat in the Goshute Mountains were determined to be competition with wild horses, domestic sheep, and cattle and water availability. Implementation of HMPs and resolution of the domestic sheep conflicts must be accomplished before a successful reintroduction can occur.

i. Facilitate big game movements by modifying existing fences to Bureau standards, where necessary (46 miles).

Evaluation of existing data indicates that some progress has been made toward attainment this objective. In 1991, approximately 10 miles of Highway 93 right-of-way fence was modified from a net wire fence to a standard 4-wire fence. More sections of the right-of-way fence were scheduled for modification by Nevada Department of Transportation (NDOT) as funds became available. The Wells RPS provides for 46 miles of fence to be modified within the Spruce Allotment. No fences have been modified by the Bureau due to other priorities. A technical recommendation will be made in this evaluation to inventory the existing fences within the Spruce Allotment that are not to Bureau specifications.

j. Improve crucial deer winter habitat by:
- cutting (thinning) within 16,000 acres of the pinyon/juniper forest type.
- chaining or burning and seeding 2,500 acres of sagebrush.

Evaluation of existing data indicates that some progress has been made toward the attainment of this objective. Approximately 50 acres of pinyon/juniper forest type was clear cut on the west side of Spruce Mountain (clear cut was started in 1981 and completed in the fall of 1989). Seeding within the unit was also completed during the harvest. The seed was a wildlife seed mixture consisting of bluebunch wheatgrass, bitterbrush, small burnette, ladak alfalfa, fourwing saltbush, big sagebrush, mountain mahogany, and prostrate kochia. Indian ricegrass was also seeded into the unit. Antelope bitterbrush, curlleaf mountain mahogany, and pinyon pine seedlings were planted after the harvest was completed.

Thinnings are completed on an annual basis through the Christmas tree program. Five hundred trees are sold commercially and an additional 300-500 trees are cut by individuals. It is estimated that thinnings, through the Christmas tree program, average 40 acres/year. From 1981 through 1993, it is

estimated that approximately 480 acres of the pinyon-forest type have been thinned on the Spruce Allotment.

Several wildfires have occurred in the Spruce Mountain area since 1983, totalling approximately 4,700 acres. Although none of these areas were re-seeded, some of these burns may have improved mule deer winter habitat or transition (spring/fall migration) range. An evaluation of how many acres of wildfires have assisted in attainment of the objective to chain, burn, and seed 2,500 acres of sagebrush will be made during development of the Spruce Habitat Management Plan (HMP).

k. Improve, enhance or develop 3 springs to good or excellent condition.

Evaluation of existing data indicated that some progress has been made toward attaining this objective. Only one spring development or enhancement project to meet this objective has been initiated to date due to district priorities. Additional spring enhancement projects will be identified and prioritized from the 1980-81 wildlife habitat and water inventory and subsequent inventories. Additional spring enhancement projects may be developed as funding is available.

The Basco Spring Pipeline (Project #5560) was proposed in 1981. The project has not been completed to date, although the troughs have been installed. The existing exclosure has not been reconstructed as proposed.

l. Manage for a wild horse herd size which will maintain a thriving ecological balance consistent with other multiple uses while remaining within the wild horse herd boundaries.

Evaluation of existing data indicates that some progress has been made toward attainment of this objective. All of the herd management areas in the Spruce Allotment have been gathered down to initial herd size as outlined in the 1993 Wells RMP Wild Horse Amendment. The establishment of an AML within all the HMAs through additional allotment evaluations, should reduce historic wild horse distribution problems and associated areas of over-utilization.

Census data indicates that wild horses are being maintained in designated herd management area boundaries, with some drift back into the checkerboard land pattern area. The construction of approximately 9 miles of fence should alleviate this problem.

m. Delineate and manage wild horses in four HMAs as follows: Antelope Valley Herd Area (includes 44 percent of the former Cherry Creek Herd Area); Goshute Herd Area; Maverick-Medicine Herd Area (includes 56 percent of the former Cherry Creek Herd Area); and Spruce-Pequop Herd Area.

Evaluation of existing data indicates that this objective has been attained. Four HMAs have been delineated as per the Wells RMP Wild Horse Amendment and horses are managed in each HMA. Management currently consists of the reduction of numbers to initial herd size in each HMA and the maintenance of initial herd size until AML is established within the HMA. Monitoring has been established in the form of collection of pre-livestock turnout utilization data, use pattern mapping data, and aerial census data.

n. Remove wild horses from checkerboard areas, which include all of the Toano Herd Area and portions of the Goshute and Spruce-Pequop Herd Areas and manage them as wild horse free areas.

Evaluation of existing data indicates that some progress has been made toward attainment of this objective. Horses were removed from checkerboard areas in the Toano herd area and portions of the Goshute and Spruce-Pequop HMAs in the fall of 1993. However, the proposed fence between the Spruce-Pequop HMA and checkerboard lands has not been constructed allowing some horses to return. The fence is currently under contract and is scheduled to be completed in 1995. In the Toano HA, a complete removal was not acheived, however, only a few horses remain.

The horses in the Toano HA will be gathered during the next regularly scheduled gather of the Goshute HMA, currently scheduled for Fall 1996, but depends on funding and priorities. The horses that have returned to the checkerboard areas of the Pequop Mountains (now outside the HMA boundary) will be moved south out of the checkerboard area after the fence is completed. This will not require a removal unless the Spruce-Pequop HMA is over AML.

o. Remove sufficient wild horses to attain the initial herd size and maintain populations at a level which will maintain a thriving ecological balance consistent with other resource values.

Evaluation of existing data indicates that some progress has been made toward the attainment of this objective. All of the HMAs have been gathered down to the initial herd size as outlined the Well RMP Wild Horse Amendment. This evaluation process will analyze monitoring data and make a technical recommendation to establish an AML. A thriving natural ecological balance should be attained within the Spruce Allotment with the maintenance of an AML, however, AML may be adjusted if future monitoring data shows a need.

p. Develop eight water sources to improve wild horse distribution, modify approximately one mile of existing fence so as not to impede wild-free roaming behavior, and construct approximately eighteen miles of new fence to prevent the return of wild horses to checkerboard land patterns.

Evaluation of existing data indicates that some progress has been made toward attainment of this objective. This objective has three separate parts and can be broken down into 1. Water Developments; 2. Fence Construction and 3. Fence Modification.

1. Water Developments - **Evaluation of existing data indicates that no progress has been made toward attainment of this objective.** The Wells RPS originally identified six waters to be developed for wild horses. Two of these waters were identified for the Spruce Allotment: the Palomino Ridge catchment and the Dolly Varden catchment. Neither of these catchments have been constructed. The Wells RMP Wild Horse Amendment identified eight waters sources to be developed and this objective supercedes the RPS objectives. While the Amendment did not specifically identify the location of these additional waters, four sites are currently under review by staff specialists. Three sites are within the Spruce Allotment and one is in the Leppy Hills Allotment. The feasibility and location of the two catchments originally identified in the RPS need to be re-examined. The development of critical springs to provide reliable yearlong water should be a higher priority.

In conducting an inventory to either develop springs or construct other water sources for wild horses, an inventory of existing wire hazards around springs should be conducted. These wire hazards, especially old spring exclosures and wild horse traps, can cause extensive injuries and result in having to destroy animals that become entangled.

2. Fence Construction - **Evaluation of existing data indicates that some progress has been made toward the attainment of this objective.** The construction of a 9 mile fence (the Rockland Fence) between the Spruce-Pequop HMA and the checkerboard land to the north is projected to begin in the Spring of 1995. The contract has been awarded.

3. Fence Modification - **Evaluation of existing data indicates that some progress has been made toward the attainment of this objective.** The one-mile section of fence to be modified has been identified and is located in the Currie Hills. The existing fence (the Sorensen-Lear Fence JDR#4059) was constructed in 1973 and has been a hinderance to wild horse movements ever since. Approximately one mile will be modified into a let-down fence to alleviate the problems in 1995.

q. The 1971 Wild Horse Herd Areas will continue to be maintained.

Evaluation of existing data indicates that this objective has been attained. The Wells RMP Wild Horse Amendment formally designated four herd management areas, deleting the checkerboard land patterns from horse management. The areas designated as herd areas in 1971 will continue to keep their status as such even though horses are not being managed there (i.e. the Toano herd area).

3. Antelope Valley Herd Management Area Plan (HMAP) Objectives

a. Habitat Objectives

1. Vegetation

Manage for the most appropriate seral stages to provide for desired quantity, quality, and density of forage in order to meet the requirements of the wild horses and other foraging animals. In general, utilization levels will be maintained at approximately 45% on shrubs and 55% on grasses which is in accordance with the recommended utilization levels in the Nevada Rangeland Monitoring Handbook (1984).

Evaluation of existing data indicate that some progress has been made toward attainment of the ecological condition and utilization objectives. A detailed discussion of this objective can be found in Section V.A.4.a (Range Key Area Objectives).

2. Distribution and Water Availability

Improve distribution and provide water yearlong for wild horses throughout the HMA where possible.

Evaluation of existing data indicates that some progress has been made toward the attainment of this objective. To date, no waters have been developed to improve the distribution of horses, however a spring at T28N., R66E., Sec. 6 NENE (Dolly Varden Mountains, Spruce Allotment) was improved to provide yearlong water for the benefit of wild horses in 1992. Distribution within the HMA should also improve with the Sorensen-Lear fence modification and the construction of let-down type fence only within the HMA.

b. **Wild Horse Objectives**

1. Multiple Use

The objective in the Antelope Valley HMA is to maintain a healthy, viable population of wild horses in a thriving natural ecological balance with all other resources and users.

Evaluation of existing data indicates that some progress has been made toward attainment of this objective. The Antelope Valley currently supports a healthy, viable population of wild horses. When an AML is established for each allotment within the Antelope Valley HMA, this objective will have been attained.

2. Appropriate Management Level (AML)

When the allotment evaluations are complete, a total AML for the HMA will be determined. The number of horses will then be maintained within a range of $\pm$ 15% of AML. As per the Strategic Plan for Management of Wild Horses and Burros, removals will be scheduled so that each HMA is gathered once every three years.

AML will be maintained using one or more of the following options: periodic removals with no selectivity, selective removals targeting specific age groups, or fertility control.

Evaluation of existing data indicates that some progress has been made toward attainment of this objective. AML is set through the allotment evaluation process. There are ten allotments which are partially or completely contained in the Antelope Valley HMA. To date, AML has been set in one allotment. The final evaluation of this objective will occur when all ten allotments have an AML set and AML for the Antelope Valley HMA is established. The RMP amendment determined an initial herd size of 240 horses for the HMA. This number will be maintained until AML is established. The initial herd size and, eventually, the AML, will be maintained by conducting removals every three years.

3. Free-Roaming Characteristics

The wild horses within the Antelope Valley HMA will be managed in a manner that maintains their wild free-roaming characteristics.

Evaluation of existing data indicates that this objective has been attained. Wild horses within the Antelope Valley HMA are managed in a manner that maintains their wild free-roaming characteristics. This is accomplished by modification of problem fences and the construction of let-down type fence only within the HMA.

4. Color and Conformation

The wild horses within the Antelope Valley HMA which exhibit the Spanish Barb characteristics will be maintained within the population. Fertility control treatments and or removals in the future will exclude those horses that obviously exhibit those traits. No other characteristics or conformations will be selected.

Evaluation of existing data indicates that this objective has been attained. No Spanish Barb horses have been removed from the Antelope Valley HMA nor included in the pilot fertility control study.

4. Allotment Specific Objectives

a. Range Key Area Objectives

Evaluation of range key area objectives, as indicated by 1, 2, and 3 below, will be summarized by subunit and key areas within subunits.

1. Show a static or upward trend in ecological status on all key areas. Upward trend will be identified by a significant increase in percent frequency of occurrence of each key species as defined by Duncan's Multiple Range Test.

2. Improve the ecological status of all key areas to (or maintain in) late seral stage.

3. Manage livestock use so that average annual utilization of key forage species does not exceed the allowable percentages outlined in Table 8.

4. In areas grazed in common by wild horses and livestock, manage for an average of 10 percent use on key forage species by wild horses prior to entry by livestock on winter range (pre-livestock use).

Summary of Key Area Objectives

Conclusions for the range key area objectives will be summarized by subunit and key areas within the subunits.

Annual actual use was calculated from 4/1 through 3/31. The reason for using this period of use, versus the grazing fee year of 3/1 through 2/28, was to identify use through the end of the dormant season and beginning of the growing season. In this area, the critical growth period generally starts around 4/1, but may begin as early as 3/1, depending on the year.

The majority of key areas on the Spruce Allotment are located within the arid salt desert shrublands which grow on the lower fans and valleys of this allotment. Condition and trend data on these salt desert shrublands spans the four year period between 1986 and 1990.

Precipitation in 1986 was above average and was the end of a generally wet cycle of years beginning in 1982/83. In 1987, precipitaion was below average and was the beginning of a drought cycle which prevailed through 1992. Therefore, the first collection of condition and frequency trend data in 1986/87 occurred at the end of a wet cycle, and the second collection of data occured several years into a drought cycle.

The Bureau began collecting pre-livestock use in 1990 when high use levels began to be observed before livestock turnout. Therefore, although this data was not available between the key area readings in 1986/87 and 1990, it can be assumed that wild horses were using these areas at or below the same levels recorded since 1990.

Of the 22 key areas with frequency trend data on the salt desert shrublands in this allotment, 14 key areas showed significant reductions of one to several key species between 1986/87 to 1990. Key species that experienced reductions in frequency included Indian ricegrass, white sage, budsage, and Nuttal's saltbush.

Conclusions by subunit are as follows:

Subunit A-1 (North Ruby Valley)

Evaluation of existing data within this subunit, indicates that some progress has been made toward attaining the trend, ecological condition, and utilization objectives. Four key areas occur within Subunit A-1 (SP-01, SP-02, SP-03, and SP-04). The first and second readings of the long term monitoring studies (frequency, weight-estimate production data, and ecological condition) were in 1986 and 1990, respectively.

This subunit received actual use ranging from 322 AUMs to 1996 AUMs and averaging 1267 AUMs (combined cattle and wild horse use) from 1986 through 1994 (eight-year period). This area has received spring use during the critical growing period about every other year since 1977.

Combined livestock and wild horse utilization has been recorded in this subunit since 1987. Average combined utilization of key species during the evaluation period has been in the moderate use category. Use pattern maps showed light to heavy use within the key areas. Use levels in the spring indicate anywhere from 0-21% of the current years growth (i.e. growth to date). No data for use by wild horses prior to livestock turnout was collected in this subunit because wild horse use is only incidental.

SP-01

Frequency data indicates a significant decrease in the key species of whitesage and Indian ricegrass.

Production data indicates that ecological condition increased from 44% (mid seral) in 1986 to 61% (late seral) in 1990. Overall, species composition shows a decrease in native grasses and slight increase in shrubs, particularly whitesage. A trace of budsage was recorded in 1986 and none recorded in 1990. Other species not recorded in either 1986 or 1990 were fourwing saltbush, and globemallow. Because this site is lacking some of the dominant species, it is concluded that this site has remained in mid seral.

Combined livestock and wild horse utilization of the key species was read six years between 1987 and 1994. For three of the six years, utilization levels exceeded the utilization objective of 55% and three years were below the utilization objective.

Evaluation of the data at this key area indicates range conditions remained in mid seral and trend is downward.

SP-02

Frequency data indicates no significant change in the key species of whitesage and Indian ricegrass.

Production data indicates that ecological condition remained in late seral from 1986 (75%) to 1990 (58%). As in SP-01, species composition showed a decrease in native grasses and slight increase in shrubs, particularly whitesage and Nuttal's saltbush. It is concluded that this site has remained in late seral.

Combined livestock and wild horse utilization of the key species was read six years between 1987 and 1994. For one of the six years, utilization levels exceeded the utilization objective of 55% and five years were below the utilization objective.

Evaluation of the data at this key area indicates that range condition has remained in late seral and trend is static.

SP-03

Frequency data indicates no significant change in the key species of whitesage and Indian ricegrass.

Production data indicates that ecological condition decreased from late seral (57%) in 1986 to mid seral (47%) in 1990. Once again, species composition showed a decrease in native grasses, bottlebrush squirreltail, and slight increase in shrubs, particularly whitesage. Because of such a

small change in numbers in ecological condition, it is concluded that range condition has remained in mid seral.

Combined livestock and wild horse utilization of the key species was read six years between 1987 and 1994. For two of the six years, utilization levels exceeded the utilization objective of 55% and four years were below the utilization objective.

Evaluation of data at this key area indicates range condition remained in mid seral and trend is static.

SP-04

Frequency data indicates no significant change in the frequency of occurrence of whitesage and a significant decrease in Indian ricegrass.

Production data indicates that ecological condition decreased from late seral (52%) in 1986 to mid seral (49%) in 1990. There was very little change in overall species composition of total grasses, forbs, and shrubs. However, individually, there was a slight increase in whitesage. As in SP-03, there is such a small change between the numbers in ecological condition, thus it is concluded that range condition has remained in mid seral.

Combined livestock and wild horse utilization of the key species was read five years between 1989 and 1994. For two of the five years, utilization levels exceeded the utilization objective of 55%, two years were below and one year was at the utilization objective.

Evaluation of data at this key area indicates that range condition remained in mid seral and trend is static.

Summary for Subunit A-1

In summary, factors such as drought and livestock spring grazing have had impacts on this subunit. The data recorded in 1986 was collected during an above average year and indicates a higher percentage of grasses. The decrease in perennial grasses recorded in 1990 may be attributed to drought. The data indicates that this area has the potential to produce more native grasses.

No significant changes were observed in frequency of shrubs, except in SP-01. This area received fairly light use until 1992 and 1993. During these two years, increased wild horse use in this area was also recorded and observed. It is difficult to explain such a decline in shrubs at this time. It is possible that part of the decline could be attributed to drought conditions and not necessarily grazing because use levels were recorded in slight use category for three of the four years between the frequency readings.

In conclusion, evaluation of all the existing data in this subunit, it is concluded that range conditions have remained in mid seral in key areas SP-01, SP-03, and SP-04 and range conditions have remained in late seral in SP-02. Trend has remained static in key areas SP-02, SP-03, and SP-04 and is downward in SP-01.

Subunit A-2 (South Ruby Valley)

Evaluation of existing data within this subunit, indicates that some progress has been made toward attaining the trend and utilization objectives (utilization objective in SP-27 and SP-30 has been attained), and no progress has been made in the ecological condition objective. Five key areas occur within Subunit A-2 (SP-05, SP-06, SP-24, SP-27, and SP-30). The first and second readings for the long term monitoring in key areas SP-05 and SP-06 were completed in 1986 and 1990, respectively. Key areas SP-24, SP-27, and SP-30 were established in 1992 to monitor utilization only.

This subunit received actual ranging from 373 AUMs to 3036 AUMs and averaging 2148 AUMs (combined cattle and wild horse use) from 1986 to 1994 (eight-year period). This area has received spring use during the critical growth period about every other year since 1977.

Combined cattle and wild horse utilization of the key species has been recorded in this subunit since 1989. Average combined utilization during the evaluation period has been in the moderate to heavy use categories. Use pattern maps showed light to severe use within the key areas. Beginning in 1992, pre-livestock use has been recorded, except for SP-06, which has been recorded since 1991.

SP-05

Frequency data indicates no significant decrease in the key species of whitesage and Indian ricegrass.

Production data indicates that ecological condition remained in mid seral but declined within the mid seral range (41% in 1986 and 28% in 1990). Overall, species composition showed a decrease in native grasses and shrubs. However, an increase in forbs was observed. In 1986, no phlox or halogeton were recorded, but in 1990, halogeton comprised 33% of the species composition with phlox only 3%. The 1986 data was collected in September while the 1990 data was collected in July. In the fall, halogeton is dry and may not have been collected in the plots. Frequency data showed half a percent of halogeton in 1986 and 37% in 1990. This increase in halogeton may have been the result of favorable conditions. Such drastic increases of halogeton were not noted in other key areas. It is concluded that this site has remained in mid seral.

Combined cattle and wild horse utilization was read six years between 1989 and 1994. For two of the six years, utilization levels exceeded the utilization objective of 55% and four years were below the utilization objective.

Pre-livestock use by wild horses has varied from slight to moderate. The objective use level of 10% prior to livestock turnout was exceeded one year and was below the objective level the other year.

Evaluation of the data at this key area indicates range condition has remained in mid seral and trend is static.

SP-06

Frequency data indicates a significant decrease in the key species of whitesage and Indian ricegrass.

Production data indicates that ecological condition increased from mid seral (43%) in 1986 to late seral (61%) in 1990. Overall, species composition showed a decrease in native grasses and slight increase in shrubs. Virtually no change was recorded in forb composition. The reason for the increase in seral stage was the higher presence of shadscale and budsage recorded in 1990 and the allowable levels for this range site. So although there was a reduced percentage of grasses, it was offset by the higher percentage of shrubs. Overall, there was no change in species diversity. It is concluded that this site remained in mid seral.

Combined utilization cattle and wild horses was read six years between 1989 and 1994. For four of the six years, utilization levels exceeded the utilization objective of 55% and two years were below the utilization objective.

Pre-livestock use by wild horses has been recorded since 1991, with use levels varying from light to heavy. All years exceeded the objective use level of 10% prior to livestock turnout.

Evaluation of the data at this key area indicates range condition remained in mid seral and trend is downward.

SP-24

This key area was established in 1992 to record utilization by wild horses prior to livestock turnout and combined use by cattle and wild horses. Two combined utilization readings were conducted in 1993 and 1994. Combined utilization levels exceeded the utilization objective of 55% (heavy use recorded).

Pre-livestock use by wild horses was recorded in the slight use category. The objective use level of 10% prior to livestock turnout was exceeded one year and was below the objective level the other year.

Because of the increased wild horse use, this area has not been used by livestock within the past five years. Therefore, the results of both the pre-livestock and combined spring utilization readings have shown wild horse use only.

SP-27

As in SP-24, this key area was established to record utilization only. Combined utilization readings were recorded two years (1993 and 1994); both years were below the utilization objective level of 55%.

Pre-livestock use by wild horses was recorded in the light use category. All years exceeded the objective use level of 10% prior to livestock turnout.

SP-30

As in SP-24, this key area was established to record utilization only. Utilization was also recorded two years (1993 and 1994); both years were within the utilization objective levels.

Pre-livestock use by wild horses was recorded in the heavy use category. All years exceeded the objective use level of 10% prior to livestock turnout.

Summary for Subunit A-2

In summary, drought conditions, livestock grazing, and wild horse use have had impacts on this subunit. Although drought has had a significant impact for grass and forb composition, the heavy livestock and wild horse use recorded has added to the impacts.

In conclusion, evaluation of all the existing data in this subunit, it is concluded that range conditions have remained in mid seral in key areas SP-05 and SP-06. Trend has remained static in key area SP-05 and is downward in SP-06.

Subunit B-1 (South Steptoe Valley)

Evaluation of the existing data within this subunit, indicates that some progress has been made toward the attainment of the trend, ecological condition, and utilization objectives. Two key areas occur within Subunit B-1 (SP-07 and SP-08). The first and second readings for the long-term monitoring for these key areas was completed in 1986 and 1990, respectively.

This subunit received actual use ranging from 380 AUMs to 1533 AUMs and averaging 1041 AUMs (combined livestock and wild horse) from 1986 to 1994 (eight-year period). This area has received spring use during the critical growth period about every other year since 1977.

Combined livestock and wild horse utilization has been recorded in this subunit since 1989. Average combined utilization during the evaluation period has been in the moderate use category. Use pattern maps showed light to moderate use within the key areas. Beginning in 1992, pre-livestock use by wild horses has been recorded annually.

SP-07

Frequency data indicates no significant change in the frequency of occurrence of whitesage, however, it indicates a significant decrease in Indian ricegrass.

Production data indicates that ecological condition increased from mid seral (49%) in 1986 to late seral (75%) in 1990. Species composition indicates a slight increase in native grasses and slight decrease in shrubs. Virtually no change was noted in forb composition. The key species, whitesage and Indian ricegrass, both increased in species composition.

Combined livestock and wild horse utilization was read five years between 1989 and 1994. For two of the five years, utilization levels exceeded the utilization objective of 55%, two years were below, and one year was at the utilization objective.

Pre-livestock use by wild horses was recorded in the slight to light use categories, exceeding the utilization objective of 10% prior to livestock turnout. One year of the two was recorded at 11%.

The frequency data indicates that there is a significant decrease in Indian ricegrass while the production data indicates an increase in species composition. With use occurring during the critical growing season and the drought related decreased in Indian ricegrass observed in other key areas, it is my professional judgement that this area has not increased from mid seral to late seral, but rather remained in mid seral with some improvement of conditions occurring. However, these changes are not sufficient enough to show a significant change in the frequency data.

Evaluation of the data at this key area indicates that range condition has remained in mid seral and trend is static.

SP-08

Frequency data indicates no significant change in the frequency of occurrence of whitesage, however, it indicates a significant decrease in Indian ricegrass.

Production data indicates that ecological condition decreased from potential natural community (PNC) (77%) in 1986 to late seral (65%) in 1990. Species composition indicated a decrease in native grasses and a slight increase in shrubs. The was virtually no change in Indian ricegrass, however, there was a decrease in bottlebrush squirreltail. No change was noted in forb composition. Because not all key dominant species were recorded in 1986 (fourwing saltbush and globemallow) it is concluded that this site has remained in late seral.

Combined livestock and wild horse utilization was read five years between 1989 and 1994. Only one out of the five years utilization levels exceeded the utilization objective of 55% and four years were below the utilization objective. Spring use during the critical growing season, i.e. April, has been recorded at slight use levels.

Pre-livestock use by wild horses was recorded in the slight to light use categories. All years exceeded the utilization objective of 10% prior to livestock turnout.

Evaluation of the data at this key area indicates that range condition has remained in late seral and trend is static.

Summary for Subunit B-1

In summary, drought conditions and grazing have had impacts on this subunit. Drought has had a significant impact on the native grasses and forbs. However, grazing during the critical part of the growing season compounded by drought, can have significant impacts on the vegetative community. This area receives incidental wild horse use in the winter and numbers are low, thus, any impacts by wild horses has been minimal.

In conclusion, evaluation of the data in this subunit indicates that range condition remained in mid seral in key area SP-07 and remained in late seral in key area SP-08. Trend remained static in both key areas.

Subunit B-2 (Currie Canyon)

Evaluation of the existing data within this subunit, indicates that some progress has been made toward attaining the trend, ecological condition, and utilization objectives. Two key areas occur within the Subunit B-2 (SP-10 and SP-11). The first and second readings for the long-term monitoring in the key areas was in 1986 and 1990, respectively.

This subunit received actual use ranging from 262 AUMs to 1884 AUMs and averaging 1275 AUMs (combined livestock and wild horses) from 1986 to 1994 (eight-year period). This area has received periodic spring use during the critical growth period since 1977.

Combined livestock and wild horse utilization has been recorded in this subunit since 1989. Average combined utilization during the evaluation period has been in the moderate use category. Use pattern maps showed moderate to heavy use within the key areas. Beginning in 1990, pre-livestock use by wild horses has been recorded.

SP-10

Frequency data indicates a significant decrease in the key species of whitesage and Indian ricegrass.

Production data indicates that ecological condition remained static in mid seral (36% in 1986 and 37% in 1990). Species composition indicates very little change in overall composition of native grasses, shrubs, and forbs. However, individual composition of shrubs indicates an increase in whitesage and decrease in rabbitbrush.

Combined livestock and wild horse utilization was read five years between 1989 and 1994. For two out of the five years, utilization levels exceeded the utilization objective of 55% and three years were below the utilization objective. Spring use during the critical growth period was recorded at 47% in 1992 and less than one percent in 1994.

Pre-livestock use by wild horses was recorded in the slight to moderate use categories. All years exceeded the objective use level of 10% prior to livestock turnout.

Evaluation of the data at this key area indicates range condition has remained in mid seral and trend is downward.

SP-11

Frequency data indicates no significant change in frequency of occurrence of whitesage and significant decrease in Indian ricegrass.

Production data indicates that ecological condition decreased from late seral (64%) in 1986 to mid seral (50%) in 1990. Species composition indicates a decrease in native grasses, slight increase in shrubs, and virtually no change in forbs. The data in 1986 indicated the presence of Indian ricegrass and whitesage. However, by 1990, only whitesage was recorded at this site. Because frequency data indicates that Indian ricegrass is present, it is concluded that Indian ricegrass is present, but was just not present in the production plot. It is my professional judgement that ecological condition has decreased but has remained within the late seral stage category.

Utilization was read five years between 1989 and 1994. For four out of the five years, utilization levels exceeded the utilization objective of 55% (one year was recorded at 56%) and one year was below the utilization objective. Spring use during the critical growing period was recorded at 38% in 1992 and 18% in 1994.

Pre-livestock use by wild horses was recorded in the slight to light use categories. Two years exceeded the objective use level of 10% prior to livestock turnout, one year was recorded below, and one year was at the objective use level.

Evaluation of the data at this key area indicates that range condition has remained in late seral and trend is static.

Summary for Subunit B-2

In summary, drought conditions and grazing have had impacts on this subunit. Drought has had a significant impact on native grasses and forbs. Drought, compounded by grazing, especially during the critical part of the growing season has been detrimental to the plants.
In conclusion, evaluation of the data indicates that range condition in key area SP-10 has remained in mid seral and trend is downward. Key area SP-11 indicates that range condition remained in late seral and trend is static.

Subunit C-1 (North Steptoe Valley)

Evaluation of existing data within this subunit, indicates that some progress has been made toward attaining the trend and utilization objectives (utilization objective in SP-23 has been attained) and no progress has been made toward attaining the ecological status objective. Three key areas occur within Subunit C-1 (SP-09, SP-12, and SP-23). The first and second readings for the long-term monitoring in key areas SP-09 and SP-12 were completed in 1986 and 1990, respectively. The first and second reading in key area SP-23 were completed in 1987 and 1990, respectively.

This subunit received actual use ranging form 991 AUMs to 3995 AUMs and averaging 1744 AUMs (combined livestock and wild horses) from 1986 to 1994 (eight-year period). This subunit received annual spring use between 1977 and 1991. Most of the spring use was attributed to sheep grazing. The permittee sold his sheep in 1991 and through the development of the draft Spruce Interim AMP, the permittee requested all of the sheep AUMs be converted to cattle. Spring use in the area since 1991 has been every other year by cattle.

Combined livestock and wild horse utilization has been recorded in this subunit since 1989. Average combined utilization during the evaluation period has been in the moderate range. Use pattern maps showed moderate use within the key areas. Beginning in 1992, pre-livestock use by wild horses has been recorded in SP-09. Pre-livestock use by wild horses was recorded only in 1993 for SP-12 and SP-23.

SP-09

Frequency data indicates a significant decrease in the key species of Nuttal's saltbush.

Production data indicates that ecological condition remained in late seral (65%) in 1986 and 1990. Species composition indicated no change in presence of Nuttal's saltbush. For both years, Nuttal's saltbush is the only species recorded. It is concluded that although both years have been rated in late seral, it is my professional judgment that range condition has remained in mid seral due to the lack of species diversity (i.e. presence of native grasses and other shrubs which could potentially exist on this range site).

Combined livestock and wild horse utilization was read five years between 1989 and 1994. For two out of the five years, utilization levels exceeded the utilization objective of 55% (one year was recorded at 56%) and three years were below the utilization objective.

Pre-livestock use by wild horses was recorded in the slight use category. Both years were below the objective use level of 10% prior to livestock turnout.

Evaluation of the data at this key area indicates that range condition has remained in mid seral and trend is downward.

SP-12

Frequency data indicates no significant change in the key species of whitesage, budsage, and Indian ricegrass.

Production data indicates that ecological condition remained static in mid seral (37% in 1986 to 43% in 1990). Species composition indicated a decrease in native grasses, slight increase in shrubs, and virtually no change in forbs. Budsage showed the greatest decrease from 1986 to 1990.

Combined livestock and wild horse utilization was read four years between 1989 and 1992. For one out of the four years, utilization exceeded the utilization objective of 55% and the remaining three years were below the utilization objective.

Pre-livestock use by wild horses was recorded in the light use category, exceeding the objective use level of 10% prior to livestock turnout.

Evaluation of the data at this key area indicates that range condition remained in mid seral and trend is static.

SP-23

Frequency data indicates no significant change in the key species of whitesage and Indian ricegrass.

Production data indicates that ecological condition remained in mid seral (32% in 1987 and 38% in 1990). Species composition indicated virtually no change in the composition of native grasses, shrubs, and forbs.

Combined livestock and wild horse utilization was read five years between 1987 and 1992. All five years indicated that utilization was below the utilization objective of 55%.

Pre-livestock use by wild horses was recorded in the slight use category, below the objective use level of 10% prior to livestock turnout.

Evaluation of the data at this key area indicates range conditions have remained in mid seral and trend is static.

Summary for Subunit B-2

In summary, drought and grazing have had impacts on this subunit. Key areas SP-12 and SP-23 indicate that range conditions have remained in mid seral and trend is static. Key area SP-09 also indicates that range conditions have remained in mid seral, however, trend is downward. This decline can be attributed to the significant amount of livestock drift that occurs on the lower end of this subunit, in the vicinity of SP-09, between the Ken Jones operation and Von Sorensen operation. It is very difficult to accurately reflect this livestock drift in actual use reports and both permittees have indicated in their actual use reports that this drift is occurring. This higher amount of livestock use

compounded with drought conditions may have led to the reduction of Nuttal's saltbush.

In conclusion, the data indicate that range conditions in this subunit have remained in mid seral. Trend is static on the northern end (SP-12 and SP-23) and downward on the southern end (SP-09).

Subunit C-1a (Mizpah Point)

Evaluation of the existing data within this subunit, indicates that no progress has been made toward attainment of the trend and ecological status objectives and some progress has been made in the utilization objective. Only one key area occurs within Subunit C-1a (SP-20). The first and second readings for the long-term monitoring were completed in 1987 and 1990, respectively.

This subunit received actual use ranging from 326 AUMs to 1053 AUMs averaging 741 AUMs from 1986 to 1994 (eight-year period). This subunit received annual spring use during the critical growing period between 1977 and 1989 Spring use in the subunit since 1990 has been every other year by cattle. Most of the spring use prior to 1989 was attributed to sheep grazing. The permittee sold his sheep in 1991 and through the development of the draft Spruce Interim AMP, the permittee requested all of the sheep AUMs be converted to cattle.

Combined livestock and wild horse utilization has been recorded in this subunit since 1987. Average combined utilization during the evaluation period has been in the moderate use category. Use pattern maps showed moderate to heavy use within the key areas. Pre-livestock use by wild horses has been recorded since 1990.

SP-20

Frequency data indicates a significant decrease in the key species of whitesage and Indian ricegrass.

Production data indicates that ecological condition remained in late seral (62% in 1988 and 53% in 1991). Species composition indicated a slight decrease in native grasses and slight increase in shrubs. The greatest change came from a drastic decrease in forbs. However, this was a decrease in an annual forb, hedgemustard. Two percent of the forb composition in 1987 was recorded as globemallow and none was recorded in 1990. Because of the lack of species diversity, it is concluded that this site was actually in mid seral in 1988 and has remained in mid seral.

Combined livestock and wild horse utilization was read seven years between 1987 through 1994. For five of the seven years, utilization levels were above the utilization objective of 55% and two years were below the utilization objective.

Pre-livestock use by wild horses was recorded in the light to moderate use categories. All years exceeded the objective use level of 10% prior to livestock turnout.

Evaluation of the data at this key area indicates that range condition has remained in mid seral and trend is downward.

Summary for Subunit C-1a

In summary, drought and grazing have had impacts on this subunit. Although drought has impacted the native grasses and forbs, the high use levels and wild horse use during the critical growing period have also contributed to the reduction of the key species and downward trend.

In conclusion, the data indicate that range condition in this subunit has remained in mid seral and trend is downward.

Subunit C-3 and J (East Goshute Valley and Goshute Mountains)

Evaluation of existing data within this subunit, indicates that the trend objective has been attained and some progress has been made toward the ecological condition and utilization objectives. Four key areas occur within Subunit C-3 (SP-18. SP-19, SP-21, and SP-22). Subunit J has no key areas but is included with subunit C-3 because a small portion may be used by cattle. Cattle may drift into the lower canyons and benches on the Goshute Mountains but do not make any significant use. The subunit boundary is the tree line and cattle do not drift much further than this.

Subunit C-3 received actual use ranging from 1066 AUMs to 2354 AUMs and averaging 1895 AUMs (cattle and wild horse) from 1986 to 1994 (eight-year period). This area received spring use by cattle during the critical growing period about every year from 1975 to 1985. Thereafter, spring use occurred about every other year to the present.

Subunit J received actual use ranging from 159 AUMs to 764 AUMs averaging 324 AUMs by wild horses from 1990 to 1994. Although there may be some insignificant use by cattle in Subunit J, the use was included in averages for Subunit C-3.

Combined cattle and wild horse utilization in has been recorded in Subunit C-3 since 1987. Average combined utilization during the evaluation period has been in the moderate range. Use pattern maps showed light to heavy use within the key areas. Pre-livestock use by

wild horses was collected in 1993. No significant wild horse problems have occurred in this area. Most of the wild horse use is in the winter when cattle are in this area and water is being pumped at stockwater wells. The amount of use in the summer by wild horses is dependent on the amount of moisture received. Summer rains make water available in the valley for short periods of time.

SP-18

Frequency data indicates a significant increase in the frequency of occurrence of whitesage and significant decrease of Indian ricegrass.

Production data indicates that ecological condition remained in late seral (51% in both 1987 and 1990). Species composition also noted very little changes in overall composition of native grasses, forbs, and shrubs.

Combined cattle and wild horse utilization was read seven years between 1987 through 1994. Only one year out of the seven years, utilization levels were above the utilization objective of 55%, four years were below, and one year was at the utilization objective.

Pre-livestock use by wild horses was recorded in the slight use category, below the objective use level of 10% prior to livestock turnout.

Evaluation of the data at this key area indicates range condition has remained in late seral and trend is upward.

SP-19

Frequency data indicates no significant change in the key species of whitesage.

Production data indicates that ecological condition remained in late seral (60% in 1987 and 57% in 1990). Species composition indicated slight increase in native grasses and slight decrease in shrubs. No forbs were recorded at either reading. Individual native grass composition indicates a slight increase in pinegrass and bottlebrush squirreltail and decrease in Indian ricegrass.

Combined cattle and wild horse utilization was read six years between 1989 through 1994. For five of the six key areas, utilization levels were below the utilization objective of 55% and one was at the utilization objective.

No use (0%) by wild horses was recorded prior to livestock turnout.

Evaluation of the data at this key area indicates that range condition has remained in late seral and trend is static.

SP-21

Frequency data indicates no significant change in the key species of whitesage.

Production data indicates that ecological condition remained static in late seral (52% in both 1987 and 1990). Species composition indicated a slight increase in native grasses and slight decrease in shrubs. Individual changes with native grass composition indicated an increase in pinegrass. However, pinegrass was the only grass species recorded. Because this site is lacking species diversity, it is my professional judgment that this key area was in mid seral in 1987 and has remained in mid seral.

Combined cattle and wild horse utilization was read seven years between 1987 through 1994. For three of the seven years, utilization was recorded at above the utilization of 55% and four years were below the utilization level.

Pre-livestock use by wild horses was recorded in the slight use category, exceeding the objective use level of 10% prior to livestock turnout.

Evaluation of the data at this key area indicates that range condition has remained in mid seral and trend is static.

SP-22

Frequency data indicates a significant increase in the key species of whitesage.

Production data indicates that ecological condition remained in late seral (52% in 1987 and 56% in 1990). Species composition indicated a slight increase in native grasses and shrubs and decrease in forbs. The decrease in forbs was primarily due to reduced presence of halogeton.

Combined cattle and wild horse utilization was read seven years between 1987 and 1994. For three of the seven years, utilization levels were recorded above the utilization objective of 55% and four years were below the utilization objective.

Pre-livestock use by wild horses was recorded in the slight use category, below the objective use level prior to livestock turnout.

Although a significant increase is noted in the frequency of the key species, it should be noted that a significant increase is also noted in halogeton. Therefore, it is my professional judgement that for this area to truly be in upward trend, there would need to be an increase in other species, particularly native grasses and perennial forbs. Therefore, it is concluded that trend in this key area is static.

Evaluation of data at this key area indicates that range condition has remained in late seral and trend is static.

Summary for Subunit C-3 and J

In summary, drought conditions and livestock grazing have had impacts on this subunit. Cattle use during the critical growing period compounded with drought conditions can be detrimental to the plants. Grazing cattle only in the spring every other year since 1985, has allowed this area to maintain or improve current condition and trend.

In conclusion, range conditions in this subunit have not changed during the evaluation period. Range conditions remained in late seral, except for key area SP-21, which remained in mid seral. Trend is static except for key area SP-18 where it is upward.

Subunit C-4 (Antelope Valley)

Evaluation of the existing data within this subunit, indicates that no progress has been made toward attainment of the trend objective, some progress has been made toward attainment of the ecological condition and utilization objectives. Four key areas occur within Subunit C-4 (SP-14, SP-15, SP-16, and SP-17). The first and second readings for the long-term monitoring were completed in 1987 and 1990, respectively.

This subunit received actual use ranging from 639 AUMs and 2824 AUMs averaging 1966 AUMs (livestock and wild horses) from 1986 to 1994 (eight-year period). This area has received spring use during the critical growth period almost annually from 1977 to 1990. Thereafter, spring use has been every other year.

Combined livestock and wild horse utilization has been recorded in this subunit since 1987. Average combined utilization during the evaluation period has been in the moderate use category. Use pattern maps show light to heavy use within the key areas. Pre-livestock use by wild horses has been recorded since 1990.

SP-14

Frequency data indicates a significant decrease in the frequency of occurrence of whitesage and no significant change in Indian ricegrass.

Production data indicates that ecological condition remained in mid seral (27% in 1987 and 26% in 1990). Species composition indicates virtually no change in overall composition of native grasses, forbs, and shrubs.

Combined livestock and wild horse utilization was read seven years between 1987 and 1994. For four of the seven years, utilization levels were recorded above the utilization objective of 55% and three years were below the utilization objective.

Pre-livestock use by wild horses was recorded in the light to moderate use categories. All years exceeded the objective use level of 10% prior to livestock turnout.

Evaluation of the data at this key area indicates that range condition has remained in mid seral and trend is static to downward.

SP-15

Frequency data indicates a significant decrease in the frequency of occurrence of the key species, whitesage.

Production data indicates that ecological condition remained in late seral (53% for both years in 1987 and 1990). Species composition indicates virtually no change in overall composition of native grasses, forbs, and shrubs. Although both years have been rated in late seral, it is my professional judgment that range condition has remained in mid seal due to the lack of species diversity (i.e. presence of other native grasses and shrubs which could potentially exist on this range site).

Combined livestock and wild horse utilization was read seven years between 1987 and 1994. For four of the seven years, utilization levels were recorded above the utilization objective of 55% and three years were below the utilization objective.

Pre-livestock use by wild horses was recorded in the slight to light use categories. Only one year exceeded the objective use level of 10% prior to livestock turnout and all other years were below.

Evaluation of the data at this key area indicates that range condition has remained in mid seral and trend is downward.

SP-16

Frequency data indicates a significant decrease in the frequency of occurrence of whitesage and no significant change in Indian ricegrass.

Production data indicates that ecological condition remained static in mid seral (30% in 1987 and 35% in 1990). Species composition indicates virtually no change in the overall composition of native grasses, forbs, and shrubs. It is concluded that this site has remained stable in mid seral.

Utilization was read seven years between 1987 and 1994. For three of the seven years, utilization levels were recorded above the utilization objective of 55% and four years were below the utilization objective.

Pre-livestock use by wild horses was recorded in the light to moderate use categories. All years exceeded the objective use level of 10% prior to livestock turnout.

Evaluation of the data at this key area indicates that range condition has remained in mid seral and trend is static to downward.

SP-17

Frequency data indicates a significant decrease in the frequency of occurrence of whitesage and no significant change in Indian ricegrass.

Production data indicates that ecological condition remained in mid seral (31% in 1987 and 42% in 1990). Species composition indicates a slight increase in native grasses and slight decrease in shrubs. Individually, whitesage and Indian ricegrass indicated slight increases.

Combined livestock and wild horse utilization was read seven years between 1987 and 1994. For three of the seven years, utilization levels were recorded above the utilization objective of 55% and four years were below the utilization objective.

Pre-livestock use by wild horses was recorded in the slight to moderate use categories. All years exceeded the objective use level of 10% prior to livestock turnout.

Evaluation of the data at this key area indicates that range condition has remained in mid seral and trend is static to downward.

Summary of Subunit C-4

In summary, drought conditions and grazing have had impacts on this subunit. In general, ecological conditions in this subunit have not improved during the evaluation period. Drought, combined with the high use levels observed prior to livestock turnout by wild horses and combined use by livestock and wild horses at the end of the grazing season are resulting in declining trend in this subunit.

Subunit E-1 (Spruce Mountain Ridge)

Evaluation of the existing data within this subunit, indicates that the trend, ecological condition, and utilization objectives have been attained. One key area occurs within subunit E-1 (SP-28). The first and second readings for the long-term monitoring were completed in 1988 and 1993, respectively.

This subunit received actual use ranging from 230 AUMs to 1753 AUMs and averaging 1021 AUMs (combined livestock and wild horses) from 1986 to 1994 (eight-year period). This subunit is primarily a summer use area but has received periodic spring use between 1977 and 1991 by sheep. Spring use by sheep ended when the sheep were sold in 1991. Cattle use has been during the summer.

Combined livestock and wild horse utilization has been recorded in this subunit since 1989. Average combined use during the evaluation period has been in the light use category. Use pattern maps show slight to moderate use within the key areas.

SP-28

Frequency data indicates no significant change in the frequency of bluebunch wheatgrass and a significant decline in the black sagebrush.

Production data indicates that ecological condition remained in late seral (74% in 1988 and 69% in 1993). Species composition indicates no change in the native grass composition, major increase in forbs, and decrease in shrubs.

Utilization was read four years between 1989 and 1993. All years have been recorded below or at the utilization objective of 50%.

Summary for Subunit E-1

In summary, a decline in blacksage was indicated by the frequency and production data. This subunit received sheep use from the 1930's to 1991. The blacksage that is present is still severely hedged. Blacksage is a preferred species by sheep, thus with sheep no longer grazing this area, this site has the potential to recover. Although the data indicates a decline in blacksage, presence of native grasses and forbs allows this range site to remain in late seral.

In conclusion, evaluation of the data at this key area indicates that range condition has remained in late seral and trend is static to downward.

Subunit E-2 (Coyote Basin)

Evaluation of the existing data within this subunit, indicates that the trend and utilization objectives have been attained and some progress has been made in the ecological condition objective. Two key areas occur within Subunit E-2 (SP-25 and SP-26). The first and second readings for the long-term monitoring was completed in 1988 and 1993, respectively.

This subunit received actual use ranging from 379 AUMs to 1458 AUMs and averaging 801 AUMs from 1986 to 1994 (eight-year period). This subunit is primarily a summer use area but has received periodic spring use between 1977 and 1991 by sheep. Spring use by sheep ended when the sheep were sold in 1991. Cattle use has been during the summer.

Combined livestock and wild horse utilization has been recorded in this subunit since 1989. Average combined utilization during the evaluation period has been in the light use category. Use pattern maps show slight to moderate use within the key areas.

SP-25

Frequency data indicates a significant increase in bluebunch wheatgrass and no significant change in antelope bitterbrush.

Production data indicates that ecological condition remained in mid seral (41% in 1988 and 47% in 1993). Species composition indicated a major increase in native grasses, a decrease in shrubs, and very little change in forbs. Individually, bluebunch wheatgrass and needlegrass indicated increases.

Utilization was read six years between 1987 and 1993. All years were recorded below the utilization objective of 50%.

Evaluation of the data at this key area indicates that range condition has remained in mid seral and trend is static to upward.

SP-26

Frequency data indicates no significant change in the key species of bluebunch wheatgrass and antelope bitterbrush.

Production data indicates that ecological condition remained in mid seral (42% in 1988 and 50% in 1993). Species composition indicated a major increase in native grasses, decrease in shrubs, and very little change in forbs.

Utilization was read six years between 1987 and 1993. All years were recorded below the utilization objective of 50%.

Evaluation of the data at this key area indicates range condition has remained in mid seral and trend is static.

Summary for Subunit E-2

In conclusion, ecological conditions have remained stable in this subunit, both ecological condition and trend. The increases in the native grasses and forbs can be attributed to the high moisture produced by the severe winter storm in early 1993. However, high moisture compounded by low use levels and reduced grazing during the critical growth period has allowed for stable to upward trend. Further, although range conditions have remained in mid seral, increases within the mid seral stage were indicated by the data.

Subunit E-4 (Ninemile Canyon)

Evaluation of the existing data within this subunit, indicates that the trend and ecological status objectives have been attained and some progress has been made toward attainment of the utilization objective. Only one key area occurs within Subunit E-4 (SP-29). The first and second readings on the long-term monitoring were completed in 1988 and 1993, respectively.

This subunit received actual use ranging form 105 AUMs to 1115 AUMs and averaging 635 AUMs (combined livestock and wild horses) from 1986 to 1994 (eight-year period). This subunit is primarily a summer use area but has received periodic spring use between 1977 and 1988 by sheep. Cattle use has been during the summer and since 1988, use has been every other year.

Combined cattle and wild horse utilization was recorded in 1987 and 1992 in this subunit. Average combined utilization during the evaluation period has been in the heavy use category. Use pattern maps showed moderate to heavy use within the key area.

SP-29

Frequency data indicates a significant decrease in the key species of bluebunch wheatgrass.

Production data indicates that ecological condition declined from late seral (68%) in 1988 to mid seral (35%) in 1993. Species composition indicates a slight decrease in native grasses, decrease in shrubs, and major increase in forbs. The abundance of forbs and the percent allowable by the range site description resulted in this key area rating mid seral in 1993. However, because of the abundance of species, it is concluded that this site remained stable in late seral.

Utilization was recorded only one year (1992) and it was recorded above the utilization objective of 50%. In 1987, a use pattern map was completed and showed this area received moderat use. In 1989, 1991, and 1993, this subunit was rested by cattle.

Summary for Subunit E-4

In summary, drought and grazing have had impacts on this subunit. Since 1989, the permittee has been resting this area every other year. A rest-rotation grazing system had been proposed in the 1987 draft Spruce AMP. Although the AMP was never finalized, the permittee voluntarily followed the grazing system.

In conclusion, it is my professional judgment that the rest rotation system has benefitted this area. The high precipitation in 1993 indicated that this site has the potential to improve or respond. The frequency data not only shows a decrease in bluebunch wheatgrass, but also an increase in other native grasses and forbs. This is a step toward improving range conditions. Therefore, although drought has had some impacts on vegetation diversity, continuing a rest rotation system and ensuring utilization levels are within the objective level, conditions should continue to improve within this subunit. It is concluded that this subunit has remained in late seral and trend is static to upward.

Subunit H (Clover Valley)

Evaluation of the existing data within this subunit, indicates that the trend objective has been attained and some progress has been made toward the ecological condition and utilization objectives. Only one key area occurs within Subunit H (SP-13). The first and second readings on the long-term monitoring were completed in 1987 and 1990, respectively.

This subunit received actual use ranging form 303 AUMs to 1578 AUMs and averaging 726 AUMs (combined sheep and cattle use) from 1986 to 1993 (eight-year period). This area received annual spring use from 1977 to 1991 by sheep. Thereafter, spring use occurred every other year, by cattle.

Livestock utilization was recorded in this subunit in 1989, 1991, and 1992. Average utilization during the evaluation period has been in the moderate use category. Only one use pattern map was completed in 1989 and it showed moderate use within the key area.

SP-13

Frequency data indicates no significant change in the whitesage and Indian ricegrass and significant decrease in budsage and bottlebrush squirreltail.

Production data indicates that ecological condition remained in mid seral (35% in 1987 and 48% in 1990). Species composition indicated very little changes in overall composition of native grasses, forbs, and shrubs.

Utilization was read three years between 1989 and 1992. Only one year of the three was recorded above the utilization objective of 55% and two years were below the utilization objective.

In conclusion, evaluation of the data at this key area indicates that range condition remained in mid seral and trend is static.

Summary For All Key Areas

Evaluation of existing data indicates that significant progress has been made toward attainment of the trend objective and some progress has been made in the ecological condition and utilization objectives. There are 27 key areas where frequency, ecological condition, and weight-estimate production data are collected. Utilization is monitored on these 27 key areas plus an additional 3. Tables 47 through 50 shows a summary of the results:

Table 47. Summary of Trend Objectives for the Spruce Allotment.

Status of Trend Objective	Number of Key Areas
Attained - Static Trend	14
Attained - Upward Trend	3
Attained - Static to Downward Trend	4
Not Attained - Downward Trend	6
Total	**27**

Table 48. Summary of Ecological Condition Objectives for the Spruce Allotment.

Status of Ecological Condition	Number of Key Areas
Attained - Maintained Late Seral.	8
Not Attained - Maintained Mid Seral.	19
Total	**27**

Table 49. Summary of Utilization Objectives for the Spruce Allotment.	
Status Of Utilization Objective	**Number of Key Areas**
Attained - Utilization below or at objective level.	6
Some Progress - Some years below or at objective level and some years above.	23
Not Attained - All years above objective level.	1
Total	**30**

Table 50. Summary of Pre-livestock Utilization Objectives for the Spruce Allotment.	
Status Of Utilization Objective	**Number of Key Areas**
No Pre-Livestock Utilization Monitored.	9
Attained - Utilization below or at objective level.	5
Some Progress - Some years below or at objective level and some years above.	4
Not Attained - All years above objective level.	12
Total	**30**

Plant populations in arid shrublands are highly responsive to the effects of both climate and grazing. Plant establishment is often related to periods of unusually heavy precipitation during certain seasons, while mortality is correlated with prolonged periods of low precipitation. Heavy grazing, particularly in the spring during early and rapid growth, can also result in substantial losses. Plants stressed by drought are further stressed by grazing.

Although the grazing that occured between 1986 and 1990 would have added to plant stresses, most of the grazing occured during the fall/winter at utilization levels that alone, absent the drought, would not be expected to cause plant mortality. When grazing did occur during the growing season, utilization data collected after the growing deason indicates also that utilization alone, absent the drought, would not be expected to cause plant mortality. Since the first collection of condition and frequency trend data in 1986/87 occured at the end of a wet cycle, and the second collection of data occured several years into a drought cycle, the declines in plant species frequency between 198687 and 1990 are attributed primarily to the effects of drought with grazing contributing to plant stresses (Professional judgment).

b. Wildlife Objectives

Attainment or non-attainment of these objectives is included under conclusions for allotment RPS objectives, Section V.A.2.

VI. TECHNICAL RECOMMENDATIONS

1. Formally divide the Spruce Allotment into 2 allotments. Von L. and Marian Sorensen will be authorized grazing use within the east unit or Spruce Allotment. Kenneth Jones will be authorized use within the West Unit or Valley Mountain Allotment. Bertrand Paris and Sons will be authorized grazing use within the Bald Mountain Sheep Use Area of the Valley Mountain Allotment.

Rationale. There are currently two main livestock operations in the Spruce Allotment. The permittees have attempted to rotate use within Steptoe Valley to prevent mixing of cattle. However, there is drift in that area that allows for inaccuracies in actual use reports. Accuracy of this information is crucial for determining carrying capacity. Division of the allotment would help achieve the multiple use objectives.

The sheep operation is limited to use within the Bald Mountain Sheep Use Area on the proposed Valley Mountain Allotment.

2. Establish active grazing preference for the Spruce and Valley Mountain Allotments as follows:

Allotment	Permittee	Kind Of Livestock	Active Pref.	Susp.	Total Pref.
Spruce Allotment	Von L. and Marian Sorensen	Cattle	8,784	0	8.784
Valley Mountain Allotmemt	Kenneth Jones	Cattle	4,464	0	4,464
	Bertrand Paris and Sons	Sheep	907	413	1,320
Total			**14,155**	**413**	**14,568**

Rationale. The active grazing preference on the Spruce and Valley Mountain Allotments is the result of conversions from sheep to cattle for Von L. and Marain Sorensen and Kenneth Jones. The total preference was converted from sheep to cattle.

The Paris sheep operation indicates a reduction in active preference. This reduction is based on the current area of use in the Bald Mountain Sheep Use Area as indicated by use pattern maps. Use has been limited to the eastern portion of the area. The western portion of the area has not been used by sheep. If water is hauled to this area, more use would be available.

3. **Implement one of the following grazing systems:**

a. A grazing system with no proposed seedings, use on the salt-desert shrub communities (native winter range) from 11/1-3/31 with maximum livestock numbers and maximum use on the winter range, and proposed fencing and water projects to improve livestock management.

b. A grazing system with proposed seedings to provide spring forage (after 4/1), use on the salt-desert shrub communities from 11/1-3/31 with reduced livestock numbers and reduced use on the winter range, and proposed fencing and water projects to improve livestock management.

c. A grazing system with proposed seedings to provide spring forage (after 4/1), use on the salt-desert shrub communities from 11/1-3/31 with maximum livestock numbers and maximum use on the winter range, and proposed fencing and water projects to improve livestock management.

The grazing system options showing the subunits, stockwater facilities to be used, and rotation schedules by livestock herd are outlined in Appendix 4.

Rationale. Implementation of the grazing systems outlined in Options 1, 2, and 3 will allow for improved ecological status and trend on winter and summer ranges, improved crucial deer winter range and seasonal antelope habitats, and improved livestock distribution.

Option 4 outlines an interim schedule to allow for spring use by cattle on the salt-desert shrub communities while the seedings are developed should that decision be made. The grazing system outlined in Option 4 is very similar to how the allotment has been grazed for the past 7 years. Continued annual grazing by livestock in the spring on the salt-desert shrub communites can diminish the ability of these plant communities to improve in condition and diversity or stay healthy over the long term, and excessive use can result in further declines in condition.

4. **The grazing permit for each operator will read as follows:**

As per Option 1:

Operator	No. Lvsk.	Kind	Pd. of Use	% PL	AUMs
Kenneth Jones	899 899	Cattle Cattle	11/1 - 2/28 3/1 - 3/31	100 100	3,547 917
Von L. and Marian Sorensen					
Secret Pass Herd	495 495	Cattle Cattle	11/1 - 2/28 3/1 - 3/31	100 100	1,953 505
Spruce Mountain Herd	528 630 630	Cattle Cattle Cattle	5/1 - 10/31 11/1 - 2/28 3/1 - 3/31	100 100 100	3,195 2,488 643
Bertrand Paris and Sons	1030	Sheep	5/1 - 9/11	100	907

As per Options 2 and 4:

Operator	No. Lvsk.	Kind	Pd. of Use	% PL	AUMs
Kenneth Jones	693 693	Cattle Cattle	11/1 - 2/28 3/1 - 5/15	100 100	2,733 1,731
Von L. and Marian Sorensen					
Secret Pass Herd	353 353	Cattle Cattle	11/1 - 2/28 3/1 - 5/31	100 100	1,392 1,066

As per Option 3:

Operator	No. Lvsk.	Kind	Pd. of Use	% PL	AUMs
Kenneth Jones	900 900	Cattle Cattle	11/1 - 2/28 3/1 - 5/15	100 100	3,552 2,250
Von L. and Marian Sorensen					
Secret Pass Herd	495 495	Cattle Cattle	11/1 - 2/28 3/1 - 5/31	100 100	1,953 1,498

Rationale. As per analysis of existing data in this allotment evaluation, the carrying carrying capacity was established by subunit. The proposed grazing systems are designed to allow use of the use of the native winter range and summer use areas and still attain the multiple use objectives.

5. The terms and conditions on the term grazing permits common to all three permits should include the following:

"Authorized grazing use will be in accordance with the Spruce Allotment Evaluation and Area Manager's Final Multiple Use Decision dated _____."

"Ensure that all salting and protein supplements in block, granular or liquid form, used for livestock, is done in conjunction with the BLM to promote good livestock distribution and away from wet and/or dry meadows and live waters."

"All riparian exclosures, including spring development exclosures, are closed to livestock use unless specifically authorized in writing by the Wells Resource Area Manager."

"All available waters within the scheduled use subunit will be used to ensure proper livestock distribution."

"Ensure that all stockwater troughs at water facilities utilized during the second half of the winter grazing season are left full of water when cattle are removed (after 3/31)."

Rationale: An evaluation of current grazing management practices has indicated multiple use objectives have not been achieved and changes are necessary.

Supplemental feed and its location is important to proper livestock distribution and range management.

Using all available waters within a pasture will ensure proper livestock distribution and provide water for wildlife and wild horses when livestock leave the area.

6. An actual use report must be submitted by each permittee. The term permit will include the following term and condition by operator:

Von L. and Marian Sorensen:

"An actual use report showing use by subunit must be submitted by
-4/15 for the Spruce Mountain Herd and,
-6/15 for the Secret Pass Herd."

Kenneth Jones Winter Grazing Operation:

"An actual use report showing use by subunit must be submitted by 5/30."

Bertrand Paris and Sons:

"An actual use report showing use by use areas in the subunit must be submitted by 9/30."

Rationale. Actual use is essential in the monitoring effort.

7. Flexibility:

"The numbers of livestock to be grazed will remain flexible according to the needs of the permittee. The grazing system is based on the maximum number of AUMs that may be removed from each subunit and the grazing treatments. Livestock numbers and periods of use will be applied for on an annual basis. Moving dates between subunits can vary 5 days before and after the scheduled move dates."

"Deviations from the grazing system will be allowed to meet the needs of the resources and the permittee as long as these deviations are consistent with multiple use objectives. Deviations, including turnout date, livestock numbers, and grazing system, will require an application and written authorization from the Wells Resource Area Manager prior to grazing use. The request must be applied for in writing, at least five working days prior to the proposed implementation date. The BLM will respond to such an application within five working days of receipt."

Rationale. The permittees are afforded flexibility in their operations in order to adjust to range readiness, climatic conditions, and annual fluctuations in their livestock operation.

8. Develop an Allotment Management Plan (AMP) on the Spruce and Valley Mountain Allotments by 1996.

Rationale. An AMP was proposed to be developed by 1987 as per the RPS Objectives for the Spruce Allotment. Two draft AMPs were completed in 1988 and 1993, however neither was finalized.

An AMP would allow the permittees increased flexibility and after-the-fact billing.

9. Establish and maintain an appropriate management level (AML) of 301 wild horses within the Spruce Allotment.

Rationale: Maintaining wild horses at the appropriate management level will result in a thriving, natural, ecological balance between wild horses and other resource values. Continued monitoring within the allotment will show if any adjustment in the AML is needed.

10. Complete the Basco, Spruce, and Latham Spring Pipelines located in the summer range on the Spruce Allotment as proposed in the environmental assessment completed in 1982.

Rationale. Completion of these projects is essential in improving livestock distribution in the summer range and providing water for wildlife and wild horses.

11. The permittee, Von L. and Marian Sorensen, will evaluate and equip Goshute Valley Well (Project #4970) if feasible.

Rationale. This well will help improve livestock distribution in Subunit C-3 (East Goshute Valley).

12. The permittee, Von L. and Marian Sorensen, will construct a fence on private lands located in Flowery Lake to prevent livestock from drifting onto public land when using the private fields.

Rationale. A fence around the private land is necessary to separate use on the private and public land in order to establish proper carrying capacity on the public land portion. Further, with the proposed grazing systems, use on the salt-desert shrub communities will not be authorized after 4/1. In order to keep livestock out of the public land portions in this area, a fence must be constructed.

13. Improve, enhance, or develop at least 3 springs in the Spruce and Valley Mountain Allotments from the list provided below. The following list was compiled from the 1980-81 wildlife habitat and water inventory. Additional springs will be developed as needs are determined and funding becomes available.

Location	Site No. from Inventory	Remarks
T. 28 N., R. 61 E., Sec. 2, NWSW	C069	Quilici Spring, Developed
T. 28 N, R. 66 E., Sec. 4, NENE	D044	
T. 28 N., R. 66 E., Sec. 6, SWSW	D040	Developed
T. 28 N., R. 66 E., Sec. 14, NENE		Austin Spring, Developed
T. 28 N., R. 66 E., Sec. 4 ,NENE		
T. 28 N., R. 66 E., Sec. 4, NWNW		
T. 28 N., R. 66 E., Sec. 6, NENE	D040	
T. 29 N., R. 65 E., Sec. 25, SENW	C020	Deer Spring
T. 30 N., R. 63 E., Sec. 2, NENE	D361	Basco Spring, Developed
T. 31 N., R. 63 E., Sec. 12, NWNW		Upper Latham Srping,Developed
T. 31 N., R. 64 E., Sec. 18, SWNW		Sidehill Spring, Developed
T. 31 N., R. 63 E., Sec. 14, SWNE		Developed
T. 31 N., R. 63 E., Sec. 27, NENE		Developed
T. 31 N., R. 63 E., Sec. 36, NENW	C329	Lower Spruce Spring, Developed
T. 31 N., R . 64 E., Sec. 6, SENW	B247	Developed
T. 31 N., R. 65 E., Sec. 20, NESW	C367	Lower Boone Spring, Developed
T. 31 N., R. 65 E., Sec. 19, NENW		
T. 31 N., R. 65 E., Sec. 20, NENE		
T. 33 N., R. 61 E., Sec. 23, SESE	C134	Government Spring, Developed
T. 33 N., R. 64 E., Sec. 29, SESE	D438	Dug-out Pond
T. 33 N., R. 64 E., Sec. 29, NWSE	D440	Dug-out Pond
T. 33 N., R. 64 E., Sec. 32, SENE	D441	Dug-out Pond
T. 30 N., R. 65 E., Sec. 6		

Rationale: One of the RPS objectives for the Spruce Allotment was to develop 3 springs. Development of springs on the Spruce Allotment is necessary to meet the multiple use objectives.

High emphasis will be placed on improving current conditions on Quilici Spring. Quilici Spring contains relict dace, a category 2 candidate species for Federal listing. Development of

this spring is crucial for the survival of this relict dace population and also to provide water for livestock and wild horses. Because the water rights for this spring are held by the permittee, Ken Jones, it is necessary to consult, coordinate, and cooperate with the permittee on this project.

Quilici Spring is located within subunit A-2 of the Spruce Allotment. This spring is located on public land with private water rights. This spring is important to the Bureau in that it not only supports a small population of relict dace, a category 2 candidate species, but also is an important water source for wild horses. This spring is currently fenced but wild horses do get in as gates are usually open. Because of drought conditions during the past few years, the pond inside the fenced area has been virtually dry.

14. Identify and develop at least two waters for wild horses within the Spruce Allotment.

Rationale: Additional water sources are needed within the Spruce Allotment to improve the distribution of wild horses. The Wells RMP Wild Horse Amendment identified eight water sources to be developed for wild horses. While locations of these water sources was not identified, at least two need to be developed in the Spruce Allotment. Additional water sources (either springs or water catchments) may be developed or constructed as needs are determined and funding is available.

15. Construct antelope guzzlers within the Spruce Allotment.

Rationale: The installation of antelope guzzlers would benefit antelope because lack of water is a limiting factor in the Spruce Allotment. The locations and numbers of guzzlers to be constructed will be determined by BLM Wildlife Biologists in cooperation, coordination, and consultation with NDOW Wildlife Biologists.

16. Prioritize and construct range improvement projects identified in Appendix 4, Table 4-10 (as per the selected grazing system option) as funding is available.

Rationale. Construction of these range improvement projects is essential in improving livestock distribution and control. Site specific environmental assessments will be completed prior to construction of each proposed project.

17. Inventory and identify existing fence projects that do not meet BLM specifications. Modify those fences which create significant barriers to big game.

Rationale: Fence modifications to BLM specifications would help facilitate big game movements and allow for more efficient use of available habitat while retaining the primary goal of restricting livestock movements.

18. Inventory, identify, and eliminate existing wire hazards. Clean up and dispose of old wire, especially where it creates a significant hazard to wild horses. Inventory of these hazard may be completed when evaluating and prioritizing spring developments to be improved, enhanced, or developed.

Rationale: Wild horses have become tangled in old barbed wire especially in old spring exclosures and wild horse traps. Entanglement in barbed wire causes extensive injuries and in some cases the need for the animal to be destroyed.

19. Continue to collect seasonal distribution data on the Maverick-Medicine, Antelope Valley, Spruce-Pequop, and Goshute HMAs.

Rationale: In 1991, intensive seasonal distribution flights were begun within the Elko District. These census flights have provided valuable information on horse movements and should continue until monitoring data indicates that the appropriate management level has been attained in all HMAs.

20. Complete the Rockland fence (9 miles) and modify approximately one mile of the Sorensen-Lear fence to a let-down fence.

Rationale: This is needed to prevent horses from returning to checkerboard land patterns and to facilitate wild horse movements. It has been identified as an objective in the Wells RMP Wild Horse Amendment. The Rockland Fence is located on the northern boundary of the Spruce Allotment and separates the Spruce and Big Springs Allotments. The Sorensen-Lear Fence is located on the southern boundary of the Spruce Allotment and separates the Spruce and Currie Allotments.

Upon completion of the Rockland Fence, it will be necessary to remove wild horses from the checkerboard areas north of the fence.

21. Establish at least one range key area in each of the following subunits:
C-2 (West Goshute Valley)
D-1 (West Independence Valley)
D-2 (East Independence Valley)
E-3 (Boone Springs)
G (Bald Mountain Sheep Use Area)

Rationale. No range key areas currently exist in these subunits. Key areas in Subunits C-2, E-3, and G will monitor frequency, production, ecological condition, and utilization. Key areas in Subunits D-1 and D-2 will monitor utilization and production.

22. Reword the allotment specific range key area utilization objective to read as follows:

"Manage grazing to obtain an average utilization of 55% on all of the native grasses and salt-desert shrubs while never exceeding 60% in any single year on the winter range (key areas SP-01 through SP-24, SP-27, and SP-30).

Manage grazing to obtain an average utilization of 50% on all of the native grasses while never exceeding 55% in any single year on the summer range (key areas SP-25, SP-26, SP-28, and SP-29).

Manage grazing to obtain an average utilization of 60% on the crested wheatgrass seedings while never exceeding 65% in any single year.

Maximum allowable use by livestock on bitterbrush is 25% (SP-25 and SP-26)."

Rationale. The implementation of either of the proposed grazing systems will result in intensive livestock management to allow the native grasses and salt-desert shrub communities to meet physiological requirements. An average utilization over a period of time will allow for some flexibility as some years may result in less use while others may be slightly higher based on the grazing treatment. Utilization on the crested wheatgrass is slightly higher as studies on similar range sites have shown utilization levels of 60% will maintain the seeding production. Utilization on bitterbrush is limited to 25% use by livestock to ensure that enough forage is left for deer during the winter.

23. Reword the Antelope Valley HMAP habitat objective on vegetation to read as follows:

"Manage for the most appropriate seral stages to provide for desired quantity, quality, and density of forage in order to meet the requirements of the wild horses and other foraging animals. In general, utilization levels will be maintained at approximately 45% on shrubs and 55% on grasses or as identified in the allotment specific utilization objectives, which is in accordance with the recommended utilization levels in the Nevada Rangeland Monitoring Handbook (1984)."

Rationale. This objective needs to be modified to include allotment specific utilization objectives because use levels may vary between the allotments that are within the Antelope Valley HMA as allotment evaluations are completed. Final evaluation of utilization objectives will be based on the allotment specific objectives.

24. Develop a forest plan for the Spruce Allotment.

Rationale: Specific forestry management objectives for the Spruce Allotment do not exist. The development of a forest plan will allow for development of specific forestry management objectives and ensure that all management actions meet sustained yield mandates and provide a permanent source of wood products for future generations.

25. The RPS objectives that have been attained will no longer be addressed. The objectives are as follows:

a. Maintain summer use areas on the upper elevations of Spruce Mountain (north and west sides), Medicine Range, and the Pequop Mountains (between Nine-mile Canyon and Brush Creek).

b. Consider formal conversions from sheep to cattle on portions of the allotment.

Rationale. Tracking of objectives that have been attained is not necessary. The objective to maintain the summer use areas is vague in that it does not clarify whether it is to maintain the condition or continue to allow use of the summer use areas. In either case, monitoring condition of the summer use areas is addressed in the allotment specific objectives. Further, the proposed grazing system for the Von L. and Marian Sorensen yearlong cattle operation allows for continued use of the summer use areas.

This allotment evaluation has proposed a formal conversion from sheep to cattle for the Von L. and Marian Sorensen and Kenneth Jones cattle operations.

26. Continue to conduct necessary monitoring studies and periodically evaluate the effects of grazing to determine if progress is being made in meeting the multiple use objectives. The Spruce and Valley Mountain Allotments will be reevaluated in accordance with priorities established in the Wells Resource Area Monitoring and Evaluation Schedule. If monitoring studies indicate a need to bring grazing use in line with capacity, necessary adjustments will be made. Refer to Appendix 5 for a list of multiple use objectives to be evaluated at the next allotment evaluation.

Rationale. Additional monitoring and analysis will be required to determine whether objectives are being met and determine if carrying capacities need to be adjusted or changes made to existing management strategies.

VII. CONSULTATIONS

Elko District BLM
Bill Baker, Wells Resource Area Manager
Ray Lister, District Rangeland Management Specialist
Roy Price, District Wildlife Biologist
Karl Scheetz, Supervisory Rangeland Management Specialist
Skip Ritter, Supervisory Natural Resource Specialist - Forester
Leticia Gallegos, Rangeland Management Specialist
Kathy McKinstry, Wild Horse Specialist
Kent Undlin, Wildlife Biologist
Joe Viray, Fishery Biologist

Permittees
Von L. and Marian Sorensen
Kenneth Jones
Bertrand Paris and Sons

Other Affected Interests
The Humane Society of the U.S.
Animal Protection Institute
Commission for the Preservation of Wild Horses
HTT Resource Advisors
Federal Land Bank
Sierra Club - Toiyabe Chapter.
American Horse Protection Association, Inc.
Nevada Wildlife Federation
Natural Resources Defense Council, Inc.
Kathyryn Cushman
U.S. Fish and Wildlife Service
Nevada Division of Wildlife
The Nature Conservancy
Rutgers Law School
Wild Horse Organized Assistance
Resource Concepts, Inc.
Wells Resource Area Grazing Association
Nevada Department of Agriculture
Edie Wilson
American Mustang and Burro Association
People for the West

Appendix 1

Spruce Allotment Data Summary Matrices

The data summaries are categorized by subunit and key areas within the subunit.

Subunit A-1

Spruce Allotment

Key Area SP-01

Range Site: Silty 8-10 (28B-13)
Key Species: EULA5 and ORHY
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./unadj.)[4]	Key Spp. Frequency[5]
1986-87	1,996 (L)	5/9/86 11/19/86-3/31/87	EULA5 64	4/27/87	MODERATE	5/87	1,715	1.17	1,466	MID 44 449 / 525	EULA5 72.5 ORHY 40.5
1987-88	648 (L)	4/1/87-4/18/87 11/25/87-12/18/87	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.88	Not Calc.	Not Read	Not Read
1988-89	1,029 (L) 0 (WH)	4/28/88-5/3/88 11/18/88-12/9/88 12/24/88 2/22/89-3/31/89	ORHY 32	6/20/89	LIGHT	6/20/89	1,769	0.63	2,808	Not Read	Not Read
1989-90	1,909 (L) 0 (WH)	4/1/89-5/3/89 11/29/89-2/14/90	EULA5 28	6/20/90	Not Mapped	N/A	3,750	0.94	3,989	Not Read	Not Read
1990-91	554 (L) 0 (WH)	5/3/90-5/9/90 11/5/90-11/6/90 11/25/90 12/8/90 3/1/91-3/31/91	ORHY 38	5/20/91	LIGHT	5/20/91	802	0.82	978	LATE 61 396 / 325	EULA5 48.5- ORHY 32.2-
1991-92	1,245 (L) 0 (WH)	4/1/91-5/16/91 11/1/91-1/29/91	EULA5 60	5/7/92	Not Mapped	N/A	1,141	0.61	1,870	Not Read	Not Read
1992-93	210 (L) 112 (WH)	5/9/92-5/11/92 11/10/92-11/12/92 3/20/93-3/31/93	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.75	Not Calc.	Not Read	Not Read
1993-94	1,755 (L) 85 (WH)	4/1/93-5/11/93 11/3/93-2/26/94	ORHY 67	3/1/94	Not Mapped	N/A	1,510	1.42	1,063	Not Read	Not Read
Avg.	1,168 (L) 99 (WH)		48				1,534[6]		1,802	423 / 425	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/89 with the start of the intensive seasonal flights (see Table 31 in allotment evaluation).

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Ruby Lake Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase + Significant increase

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit A-1

Spruce Allotment

Key Area SP-02

Range Site: Silty Clay 8-10 (28B-71)
Key Species: EULA5 and ORHY
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./unadj.)[4]	Key Spp. Frequency[5]
1986-87	1,996 (L)	5/9/86 11/19/86-3/31/87	EULA5 50	4/24/87	HEAVY	5/87	2,196	1.17	1,877	LATE 75 298 / 349	EULA5 75.5 ORHY 11.5
1987-88	648 (L)	4/1/87-4/18/87 11/25/87-12/18/87	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.88	Not Calc.	Not Read	Not Read
1988-89	1,029 (L) 0 (WH)	4/28/88-5/3/88 11/18/88-12/9/88 12/24/88 2/22/89-3/31/89	EULA5 48	6/20/89	MODERATE	6/20/89	1,179	0.63	1,871	Not Read	Not Read
1989-90	1,909 (L) 0 (WH)	4/1/89-5/3/89 11/29/89-2/14/90	EULA5 42	6/20/90	Not Mapped	N/A	2,500	0.94	2,660	Not Read	Not Read
1990-91	554 (L) 0 (WH)	5/3/90-5/9/90 11/5/90-11/6/90 11/25/90 12/8/90 3/1/91-3/31/91	ORHY 36	5/20/91	LIGHT	5/20/91	846	0.82	1,032	LATE 58 567 / 465	EULA5 69.0= ORHY 12.0=
1991-92	1,245 (L) 0 (WH)	4/1/91-5/16/91 11/1/91-1/29/92	ORHY 54	5/7/92	Not Mapped	N/A	1,268	0.61	2,079	Not Read	Not Read
1992-93	210 (L) 112 (L)	5/9/92-5/11/92 11/10/92-11/12/92 3/20/93-3/31/93	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.75	Not Calc.	Not Read	Not Read
1993-94	1,755 (L) 85 (WH)	4/1/93-5/11/93 11/3/93-2/26/94	ORHY 68	3/1/94	Not Mapped	N/A	1,488	1.42	1,048	Not Read	Not Read
Avg.	1,168 (L) 99 (WH)		50				1,195[6]		1,508	433 / 407	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/89 with the start of the intensive seasonal flights (see Table 31 in allotment evaluation).

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Ruby Lake Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The block that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit A-1

Spruce Allotment

Key Area SP-03

Range Site: Coarse Silty 6-8 (28B-84)
Key Species: EULA5 and ORHY
Period of Use: 11/1-3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./ unadj.)[4]	Key Spp. Frequency[5]
1986-87	1,996 (L)	5/9/86 11/19/86-3/31/87	EULA5 30	4/24/87	MODERATE	5/87	3,659	1.17	3,127	LATE 57 361 / 422	EULA5 69.0 ORHY 52.0
1987-88	624 (L)	4/1/87-4/18/87 11/25/87-12/18/87	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.88	Not Calc.	Not Read	Not Read
1988-89	1,029 (L) 0 (WH)	4/28/88-5/3/88 11/18/88-12/9/88 12/24/88 2/22/89-3/31/89	ORHY 41	6/20/89	MODERATE	6/20/89	1,380	0.63	2,190	Not Read	Not Read
1989-90	1,909 (L) 0 (WH)	4/1/89-5/3/89 11/29/89-2/14/90	EULA5 39	6/20/90	Not Mapped	N/A	2,692	0.94	2,864	Not Read	Not Read
1990-91	554 (L) 0 (WH)	5/3/90-5/9/90 11/5/90-11/6/90 11/25/90 12/8/90 3/1/91-3/31/91	ORHY 46	5/20/91	MODERATE	5/20/91	662	0.82	807	MID 47 359 / 295	EULA5 64.5= ORHY 39.0=
1991-92	1,245 (L) 0 (WH)	4/1/91-5/16/91 11/1/91-1/29/92	ORHY 57	5/7/92	Not Mapped	N/A	1,201	0.61	1,969	Not Read	Not Read
1992-93	210 (L) 112 WH)	5/9/92-5/11/92 11/10/92-11/12/92 3/20/93-3/31/93	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.75	Not Calc.	Not Read	Not Read
1993-94	1,755 (L) 85 (WH)	4/1/93-5/11/93 11/3/93-2/26/94	ORHY 64	3/1/94	Not Mapped	N/A	1,581	1.42	1,113	Not Read	Not Read
Avg.	1,168 (L) 99 (WH)		46				1,387[6]		1,424	360 / 359	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/89 with the start of the intensive seasonal flights (see Table 31 in allotment evaluation).

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Ruby Lake Weather Station).

[4] Adj. - Productuon data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit A-1

Spruce Allotment

Key Area SP-04

Range Site: Coarse Silty 6-8 (28B-84)
Key Species: EULA5 and ORHY
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./unadj.)[4]	Key Spp. Frequency[5]
1986-87	1,996 (L)	5/9/86 11/19/86-3/31/87	Not Read	N/A	LIGHT	5/87	Not Calc.	1.17	Not Calc	LATE 52 327 / 382	EULA5 65.0 ORHY 49.5
1987-88	648 (L)	4/1/87-4/18/87 11/25/87-12/18/87	Not Read	N/A	Not Mapped	N/A	Not Calc	0.88	Not Calc	Not Read	Not Read
1988-89	1,029 (L) 0 (WH)	4/28/88-5/3/88 11/18/88-12/9/88 12/24/88 2/22/89-3/31/89	ORHY 50	6/26/89	MODERATE	6/26/89	1,132	0.63	1,797	Not Read	Not Read
1989-90	1,909 (L) 0 (WH)	4/1/89-5/3/89 11/29/89-2/14/90	EULA5 41	6/20/90	Not Mapped	N/A	2,561	0.94	2,724	Not Read	Not Read
1990-91	554 (L) 0 (WH)	5/3/90-5/9/90 11/5/90-11/6/90 11/25/90 12/8/90 3/1/91-3/31/91	ORHY 60	5/20/91	MODERATE	5/20/91	508	0.82	620	MID 49 407 / 334	EULA5 58.9= ORHY 41.0-
1991-92	1,245 (L) 0 (WH)	4/1/91-5/16/91 11/1/91-1/29/92	ORHY 55	5/7/92	Not Mapped	N/A	1,245	0.61	2,041	Not Read	Not Read
1992-93	210 (L) 112 (WH)	5/9/92-5/11/92 11/10/92-11/12/92 3/20/93-3/31/93	Not Read	N/A	MODERATE	4/6/93	Not Calc	0.75	Not Calc	Not Read	Not Read
1993-94	1,755 (L) 85 (WH)	4/1/93-5/11/93 11/3/93-2/26/94	ORHY 66	3/1/94	Not Mapped	N/A	1,533	1.42	1,080	Not Read	Not Read
Avg.	1,168 (L) 99 (WH)		54				1,303[6]		1,639	367 / 358	

[1] Acatual use is livestick (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/89 with the start of the intensive seasonal flights (see Table 31 in allotment evaluation).

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Ruby Lake Weather Station).

[4] Adj. = Production data adjusted to CAf. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit A-2

Spruce Allotment

Key Area SP-06

Range Site: Coarse Gravelly Loam 6-8 (28B-75)
Key Species: EULA5 and ORHY
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./unadj.)[4]	Key Spp. Frequency[5]
1986-87	1,819 (L)	5/9/86 12/2/86-3/31/87	Not Read	N/A	MODERATE	5/87	Not Calc.	1.17	Not Calc.	MID 43 488 / 572	EULA5 33.0 ORHY 21.0
1987-88	373 (L)	4/1/87-4/18/87 12/8/87-12/18/87	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.88	Not Calc.	Not Read	Not Read
1988-89	809 (L) 108 (WH)	4/22/88-5/3/88 11/19/88-12/9/88 2/22/89-3/31/89	EULA5 39	6/26/89	LIGHT	6/26/89	1,293	0.63	2,052	Not Read	Not Read
1989-90	1,182 (L) 1,272 (WH)	4/1/89-5/3/89 11/29/89-2/14/90	EULA5 36	6/20/90	Not Mapped	N/A	3,749	0.94	3,988	Not Read	Not Read
1990-91	291 (L) 1.272 (WH)	3/1/91-3/31/91	EULA5 61	5/20/91	HEAVY	5/20/91	1,409	0.82	1,718	LATE 61 299 / 245	EULA5 17.0- ORHY 14.5-
1991-92	1,084 (L) 731 (WH)	4/1/91-5/16/91 11/1/91-1/28/92	ORHY 85	3/27/92	SEVERE	3/27/92	1,174	0.61	1,925	Not Read	Not Read
1992-93	135 (L) 1.444 (WH)	11/10/92-11/12/92 3/20/93-3/31/93	ORHY 62	4/6/93	HEAVY	4/6/93	1,401	0.75	1,868	Not Read	Not Read
1993-94	1,506 (L) 1,520 (WH)	4/1/93-5/11/93 11/3/93-2/26/94	ORHY 66	4/20/94	Not Mapped	NA	2,522	1.42	1,776	Not Read	Not Read
Avg.	900 (L) 1,248 (WH)		58				1,319[6]		1,891	394 / 409	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/89 with the start of the intensive seasonal flights (see Table 31 in allotment evaluation). WH actual use for 1988-89 was not included in the average because this use only represented one month for that year.

[2] The period of use shown is only livestock.

[3] CAF = Climatic Adjustment Factor (Ruby Lake Weather Station).

[4] Adj. = Production data is adjusted to CAF. Unadj. = Production data is unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit A-2

Spruce Allotment

Key Area SP-05

Range Site: Coarse Gravelly Loam 6-8 (28B-75)
Key Species: EULA5 and ORHY
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./unadj.)[4]	Key Spp. Frequency[5]
1986-87	1,819 (L)	5/9/86 12/2/86-3/31/87	Not Read	N/A	MODERATE	5/87	Not Calc.	1.17	Not Calc.	MID 41 439 / 514	EULA5 65.0 ORHY 16.5
1987-88	373 (L)	4/1/87-4/18/87 12/8/87-12/18/87	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.88	Not Calc.	Not Read	Not Read
1988-89	809 (L) 108 (WH)	4/22/88-5/3/88 11/19/88-12/9/88 2/22/89-3/31/89	ORHY 37	6/26/89	LIGHT	6/26/89	1,363	0.63	2,163	Not Read	Not Read
1989-90	1,182 (L) 1,272 (WH)	4/1/89-5/3/89 11/29/89-2/14/90	EULA5 28	6/20/90	Not Mapped	N/A	4,820	0.94	5,128	Not Read	Not Read
1990-91	291 (L) 1,272 (WH)	3/1/91-3/31/91	EULA5 44	5/20/91	MODERATE	5/20/91	1,954	0.82	2,383	MID 28 321 / 263	EULA5 60.5= ORHY 16.0=
1991-92	1,084 (L) 731 (WH)	4/1/91-5/16/91 11/1/91-1/28/92	ORHY 50	3/27/92	MODERATE	3/27/92	1,997	0.61	3,274	Not Read	Not Read
1992-93	135 (L) 1,444 (WH)	11/10/92-11/12/92 3/20/93-3/31/93	EULA5 60	4/6/93	MODERATE	4/6/93	1,447	0.75	1,929	Not Read	Not Read
1993-94	1,506 (L) 1,520 (WH)	4/1/93-5/11/93 11/3/93-2/26/94	EULA5 68	. 3/1/94	Not Mapped	N/A	2,448	1.42	1,724	Not Read	Not Read
Avg.	900 (L) 1,248 (WH)		48				2,133[6]		2,460	380 / 389	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/89 with the start of the intensive seasonal flights (see Table 31 in allotment evaluation). WH actual use for 1988-89 was not included in the average because this use only represented one month for that year.

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Ruby Lake Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit A-2

Spruce Allotment

Key Area SP-24

Range Site: Silty 8-10 (28B-13)
Key Species: EULA5
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod.[4]	Key Spp. Frequency[4]
1986-87	1,819 (L)	5/9/86 12/2/86-3/31/87	Not Read	N/A	Not Mapped	N/A	Not Calc.	1.17	Not Calc.	Not Read	Not Read
1987-88	373 (L)	4/1/87-4/18/87 12/8/87-12/18/87	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.88	Not Calc.	Not Read	Not Read
1988-89	809 (L)	4/22/88-5/3/88 11/19/88-12/9/88 2/22/89-3/31/89	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.63	Not Calc.	Not Read	Not Read
1989-90	1,182 (L) 1,272 (WH)	4/1/89-5/3/89 11/29/89-2/14/90	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.94	Not Calc.	Not Read	Not Read
1990-91	291 (L) 1,272 (WH)	3/1/91-3/31/91	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.82	Not Calc.	Not Read	Not Read
1991-92	1,084 (L) 731 (WH)	4/1/91-5/16/91 11/1/91-1/28/92	Not Read	N/A	SEVERE	3/27/92	Not Calc.	0.61	Not Calc.	Not Read	Not Read
1992-93	135 (L) 1,444 (WH)	11/10/92-11/12/92 3/20/93-3/31/93	EULA5 73	4/27/93	HEAVY	4/27/93	1,190	0.75	1,587	Not Read	Not Read
1993-94	1506 (L) 1.520 (WH)	4/1/93-5/11/93 11/3/93-2/26/94	EULA5 75	4/20/94	Not Mapped	N/A	2,219	1.42	1,563	Not Read	Not Read
Avg.	900 (L) 1,248 (WH)		74				1,705[5]				

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/89 with the start of the intensive seasonal flights (see Table 31 in allotment evaluation). WH actual use for 1988-89 was not included in the average because this use only represented one month for that year.

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Ruby Lake Weather Station).

[4] This key area is used to monitor utilization only.

[5] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit A-2

Spruce Allotment

Key Area SP-27

Range Site: Coarse Gravelly Loam 6-8 (28B-75)
Key Species: EULA5 and ORHY
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod.[4]	Key Spp. Frequency[4]
1986-87	1,819 (L)	5/9/86 12/2/86-3/31/87	Not Read	N/A	MOD-HVY	5/87	Not Calc.	1.17	Not Calc.	Not Read	Not Read
1987-88	373 (L)	4/1/87-4/18/87 12/8/87-12/18/87	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.88	Not Calc.	Not Read	Not Read
1988-89	809 (L) 108 (WH)	4/22/88-5/3/88 11/19/88-12/9/88 2/22/89-3/31/89	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.63	Not Calc.	Not Read	Not Read
1989-90	1,182 (L) 1,272 (WH)	4/1/89-5/3/89 11/29/89-2/14/90	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.94	Not Calc.	Not Read	Not Read
1990-91	291 (L) 1,272 (WH)	3/1/91-3/31/91	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.82	Not Calc.	Not Read	Not Read
1991-92	1,084 (L) 731 (WH)	4/1/91-5/16/91 11/1/91-1/28/92	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.61	Not Calc.	Not Read	Not Read
1992-93	135 (L) 1,444 (WH)	11/10/92-11/12/92 3/20/93-3/31/93	EULA5 54	4/6/93	MODERATE	4/6/93	1,608	0.75	2,144	Not Read	Not Read
1993-94	1,506 (L) 1,520 (WH)	4/1/93-5/11/93 11/3/93-2/26/94	EULA5 48	3/1/94	Not Mapped	N/A	3,467	1.42	2442	Not Read	Not Read
Avg.	900 (L) 1,248 (WH)		51				1,608[5]		2,144		

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/89 with the start of the intensive seasonal flights (see Table 31 in allotment evaluation). WH actual use for 1988-89 was not included in the average because this use only represented one month for that year.

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Ruby Lake Weather Station). .

[4] This key area is uded to monitor utilization only.

[5] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit A-2

Spruce Allotment

Key Area SP-30

Range Site: Coarse Gravelly Loam 6-8 (28B-75)
Key Species: ORHY
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod.[4]	Key Spp. Frequency[4]
1986-87	1,819 (L)	5/9/86 12/2/86-3/31/87	Not Read	N/A	Not Mapped	N/A	Not Calc.	1.17	Not Calc.	Not Read	Not Read
1987-88	373 (L)	4/22/87-5/3/87 12/8/87-12/18/87	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.88	Not Calc.	Not Read	Not Read
1988-89	809 (L) 108 (WH)	4/22/88-5/3/88 11/19/88-12/9/88 2/22/89-3/31/89	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.63	Not Calc.	Not Read	Not Read
1989-90	1,182 (L) 1,272 (WH)	4/1/89-5/3/89 11/29/89-2/14/90	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.94	Not Calc.	Not Read	Not Read
1990-91	291 (L) 1,272 (WH)	3/1/91-3/31/91	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.82	Not Calc.	Not Read	Not Read
1991-92	1,084 (L) 731 (WH)	4/1/91-5/16/91 11/1/91-1/28/92	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.61	Not Calc.	Not Read	Not Read
1992-93	135 (L) 1,444 (WH)	11/10/92-11/12/92 3/20/93-3/31/93	ORHY 54	4/6/93	MODERATE	4/6/93	1,608	0.75	2,144	Not Read	Not Read
1993-94	1,506 (L) 1,520 (WH)	4/1/93-5/11/93 1/3/93-2/26/94	ORHY 52	3/1/94	Not Mapped	N/A	3,201	1.42	2,254	Not Read	Not Read
Avg.	900 (L) 1,248 (WH)		53				1,608[5]		2,144		

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/89 with the start of the intensive seasonal flights (see Table 31 in allotment evaluation). WH actual use for 1988-89 was not included in the average because this use only represented one month for that year.

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Ruby Lake Weather Station).

[4] This key area is used to monitor utilization only.

[5] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final crrying capacity for the subunit.

Subunit B-1

Spruce Allotment

Key Area SP-07

Range Site: Silty 8-10 (28B-13)
Key Species: EULA5 and ORHY
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./unadj.)[4]	Key Spp. Frequency[5]
1986-87	525 (L)	4/1/86-5/8/86	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.61	Not Calc.	MID 49 597 / 364	EULA5 33.0 ORHY 42.5
1987-88	1,473 (L)	12/19/87-3/31/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	Not Read	Not Read
1988-89	1,506 (L)	4/1/88-4/27/88 11/17/88-12/1/88 12/10/88-2/21/89	EULA5 38	6/12/89	LIGHT	6/12/89	2,180	1.10	1,982	Not Read	Not Read
1989-90	826 (L)	11/28/89-12/2/89 2/15/90-3/31/90	ORHY 58	5/30/90	Not Mapped	N/A	783	0.95	824	Not Read	Not Read
1990-91	1,461 (L)	4/1/90-5/2/90 11/7/90-2/28/91	EULA5 ORHY 37	3/19/91	LIGHT	3/19/91	2,172	0.89	2,440	LATE 75 279 / 248	EULA5 25.5= ORHY 34.0-
1991-92	581 (L) 0 (WH)	1/29/92-3/31/92	ORHY 55	6/5/92	Not Mapped	N/A	581	0.68	854	Not Read	Not Read
1992-93	1,533 (L) 0 (WH)	4/1/92-5/8/92 11/13/92-1/11/93	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.72	Not Calc.	Not Read	Not Read
1993-94	374 (L) 6 (WH)	2/27/94-3/31/94	ORHY 61	5/26/94	Not Mapped	N/A	343	1.28	268	Not Read	Not Read
Avg.	1,035 (L) 6 (WH)		50				2,176[6]		2,211	438 / 306	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 6/91 with the start of the intensive seasonal flights (see Table 34 in allotment evaluation).

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit B-1

Spruce Allotment

Key Area SP-08

Range Site: Silty 8-10 (28B-13)
Key Species: EULA5 and ORHY
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./unadj.)[4]	Key Spp. Frequency[5]
1986-87	525 (L)	4/1/86-5/8/86	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.61	Not Calc.	PNC 77 692 / 420	EULA5 50.5 ORHY 62.0
1987-88	1,473 (L)	12/19/87-3/31/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	Not Read	Not Read
1988-89	1,506 (L)	4/1/88-4/27/88 11/17/88-12/1/88 12/10/88-2/21/89	EULA5 52	. 6/14/89	MODERATE	6/14/89	1,593	1.10	1,448	Not Read	Not Read
1989-90	826 (L)	11/28/89-12/2/89 2/15/90-3/31/90	ORHY 46	5/30/90	Not Mapped	N/A	988	0.95	1,040	Not Read	Not Read
1990-91	1,461 (L)	4/1/90-5/2/90 11/7/90-2/28/91	ORHY 40	3/19/91	LIGHT	3/19/91	2,009	0.89	2,257	LATE 65 123 / 110	EULA5 41.5= ORHY 49.0-
1991-92	581 (L) 0 (WH)	1/29/92-3/31/92	EULA5 ORHY 53	6/5/92	Not Mapped	N/A	603	0.68	887	Not Read	Not Read
1992-93	1,533 (L) 0 (WH)	4/1/92-5/8/92 11/13/92-1/11/93	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.72	Not Calc.	Not Read	Not Read
1993-94	374 (L) 6 (WH)	2/27/94-3/31/94	ORHY 65	5/26/94	Not Mapped	N/A	322	1.28	252	Not Read	Not Read
Avg.	1,035 (L) 6 (WH)		51				1,801[6]		1,853	408 / 265	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 6/91 with the start of the intensive seasonal flights (see Table 34 in allotment evaluation).

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit B-2

Spruce Allotment

Key Area SP-10

Range Site: Coarse Gravelly Loam 6-8 (28B-75)
Key Species: EULA5 and ORHY
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./unadj.)[4]	Key Spp. Frequency[5]
1986-87	262 (L)	4/1/86-5/8/86	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.61	Not Calc.	MID 36 661 / 403	EULA5 42.5 ORHY 38.0
1987-88	736 (L)	12/19/87-3/31/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	Not Read	Not Read
1988-89	1,047 (L)	4/1/88-4/27/88 12/2/88-2/21/89 3/28/89-3/29/89	EULA5 58	6/12/89	MODERATE	6/12/89	993	1.10	903	Not Read	Not Read
1989-90	578 (L) 51 (WH)	11/28/89-12/2/89 2/15/90-2/28/90	EULA5 52	5/31/90	Not Mapped	N/A	665	0.95	700	Not Read	Not Read
1990-91	1,116 (L) 768 (WH)	4/2/90-4/11/90 11/7/90-2/28/91	ORHY 43	3/19/91	MODERATE	3/19/91	2,410	0.89	2,708	MID 37 378 / 336	EULA5 26.5- ORHY 11.0-
1991-92	581 (L) 592 (WH)	1/29/92-3/31/92	ORHY 70	5/7/92	Not Mapped	N/A	922	0.68	1,356	Not Read	Not Read
1992-93	350 (L) 724 (WH)	4/1/92-5/8/92	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.72	Not Calc.	Not Read	Not Read
1993-94	331 (L) 515 (WH)	3/1/94-3/31/94	ORHY 27	5/26/94	Not Mapped	N/A	1,723	1.28	1,346	Not Read	Not Read
Avg.	625 (L) 650 (WH)		50				860[6]		986	520 / 370	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/90 with the start of the intensive seasonal flights (see Table 32 in allotment evaluation). WH actual use for 1989-90 was not included in the average because this use only represented one month for that year.

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] Adj, = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit B-2

Spruce Allotment

Key Area SP-11

Range Site: Silty 8-10 (28B-13)
Key Species: EULA5 and ORHY
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./unadj.)[4]	Key Spp. Frequency[5]
1986-87	262 (L)	4/1/86-5/8/86	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.61	Not Calc.	LATE 64 602 / 367	EULA5 87.0 ORHY 35.5
1987-88	736 (L)	12/19/87-3/31/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	Not Read	Not Read
1988-89	1,047 (L)	4/1/88-4/27/88 12/2/88-2/21/89 3/28/89-3/29/89	EULA5 61	6/12/89	HEAVY	6/12/89	944	1.10	858	Not Read	Not Read
1989-90	578 (L) 51 (WH)	11/28/89-12/2/89 2/15/90-2/28/90	EULA5 56	5/31/90	Not Mapped	N/A	618	0.95	651	Not Read	Not Read
1990-91	1,116 (L) 768 (WH)	4/2/90-4/11/90 11/7/90-2/28/91	ORHY 62	3/19/91	HEAVY	3/19/91	1,671	0.89	1,878	MID 50 160 / 143	EULA5 81.0= ORHY 19.0-
1991-92	581 (L) 592 (WH)	1/29/92-3/3192	ORHY 62	5/7/92	Not Mapped	N/A	1,041	0.68	1,531	Not Read	Not Read
1992-93	350 (L) 724 (WH)	4/1/92-5/8/92	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.72	Not Calc.	Not Read	Not Read
1993-94	331 (L) 515 (WH)	3/1/94-3/31/94	ORHY 52	5/26/94	Not Mapped	N/A	895	1.28	699	Not Read	Not Read
Avg.	625 (L) 650 (WH)		59				960[6]		1,029	381 / 255	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/90 with the start of the intensive seasonal flights (see Table 32 in allotment evaluation). WH actual use for 1989-90 was not included in the average because this use only represented one month for that year.

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit C-1a

Spruce Allotment

Key Area SP-20

Range Site: Silty 8-10 (28B-13)
Key Species: EULA5 and ORHY
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./unadj.)[4]	Key Spp. Frequency[5]
1986-87	366 (L)	5/10/86-5/11/86 3/1/87-3/15/87	EULA5 51	5/7/87	Not Mapped	N/A	395	0.61	648	Not Read	Not Read
1987-88	405 (L)	4/14/87 12/10/87-3/31/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc	LATE 62 1284 / 1156	EULA5 43.5 ORHY 63.0
1988-89	410 (L)	4/1/88-5/6/88 12/6/88-2/21/89	EULA5 62	6/14/89	HEAVY	6/14/89	364	1.10	331	Not Read	Not Read
1989-90	773 (L) 5 (WH)	4/17/89 11/21/89-12/20/89 2/15/90-2/28/90	EULA5 ORHY 56	5/30/90	Not Mapped	N/A	764	0.95	804	Not Read	Not Read
1990-91	616 (L) 119 (WH)	5/2/90-5/9/90 12/1/90-12/31/90	ORHY 60	3/19/91	MODERATE	3/19/91	674	0.89	757	LATE 53 244 / 217	EULA5 28.5- ORHY 44.5-
1991-92	480 (L) 375 (WH)	12/1/91-12/31/91	ORHY 54	5/8/92	Not Mapped	N/A	871	0.68	1281	Not Read	Not Read
1992-93	110 (L) 216 (WH)	5/2/92-5/5/92 3/23/93-3/31/93	ORHY 66	4/22/93	HEAVY	4/22/93	272	0.72	378	Not Read	Not Read
1993-94	764 (L) 289 (WH)	4/1/93-6/1/93 12/2/93-2/22/94	ORHY 57	5/26/94	Not Mapped	N/A	1016	1.28	794	Not Read	Not Read
Avg.	491 (L) 250 (WH)		58				831[6]		909	764 / 687	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/90 with the start of the intensive seasonal flights (see Table 32 in allotment evaluation). WH actual use for 1989-90 was not included in the average because this use only represented one month for that year.

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit C-1

Spruce Allotment

Key Area SP-09

Range Site: Saline Terrace 5-8 (28B-47)
Key Species: ATNU2
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (Adj./Unadj.)[4]	Key Spp. Frequency[5]
1986-87	1,012 (L)	4/1/86-5/13/86 12/6/86-12/21/86 3/16/87-3/31/87	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.61	Not Calc.	LATE 65 1231 / 751	ATNU2 48.5
1987-88	1,447 (L)	4/1/87-5/13/87 11/28/87-3/31/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	Not Read	Not Read
1988-89	1,077 (L)	4/1/88-5/15/88 11/17/88-2/21/89 3/30/89-3/31/89	ATNU2 51	6/14/89	MODERATE	6/14/89	1,161	1.10	1,055	Not Read	Not Read
1989-90	991 (L)	4/1/89-4/28/89 11/15/89-11/29/89 2/15/90-2/28/90	ATNU2 59	5/30/90	Not Mapped	N/A	924	0.95	973	Not Read	Not Read
1990-91	1,547 (L)	4/2/90-4/11/90 5/10/90-5/14/90 11/5/90-12/15/90 1/1/91-3/31/91	ATNU2 48	3/19/91	MODERATE	3/19/91	1,773	0.89	1,992	LATE 65 790 / 703	ATNU2 25.5-
1991-92	1,420 (L) 28 (WH)	4/1/91-4/24/91 11/20/91-2/28/92	ATNU2 56	6/5/92	Not Mapped	N/A	1,422	0.68	2,091	Not Read	Not Read
1992-93	3,703 (L) 292 (WH)	11/13/92-3/31/93	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.72	Not Calc.	Not Read	Not Read
1993-94	1,620 (L) 107 (WH)	4/1/93-6/1/93 12/2/93-2/22/94	ATNU2 54	5/26/94	Not Mapped	N/A	1,759	1.28	1,374	Not Read	Not Read
Avg.	1,602 (L) 142 (WH)		54				1,292[6]		1,573	1011 / 727	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 6/91 with the start of the intensive seasonal flights (see Table 34 in allotment evaluation).

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Ajustment Factor (Montello Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit C-1

Spruce Allotment

Key Area SP-12

Range Site: Coarse Gravelly Loam 6-8 (28B-75)
Key Species: EULA5, ARSP5, and ORHY
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (Adj./Unadj.)[4]	Key Spp. Frequency[5]
1986-87	1,012 (L)	4/1/86-5/13/86 12/6/86-12/21/86 3/16/87-3/31/87	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.61	Not Calc.	MID 37 894 / 545	EULA5 4.0 ARSP5 15.5 ORHY 17.5
1987-88	1,447 (L)	4/1/87-5/13/87 11/28/87-3/31/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	Not Read	Not Read
1988-89	1,077 (L)	4/1/88-5/15/88 11/17/88-2/21/89 3/30/89-3/31/89	ORHY 48	6/28/89	MODERATE	6/28/89	1,234	1.10	1,122	Not Read	Not Read
1989-90	991 (L)	4/1/89-4/28/89 11/15/89-11/29/89 2/15/90-2/28/90	EULA5 57	5/31/90	Not Mapped	N/A	956	0.95	1,006	Not Read	Not Read
1990-91	1,547 (L)	4/2/90-4/11/90 5/10/90-5/14/90 11/5/90-12/15/90 1/1/91-3/31/91	ORHY 48	3/19/91	MODERATE	3/19/91	1,773	0.89	1,992	MID 43 117 / 104	EULA5 6.0= ARSP5 15.5= ORHY 17.0=
1991-92	1,420 (L) 28 (WH)	4/1/91-4/24/91 11/20/91-2/28/92	ORHY 26	6/5/92	Not Mapped	N/A	3,063	0.68	4,504	Not Read	Not Read
1992-93	3,703 (L) 292 (WH)	11/13/92-3/31/93	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.72	Not Calc.	Not Read	Not Read
1993-94	1,620 (L) 107 (WH)	4/1/93-6/1/93 12/2/93-2/22/94	Not Read	N/A	Not Mapped	N/A	Not Calc.	1.28	Not Calc.	Not Read	Not Read
Avg.	1,602 (L) 142 (WH)		45				1,234[6]		1,122	506 / 325	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 6/91 with the start of the intensive seasonal flights (see Table 34 in allotment evaluation).

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit C-1

Spruce Allotment
Key Area SP-23

Range Site: Coarse Silty 6-8 (28B-84)
Key Species: EULA5 and ORHY
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (Adj./Unadj.)[4]	Key Spp. Frequency[5]
1986-87	1,012 (L)	4/1/86-5/13/86 12/6/86-12/21/86 3/16/87-3/31/87	EULA5 53	5/7/87	Not Mapped	N/A	1,050	0.61	1,721	Not Read	Not Read
1987-88	1,447 (L)	4/1/87-5/13/87 11/28/87-3/31/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	MID 32 622 / 560	EULA5 37.0 ORHY 58.5
1988-89	1,077 (L)	4/1/88-5/15/88 11/17/88-2/21/89 3/30/89-3/31/89	ORHY 50	6/28/89	MODERATE	6/28/89	1,184	1.10	1,076	Not Read	Not Read
1989-90	991 (L)	4/1/89-4/28/89 11/15/89-11/29/89 2/15/90-2/28/90	EULA5 41	5/13/90	Not Mapped	N/A	1,329	0.95	1,399	Not Read	Not Read
1990-91	1,547 (L)	4/2/90-4/11/90 5/10/90-5/14/90 11/5/90-12/15/90 1/1/91-3/31/91	ORHY 51	3/19/91	MODERATE	3/19/91	1,668	0.89	1,874	MID 38 449 / 400	EULA5 30.0= ORHY 53.5=
1991-92	1,420 (L) 28 (WH)	4/1/91-4/24/91 11/20/91-2/28/92	ORHY 31	6/5/92	Not Mapped	N/A	2,569	0.68	3,778	Not Read	Not Read
1992-93	3,703 (L) 292 (WH)	11/13/92-3/31/93	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.72	Not Calc.	Not Read	Not Read
1993-94	1,620 (L) 107 (WH)	4/1/93-6/1/93 12/2/93-2/22/94	Not Read	N/A	Not Mapped	N/A	Not Calc.	1.28	Not Calc.	Not Read	Not Read
Avg.	1,602 (L) 142 (WH)		45				1,188[6]		1,399	536 / 480	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 6/91 with the start of the intensive seasonal flights (see Table 34 in allotment evaluation).

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determing the final carrying capacity for the subunit.

Subunit C-2

Spruce Allotment

No Key Area

Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./unadj.)[4]	Key Spp. Frequency[4]
1986-87	649 (L)	5/14/86-6/12/86 1/1/87-1/2/87	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.61	Not Calc.	Not Read	Not Read
1987-88	1,870 (L)	4/18/87-6/24/87 11/1/87-12/9/87 3/4/88-3/17/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	Not Read	Not Read
1988-89	1,121 (L)	5/16/88-6/22/88 11/8/88-12/5/88 3/30/89-3/31/89	Not Read	N/A	Not Mapped	N/A	Not Calc.	1.10	Not Calc.	Not Read	Not Read
1989-90	222 (L)	4/1/89 10/31/89-11/14/89	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.95	Not Calc.	Not Read	Not Read
1990-91	737 (L)	5/15/90-6/3/90 10/1/90-11/4/90	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.89	Not Calc.	Not Read	Not Read
1991-92	1,660 (L) 0 (WH)	4/2/91-6/13/91 11/27/91-12/5/91	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.68	Not Calc.	Not Read	Not Read
1992-93	722 (L) 0 (WH)	5/6/92-5/21/92 11/2/92-11/25/92	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.72	Not Calc.	Not Read	Not Read
1993-94	956 (L) 46 (WH)	5/5/93-6/18/93 11/6/93-11/19/93	Not Read	N/A	Not Mapped	N/A	Not Calc.	1.28	Not Calc.	Not Read	Not Read
Avg.	992 (L) 46 (WH)										

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 6/91 with the start of the intensive seasonal flights (see Table 34 in allotment evaluation). This subunit has been used in conjunction with the private land on Flowery Lake and thus the recommended carrying capcity for livestock on this subunit is based on one half of the actual use by livestock.

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] There is no key area in this subunit.

Subunit C-3

Spruce Allotment

Key Area SP-18

Range Site: Silty Clay 8-10 (28B-71)
Key Species: EULA5 and ORHY
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (Adj./Unadj.)[4]	Key Spp. Frequency[5]
1986-87	1,066 (L)	1/3/87-2/28/87	0	N/A	Not Mapped	N/A	Not Calc.	0.61	Not Calc.	Not Read	Not Read
1987-88	1,449 (L)	12/21/87-3/5/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	LATE 51 932 / 839	EULA5 71.0 ORHY 4.5
1988-89	2,354 (L)	12/12/88-3/31/89	EULA5 57	6/28/89	MODERATE	6/28/89	2,271	1.10	2,065	Not Read	Not Read
1989-90	1,837 (L) 0 (WH)	4/1/89-4/17/89 12/21/89-2/28/90	EULA5 55	5/30/90	Not Mapped	N/A	1,837	0.95	1,934	Not Read	Not Read
1990-91	2,041 (L) 0 (WH)	11/12/90-1/20/91 3/5/91-3/31/91	ORHY 52	3/20/91	MODERATE	3/20/91	2,159	0.89	2,426	LATE 51 361 / 321	EULA5 78.0+ ORHY 1.0-
1991-92	1,762 (L) 17 (WH)	4/1/91 12/14/91-3/11/92	ORHY 50	5/8/92	Not Mapped	N/A	1,957	0.68	2,878	Not Read	Not Read
1992-93	767 (L) 350 (WH)	11/26/92-1/1/93 3/24/93-3/31/93	EULA5 40	4/22/93	MODERATE	4/22/93	1,536	0.72	2,133	Not Read	Not Read
1993-94	2,024 (L) 392 (WH)	4/1/93-5/4/93 11/20/93-2/28/94	EULA5 47	3/7/94	Not Mapped	N/A	2,754	1.28	2,152	Not Read	Not Read
Avg.	1,663 (L) 232 (WH)		50				1,952[6]		2,287	647 / 387	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/90 with the start of the intensive seasonal flights (see Table 33 in allotment evaluation).

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] Adj. = Production data ajusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit C-3

Spruce Allotment

Key Area SP-19

Range Site: Silty Clay 8-10 (28B-71)
Key Species: EULA5
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (Adj./Unadj.)[4]	Key Spp. Frequency[5]
1986-87	1,066 (L)	1/3/87-2/28/87	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.61	Not Calc.	Not Read	Not Read
1987-88	1,449 (L)	12/21/87-3/5/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	LATE 60 519 / 467	EULA5 64.5
1988-89	2,354 (L)	12/12/88-3/31/89	EULA5 37	6/28/89	LIGHT	6/28/89	3,499	1.10	3,181	Not Read	Not Read
1989-90	1,837 (L) 0 (WH)	4/1/89-4/17/89 12/21/89-2/28/90	EULA5 55	5/31/90	Not Mapped	N/A	1,837	0.95	1,934	Not Read	Not Read
1990-91	2,041 (L) 0 (WH)	11/12/90-1/20/91 3/5/91-3/31/91	EULA5 46	3/20/91	MODERATE	3/20/91	2,440	0.89	2,742	LATE 57 533 / 475	EULA5 62.5=
1991-92	1,762 (L) 17 (WH)	4/1/91 12/14/91-3/11/92	EULA5 45	5/8/92	Not Mapped	N/A	2,174	0.68	3,197	Not Read	Not Read
1992-93	767 (L) 350 (WH)	11/26/92-1/1/93 3/24/93-3/31/93	EULA5 34	4/22/93	LIGHT	4/22/93	1,807	0.72	2,510	Not Read	Not Read
1993-94	2,024 (L) 392 (WH)	4/1/93-5/4/93 11/20/93-2/28/94	EULA5 32	3/7/94	Not Mapped	N/A	4,044	1.28	3,159	Not Read	Not Read
Avg.	1,663 (L) 232 (WH)		42				2,065[6]		2,596	526 / 471	

[1] Actual use is livestock (L) and wild horse WH) use from 4/1 - 3/31. Wild horse actual use begins 3/90 with the start of the intensive seasonal flights (see Table 33 in allotment evaluation).

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capactiy for this subunit.

Subunit C-3

Spruce Allotment

Key Area SP-21

Range Site: Silty Clay 8-10 (28B-71)
Key Species: EULA5
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use	KMA Util. (%)	Dates read	KMA Use-Pat.2 Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (Adj./Unadj/)[4]	Key Spp. Frequency[5]
1986-87	1,066 (L)	1/3/87-2/28/87	EULA5 53	5/7/87	Not Mapped	N/A	1,106	0.61	1,813	Not Read	Not Read
1987-88	1,449 (L)	12/21/87-3/5/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	LATE 52 699 / 629	EULA5 62.5
1988-89	2,354 (L)	12/12/88-3/31/89	EULA5 62	6/19/89	HEAVY	6/19/89	2,088	1.10	1,898	Not Read	Not Read
1989-90	1,837 (L) 0 (WH)	4/1/89-4/17/89 12/21/89-2/28/90	EULA5 57	5/31/90	Not Mapped	N/A	1,773	0.95	1,866	Not Read	Not Read
1990-91	2,041 (L) 0 (WH)	11/12/90-1/20/91 3/5/91-3/31/91	EULA5 47	3/20/91	MODERATE	3/20/91	2,388	0.89	2,683	LATE 52 269 / 240	EULA5 59.0=
1991-92	1,762 (L) 17 (WH)	4/1/91 12/14/91-3/11/92	EULA5 45	5/8/92	Not Mapped	N/A	2,174	0.68	3,197	Not Read	Not Read
1992-93	767 (L) 350 (WH)	11/26/92-1/1/93 3/24/93-3/31/93	EULA5 50	4/22/93	MODERATE	4/22/93	1,229	0.72	1,707	Not Read	Not Read
1993-94	2,024 (L) 392 (WH)	4/1/93-5/4/93 11/20/93-2/28/94	EULA5 63	3/7/94	Not Mapped	N/A	2,054	1.28	1,605	Not Read	Not Read
Avg.	1,663 (L) 232 (WH)		54				1,650[6]		1,778	484 / 435	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/90 with the start of the intensive seasonal flights (see Table 33 in allotment evaluation).

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit C-3

Spruce Allotment

Key Area SP-22

Range Site: Silty Clay 8-10 (28B-71)
Key Species: EULA5
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (Adj./Unadj.)[4]	Key Spp. Frequency[5]
1986-87	1,066 (L)	1/3/87-2/28/87	EULA5 51	5/7/87	Not Mapped	N/A	1,150	0.61	1,885	Not Read	Not Read
1987-88	1,449 (L)	12/21/87-3/5/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	LATE 52 1552 / 1396	EULA5 55.5
1988-89	2,354 (L)	12/12/88-3/31/89	EULA5 61	6/19/89	HEAVY	6/19/89	2,122	1.10	1,929	Not Read	Not Read
1989-90	1,837 (L) 0 (WH)	4/1/89-4/17/89 12/21/89-2/28/90	EULA5 56	5/31/90	Not Mapped	N/A	1,804	0.95	1,899	Not Read	Not Read
1990-91	2,041 (L) 0 (WH)	11/12/90-1/20/91 3/5/91-3/31/91	EULA5 48	3/20/91	MODERATE	3/20/91	2,339	0.89	2,628	LATE 56 694 / 618	EULA5 77.0+
1991-92	1,762 (L) 17 (WH)	4/1/91 12/14/91-3/11/92	EULA5 45	5/8/92	Not Mapped	N/A	2,174	0.68	3,197	Not Read	Not Read
1992-93	767 (L) 350 (WH)	11/26/92-1/1/93 3/24/93-3/31/93	EULA5 40	4/22/93	LT-MOD	4/22/93	1,536	0.72	2,133	Not Read	Not Read
1993-94	2,024 (L) 392 (WH)	4/1/93-5/4/93 11/20/93-2/28/94	EULA5 63	3/7/94	Not Mapped	N/A	2,054	1.28	1,605	Not Read	Not Read
Avg.	1,663 (L) 232 (WH)		52				2,045[6]		2,298	1123 / 1007	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/90 with the start of the intensive seasonal flights (see Table 33 in allotment evaluation).

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit C-3

Spruce Allotment

Key Area SP-21

Range Site: Silty Clay 8-10 (28B-71)
Key Species: EULA5
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use	KMA Util. (%)	Dates read	KMA Use-Pat.2 Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (Adj./Unadj/)[4]	Key Spp. Frequency[5]
1986-87	1,066 (L)	1/3/87-2/28/87	EULA5 53	5/7/87	Not Mapped	N/A	1,106	0.61	1,813	Not Read	Not Read
1987-88	1,449 (L)[2]	12/21/87-3/5/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	LATE 52 699 / 629	EULA5 62.5
1988-89	2,354 (L)	12/12/88-3/31/89	EULA5 62	6/19/89	HEAVY	6/19/89	2,088	1.10	1,898	Not Read	Not Read
1989-90	1,837 (L) 0 (WH)	4/1/89-4/17/89 12/21/89-2/28/90	EULA5 57	5/31/90	Not Mapped	N/A	1,773	0.95	1,866	Not Read	Not Read
1990-91	2,041 (L) 0 (WH)	11/12/90-1/20/91 3/5/91-3/31/91	EULA5 47	3/20/91	MODERATE	3/20/91	2,388	0.89	2,683	LATE 52 269 / 240	EULA5 59.0=
1991-92	1,762 (L) 17 (WH)	4/1/91 12/14/91-3/11/92	EULA5 45	5/8/92	Not Mapped	N/A	2,174	0.68	3,197	Not Read	Not Read
1992-93	767 (L) 350 (WH)	11/26/92-1/1/93 3/24/93-3/31/93	EULA5 50	4/22/93	MODERATE	4/22/93	1,229	0.72	1,707	Not Read	Not Read
1993-94	2,024 (L) 392 (WH)	4/1/93-5/4/93 11/20/93-2/28/94	EULA5 63	3/7/94	Not Mapped	N/A	2,054	1.28	1,605	Not Read	Not Read
Avg.	1,663 (L) 232 (WH)		54				1,650[6]		1,778	484 / 435	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/90 with the start of the intensive seasonal flights (see Table 33 in allotment evaluation).

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit C-4

Spruce Allotment

Key Area SP-14

Range Site: Coarse Gravelly Loam 6-8 (28B-75)
Key Species: EULA5 and ORHY
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (Adj./Unadj.)[4]	Key Spp. Frequency[5]
1986-87	1,880 (L)	4/1/86-5/7/86 12/22/86-3/31/87	EULA5 52	5/5/87	Not Mapped	N/A	1,988	0.61	3,259	Not Read	Not Read
1987-88	639 (L)	4/1/87-4/13/87 3/6/88-3/31/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	MID 27 777 / 700	EULA5 28.5 ORHY 23.5
1988-89	678 (L)	4/1/88-4/27/88 3/9/89-3/31/89	EULA5 31	6/15/89	LIGHT	6/15/89	1,203	1.10	1,094	Not Read	Not Read
1989-90	765 (L) 95 (WH)	4/1/89-4/16/89 3/1/90-3/31/90	EULA5 58	5/30/90	Not Mapped	N/A	816	0.95	859	Not Read	Not Read
1990-91	1.689 (L) 1403 (WH)	4/1/90-5/1/90 1/21/91-3/9/91	ORHY 35	3/19/91	LIGHT	3/19/91	4,859	0.89	5,460	MID 26 166 / 148	EULA5 16.0- ORHY 27.5=
1991-92	392 (L) 629 (WH)	3/12/92-3/31/92	ORHY 61	5/8/92	Not Mapped	N/A	921	0.68	1,354	Not Read	Not Read
1992-93	1,986 (L) 838 (WH)	4/1/92-5/1/92 1/2/93-3/23/93	EULA5 74	4/22/93	HEAVY	4/22/93	2,099	0.72	2,915	Not Read	Not Read
1993-94	877 (L) 542 (WH)	2/8/94-3/31/94	ORHY 59	5/26/94	Not Mapped	N/A	1,323	1.28	1,034	Not Read	Not Read
Avg.	1,113 (L) 853 (WH)		53				1,066[6]		1,085	472 / 424	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/90 with the start of the intensive seasonal flights (see Table 32 in allotment evaluation). WH actual use for 1989-90 was not included in the average because this use only represented one month for that year.

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit C-4

Spruce Allotment

Key Area SP-15

Range Site: Silty 8-10 (28B-13)
Key Species: EULA5
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (Adj./Unadj.)[4]	Key Spp. Frequency[5]
1986-87	1,880 (L)	4/1/86-5/7/86 12/22/86-3/31/87	EULA5 33	5/5/87	Not Mapped	N/A	3,133	0.61	5,136	Not Read	Not Read
1987-88	639 (L)	4/1/87-4/13/87 3/6/88-3/31/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	LATE 53 834 / 751	EULA5 32.0
1988-89	678 (L)	4/1/88-4/27/88 3/9/89-3/31/89	EULA5 41	6/15/89	MODERATE	6/15/89	910	1.10	827	Not Read	Not Read
1989-90	765 (L) 95 (WH)	4/1/89-4/16/89 3/1/90-3/31/90	EULA5 56	5/30/90	Not Mapped	N/A	845	0.95	889	Not Read	Not Read
1990-91	1,689 (L) 1,403 (WH)	4/1/90-5/1/90 1/21/91-3/9/91	EULA5 25	3/19/91	LIGHT	3/19/91	6,802	0.89	7,643	LATE 53 161 / 144	EULA5 19.0-
1991-92	392 (L) 629 (WH)	3/12/92-3/31/92	ORHY 65	5/8/92	Not Mapped	N/A	864	0.68	1,271	Not Read	Not Read
1992-93	1,986 (L) 838 (WH)	4/1/92-5/1/92 1/2/93-3/23/93	EULA5 70	4/22/93	HEAVY	4/22/93	2,219	0.72	3,082	Not Read	Not Read
1993-94	877 (L) 542 (WH)	2/8/94-3/31/94	ORHY 68	5/26/94	Not Mapped	N/A	1,148	1.28	897	Not Read	Not Read
Avg.	1,113 (L) 853 (WH)		51				942[6]		971	513 / 448	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use bebins 3/90 with the start of the intensive seasonal flights (see Table 32 in allotment evaluation). WH actual use for 1989-90 was not included in the average because this use only represented one month for that year.

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit C-4

Spruce Allotment

Key Area SP-14

Range Site: Coarse Gravelly Loam 6-8 (28B-75)
Key Species: EULA5 and ORHY
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (Adj./Unadj.)[4]	Key Spp. Frequency[5]
1986-87	1,880 (L)	4/1/86-5/7/86 12/22/86-3/31/87	EULA5 52	5/5/87	Not Mapped	N/A	1,988	0.61	3,259	Not Read	Not Read
1987-88	639 (L)	4/1/87-4/13/87 3/6/88-3/31/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	MID 27 777 / 700	EULA5 28.5 ORHY 23.5
1988-89	678 (L)	4/1/88-4/27/88 3/9/89-3/31/89	EULA5 31	6/15/89	LIGHT	6/15/89	1,203	1.10	1,094	Not Read	Not Read
1989-90	765 (L) 95 (WH)	4/1/89-4/16/89 3/1/90-3/31/90	EULA5 58	5/30/90	Not Mapped	N/A	816	0.95	859	Not Read	Not Read
1990-91	1.689 (L) 1403 (WH)	4/1/90-5/1/90 1/21/91-3/9/91	ORHY 35	3/19/91	LIGHT	3/19/91	4,859	0.89	5,460	MID 26 166 / 148	EULA5 16.0- ORHY 27.5=
1991-92	392 (L) 629 (WH)	3/12/92-3/31/92	ORHY 61	5/8/92	Not Mapped	N/A	921	0.68	1,354	Not Read	Not Read
1992-93	1,986 (L) 838 (WH)	4/1/92-5/1/92 1/2/93-3/23/93	EULA5 74	4/22/93	HEAVY	4/22/93	2,099	0.72	2,915	Not Read	Not Read
1993-94	877 (L) 542 (WH)	2/8/94-3/31/94	ORHY 59	5/26/94	Not Mapped	N/A	1,323	1.28	1,034	Not Read	Not Read
Avg.	1,113 (L) 853 (WH)		53				1,066[6]		1,085	472 / 424	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/90 with the start of the intensive seasonal flights (see Table 32 in allotment evaluation). WH actual use for 1989-90 was not included in the average because this use only represented one month for that year.

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit C-4

Spruce Allotment

Key Area SP-16

Range Site: Coarse Gravelly Loam 6-8 (28B-75)
Key Species: EULA5 and ORHY
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (Adj./Unadj.)[4]	Key Spp. Frequency[5]
1986-87	1,880 (L)	4/1/86-5/7/86 12/22/86-3/31/87	EULA5 46	5/5/87	Not Mapped	N/A	2,248	0.61	3,685	Not Read	Not Read
1987-88	639 (L)	4/1/87-4/13/87 3/6/88-3/31/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	MID 30 1231 / 1107	EULA5 29.0 ORHY 39.5
1988-89	678 (L)	4/1/88-4/27/88 3/9/89-3/31/89	EULA5 54	6/15/89	MODERATE	6/15/89	691	1.10	628	Not Read	Not Read
1989-90	765 (L) 95 (WH)	4/1/89-4/16/89 3/1/90-3/31/90	ORHY 51	5/30/90	Not Mapped	N/A	927	0.95	976	Not Read	Not Read
1990-91	1,689 (L) 1,403 (WH)	4/1/90-5/1/90 1/21/91-3/9/91	EULA5 38	3/19/91	LIGHT	3/19/91	4,475	0.89	5,028	MID 35 191 / 170	EULA5 20.0- ORHY 33.5=
1991-92	392 (L) 629 (WH)	3/12/92-3/31/92	ORHY 59	5/8/92	Not Mapped	N/A	952	0.68	1,400	Not Read	Not Read
1992-93	1,986 (L) 838 (WH)	4/1/92-5/1/92 1/2/93-3/23/93	EULA5 70	4/22/93	HEAVY	4/22/93	2,219	0.72	3,082	Not Read	Not Read
1993-94	877 (L) 542 (WH)	2/8/94-3/31/94	ORHY 46	5/26/94	Not Mapped	N/A	1,697	1.28	1,326	Not Read	Not Read
Avg.	1,113 (L) 853 (WH)		52				857[6]		1,001	711 / 639	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/90 with the start of the intensive seasonal flights (see Table 32 in allotment evaluation). WH actual use for 1989-90 was not included in the average because this use only represented one month for that year.

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunit C-4

Spruce Allotment

Key Area SP-17

Range Site: Coarse Gravelly Loam 6-8 (28B-75)
Key Species: EULA5 and ORHY
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (Adj./Unadj.)[4]	Key Spp. Frequency[5]
1986-87	1,880 (L)	4/1/86-5/7/86 12/22/86-3/31/87	EULA5 43	5/5/87	Not Mapped	N/A	2,405	0.61	3,943	Not Read	Not Read
1987-88	639 (L)	4/1/87-4/13/87 3/6/88-3/31/88	Not Read	N/A	Not Mapped	N/A		0.90		MID 31 1013 / 911	EULA5 47.5 ORHY 35.0
1988-89	678 (L)	4/1/88-4/27/88 3/9/89-3/31/89	EULA5 24	6/15/89	LIGHT	6/15/89	1,554	1.10	1,413	Not Read	Not Read
1989-90	765 (L) 95 (WH)	4/1/89-4/16/89 3/1/90-3/31/90	EULA5 57	5/30/90	Not Mapped	N/A	830	0.95	874	Not Read	Not Read
1990-91	1,689 (L) 1,403 (WH)	4/1/90-5/1/90 1/21/91-3/9/91	EULA5 ORHY 39	3/19/91	LIGHT	3/19/91	4,361	0.89	4,900	MID 42 315 / 280	EULA5 37.5- ORHY 39.5=
1991-92	392 (L) 629 (WH)	3/12/92-3/31/92	ORHY 50	5/8/92	Not Mapped	N/A	1,123	0.68	1,651	Not Read	Not Read
1992-93	1,986 (L) 838 (WH)	4/1/92-5/1/92 1/2/93-3/23/93	EULA5 64	4/22/93	HEAVY	4/22/93	2,427	0.72	3,371	Not Read	Not Read
1993-94	877 (L) 542 (WH)	2/8/94-3/31/94	ORHY 58	5/26/94	Not Mapped	N/A	1,346	1.28	1,052	Not Read	Not Read
Avg.	1,113 (L) 853 (WH)		48				1,341[6]		1,372	664 / 596	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/90 with the start of the intensive seasonal flights (see Table 32 in allotment evaluation). WH actual use for 1989-90 was not included in the average because this use only represented one month for that year.

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunits D-1,2,3

Spruce Allotment

No Key Area

Independence Valley Seeding

Period of Use: 5/1 - 6/30

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./unadj.)[4]	Key Spp. Frequency[4]
1986-87	733 (L)	6/13/86-7/13/86 10/2/86-12/31/86	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.61	Not Calc.	Not Read	Not Read
1987-88	729 (L)	6/25/87-7/18/87 10/1/87-11/16/87	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	Not Read	Not Read
1988-89	1,009 (L)	6/23/88-8/28/88 10/1/88-11/17/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	1.10	Not Calc.	Not Read	Not Read
1989-90	1,073 (L)	5/3/89-7/1/89 10/1/89-10/30/89	50 (UPM)	N/A	MODERATE	11/7/89	1,288	0.95	1,356	Not Read	Not Read
1990-91	1,154 (L)	6/4/90-7/13/90 10/1/90-10/20/90	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.89	Not Calc.	Not Read	Not Read
1991-92	1,048 (L) 0 (WH)	6/14/91-7/14/91 10/1/91-11/22/91	50 (UPM)	N/A	MODERATE	11/26/91	1,258	0.68	1,850	Not Read	Not Read
1992-93	1,346 (L) 0 (WH)	5/22/92-7/21/92 9/4/92-11/1/92	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.72	Not Calc.	Not Read	Not Read
1993-94	1,002 (L) 9 (WH)	6/19/93-8/9/93 9/11/93-11/8/93	Not Read	N/A	Not Mapped	N/A	Not Calc.	1.28	Not Calc.	Not Read	Not Read
Avg.	1,012 (L) 9 (WH)						1,273[5]				

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 10/31. Wild horse actual use begins 6/91 with the start of the intensive seasonal flights (see Table 34 in allotment evaluation). WH use is only incidental in this subunit.

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] There is no key area in this subunit.

[5] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit. Actual use from 4/1 - 10/31 and a 60% utilization objective level was used in calculating capacity on this subunit..

Subunit E-1

Spruce Allotment

Key Area SP-28

Range Site: Mountain Ridge 14+ (28B-38)
Key Species: AGSP and ARARN
Period of Use: 7/1 - 9/30

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (Adj./Unadj.)[4]	Key Spp. Frequency[5]
1986-87	1,665 (L)	5/10/86-11/8/86	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.61	Not Calc.	Not Read	Not Read
1987-88	1,334 (L)	3/31/87-4/20/87 5/16/87-11/10/87	Not Read	N/A	MODERATE	10/87	Not Calc.	0.90	Not Calc.	Not Read	Not Read
1988-89	917 (L)	3/14/88-4/18/88 4/23/88-6/11/88 7/2/88-9/30/88 10/4/88-11/19/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	1.10	Not Calc.	LATE 74 1178 / 1296	AGSP 29.5 ARARN 59.5
1989-90	810 (L)	5/9/89-9/30/89 10/4/89-11/29/89	50 (UPM)	11/7/89	MODERATE	11/7/89	810	0.95	853	Not Read	Not Read
1990-91	1,667 (L)	3/21/90-4/30/90 5/2/90-6/13/90 7/14/90-9/30/90 10/4/90-10/26/90	ARARN 47	10/3/90	MODERATE	10/3/90	1,773	0.89	1,992	Not Read	Not Read
1991-92	384 (L) 0 (WH)	6/21/91-9/30/91	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.68	Not Calc.	Not Read	Not Read
1992-93	192 (L) 38 (WH)	6/13/92-9/3/92	AGSP 19	10/22/92	SLIGHT	10/22/92	605	0.72	840	Not Read	Not Read
1993-94	278 (L) 11 (WH)	7/7/93-9/10/93	AGSP 22	10/5/93	LIGHT	10/5/93	657	1.28	513	LATE 69 352 / 451	AGSP 32.0= ARARN 49.5-
Avg.	906 (L) 25 (WH)		35				691[6]		735	765 / 874	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 10/31. Wild horse actual use begins 6/91 with the start of the intensive seasonal flights (see Table 34 in allotment evaluation).

[2] Period of use shown is only livestock use.

[3] CAF = Climatic Ajustment Factor (Montello Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit. Actual use from 4/1 - 10/31 and a 50% utilization objective level was used in calculating capacity on this subunit.

Subunit E-2

Spruce Allotment

Key Area SP-25

Range Site: Stony Mahogany Savanna (28B-32)
Key Species: AGSP and PUTR2
Period of Use: 7/1 - 9/30

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (Adj./Unadj.)[4]	Key Spp. Frequency[5]
1986-87	833 (L)	5/6/86-5/30/86 6/4/86-10/1/86 11/9/86-12/4/86	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.61	Not Calc.	Not Read	Not Read
1987-88	507 (L)	4/28/87-5/15/87 6/30/87-9/30/87 11/27/87	Not Read	N/A	MODERATE	10/87	Not Calc.	0.90	Not Calc.	Not Read	Not Read
1988-89	653 (L)	7/10/88-9/30/88 10/28/88-11/16/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	1.10	Not Calc.	MID 41 2299 / 2529	AGSP 34.0 PUTR2 33.5
1989-90	1,235 (L)	4/27/89-5/8/89 6/15/89-9/30/89 10/14/89-11/19/89	STIPA 26	10/16/89	MODERATE	11/7/89	2,375	0.95	2,500	Not Read	Not Read
1990-91	399 (L)	4/12/90-4/30/90 7/9/90-10/1/90	AGSP 41	10/3/90	MODERATE	10/3/90	487	0.89	547	Not Read	Not Read
1991-92	379 (L) 0 (WH)	7/15/91-9/30/91	AGSP 30	10/25/91	Not Mapped	N/A	632	0.68	929	Not Read	Not Read
1992-93	557 (L) 86 (WH)	6/17/92-9/3/92	AGSP 40	10/22/92	LIGHT	10/22/92	804	0.72	1,117	Not Read	Not Read
1993-94	1,029 (L) 66 (WH)	7/9/93-10/6/93	AGSP 6	10/5/93	SLIGHT	10/5/93	9,125	1.28	7,129	MID 47 1352 / 1730	AGSP 52.5+ PUTR2 32.0=
Avg.	699 (L) 76 (WH)		29				718[6]		1,023	1826 / 2130	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 10/31. Wild horse actual use begins 6/91 with the start of the intensive seasonal flights (see Table 34 in allotment evaluation).

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit. Actual use from 4/1 - 10/31 and a 50% utilization objective level was used in calculating capacity on this subunit.

Subunit E-2

Spruce Allotment

Key Area SP-26

Range Site: Calcareous Loam 14-16 (28B-88)
Key Species: AGSP and PUTR2
Period of Use: 7/1 - 9/30

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (Adj./Unadj.)[4]	Key Spp. Frequency[5]
1986-87	833 (L)	5/6/86-5/30/86 6/4/86-10/1/86 11/9/86-12/4/86	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.61	Not Calc.	Not Read	Not Read
1987-88	507 (L)	4/28/87-5/15/87 6/30/87-9/30/87 11/27/87	Not Read	N/A	MODERATE	10/87	Not Calc.	0.90	Not Calc.	Not Read	Not Read
1988-89	653 (L)	7/10/88-9/30/88 10/28/88-11/16/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	1.10	Not Calc.	MID 42 3996 / 4345	AGSP 22.5 PUTR2 37.5
1989-90	1,235 (L)	4/27/89-5/8/89 6/15/89-9/30/89 10/14/89-11/19/89	AGSP 37	10/16/89	MODERATE	11/7/89	1,669	0.95	1,757	Not Read	Not Read
1990-91	399 (L)	4/12/90-4/30/90 7/9/90-10/1/90	AGSP 43	10/3/90	MODERATE	10/3/90	464	0.89	521	Not Read	Not Read
1991-92	379 (L) 0 (WH)	7/15/91-9/30/91	AGSP 42	10/25/91	Not Mapped	N/A	451	0.68	663	Not Read	Not Read
1992-93	557 (L) 86 (WH)	6/17/92-9/3/92	AGSP 36	10/20/92	LIGHT	10/20/92	893	0.72	1,240	Not Read	Not Read
1993-94	1,029 (L) 66 (WH)	7/9/93-10/6/93	AGSP 42	10/5/93	MODERATE	10/5/93	1,304	1.28	1,019	MID 50 1155 / 1478	AGSP 19.0= PUTR2 35.5=
Avg.	699 (L) 76 (WH)		29				1,099[6]		1,130	2576 / 2912	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 10/31. Wild horse actual use begins 6/91 with the start of the intensive seasonal flights (see Table 34 in allotment evaluation).

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit. Actual use from 4/1 - 10/31 and a 50% utilization objective level was used in calculating capacity on this subunit.

Subunits E-3

Spruce Allotment

Key Area DW-2-T-04 (Wildlife Key Area)

Period of Use: 7/1 - 9/30

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./unadj.)[4]	Key Spp. Frequency[4]
1986-87	337 (L)	5/1/86-5/5/86 6/3/86-10/1/86 12/5/86	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.61	Not Calc.	Not Read	Not Read
1987-88	739 (L)	5/14/87-9/30/87 12/1/87-12/26/87	AGSP 56	11/10/87	MODERATE	10/87	660	0.90	733	Not Read	Not Read
1988-89	456 (L)	7/14/88-9/30/88	AGSP 7	10/28/88	Not Mapped	N/A	3,257	1.10	2,961	Not Read	Not Read
1989-90	742 (L)	6/18/89-9/30/89	AGSP 10	10/16/89	MODERATE	11/7/89	3,710	0.95	3,905	Not Read	Not Read
1990-91	778 (L)	7/14/90-10/15/90 3/11/91-3/31/91	Not Read	N/A	MODERATE	10/3/90	778	0.89	874	Not Read	Not Read
1991-92	341 (L) 70 (WH)	4/1/91-4/24/91 7/12/91-9/30/91	AGSP 16	10/25/91	Not Mapped	N/A	1,284	0.68	1,888	Not Read	Not Read
1992-93	0 (L) 133 (WH)		50% (UPM)	N/A	MODERATE	10/22/92	133	0.72	185	Not Read	Not Read
1993-94	0 (L) 110 (WH)		Not Read	N/A	HEAVY	10/5/93	79	1.28	62	Not Read	Not Read
Avg.	566 (L) 104 (WH)						660[5]				

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 10/31. Wild horse actual use begins 6/91 with the start of the intensive seasonal flights (see Table 34 in allotment evaluation).

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] There is no range key area in this subunit. However, there is a wildlife key area in this suubnit.

[5] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit. Actual use from 4/1 - 10/31 and a 50% utilization objective was used in calculating capacity on this subunit..

Subunit E-4

Spruce Allotment

Key Area SP-29

Range Site: Calcareous Mountain Ridge (28B-48)
Key Species: AGSP
Period of Use: 7/1 - 9/30

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (Adj./Unadj.)[4]	Key Spp. Frequency[5]
1986-87	432 (L)	7/4/86-10/1/86	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.61	Not Calc.	Not Read	Not Read
1987-88	192 (L)	7/19/87-9/30/87 12/27/88-2/29/88	50 (UPM)	10/87	MODERATE	10/87	192	0.90	213	Not Read	Not Read
1988-89	228 (L)	3/1/88-3/3/88 7/20/88-9/30-88	Not Read	N/A	Not Mapped	N/A	Not Calc.	1.10	Not Calc.	LATE 68 639 / 702	AGSP 73.5
1989-90	0 (L)		Not Read	N/A	Not Mapped	N/A	Not Calc.	0.95	Not Calc.	Not Read	Not Read
1990-91	105 (L)	9/12/90-10/15/90	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.89	Not Calc.	Not Read	Not Read
1991-92	0 (L) 210 (WH)		Not Read	N/A	Not Mapped	N/A	Not Calc.	0.68	Not Calc.	Not Read	Not Read
1992-93	429 (L) 21 (WH)	6/15/92-9/3/92	AGSP 78	10/22/92	HEAVY	10/22/92	288	0.72	400	Not Read	Not Read
1993-94	0 (L) 59 (WH)		Not Read	N/A	Not Mapped	N/A	Not Calc.	1.28	Not Calc.	MID 35 451 / 577	AGSP 62.5-
Avg.	277 (L) 97 (WH)		78				240[6]		307	545 / 640	

[1] Actual use is livestock (L) and wild horse (WH) use from 4/1 - 10/31. Wild horse actual use begins 6/91 with the start of the intensive seasonal flights (see Table 34 in allotment evaluation).

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[5] = No significant change + Significant increase - Significant decrease

[6] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit. Actual use from 4/1 - 10/31 and a 50% utilization objective was used in calculating capacity on this subunit.

Subunits F-1

Spruce Allotment
No Key Area
West Dolly Vardens

Period of Use: 4/1 - 10/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./unadj.)[4]	Key Spp. Frequency[4]
1986-87			Not Read	N/A	Not Mapped	N/A	Not Calc.	0.61	Not Calc.	Not Read	Not Read
1987-88			Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	Not Read	Not Read
1988-89			Not Read	N/A	Not Mapped	N/A	Not Calc.	1.10	Not Calc.	Not Read	Not Read
1989-90	0 (WH)		Not Read	N/A	Not Mapped	N/A	Not Calc.	0.95	Not Calc.	Not Read	Not Read
1990-91	5 (WH)		Not Read	N/A	Not Mapped	N/A	Not Calc.	0.89	Not Calc.	Not Read	Not Read
1991-92	16 (WH)		Not Read	N/A	Not Mapped	N/A	Not Calc.	0.68	Not Calc.	Not Read	Not Read
1992-93	168 (WH)		Not Read	N/A	Not Mapped	N/A	Not Calc.	0.72	Not Calc.	Not Read	Not Read
1993-94	177 (WH)		Not Read	N/A	Not Mapped	N/A	Not Calc.	1.28	Not Calc.	Not Read	Not Read
Avg.	91 (WH)										

[1] Actual use is wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/90 with the start of the intensive seasonal flights (see Table 32 in allotment evaluation). WH actual use for 1989-90 was not included in the average because this use only represented one month for that year. Carrying capacity in this subunit is 75 WH AUMs (11 head) from 4/1-10/31 (summer use area by WH). The carrying capacity is based on the capacity of the winter range. The number of WHs in this subunit is based on the % of horses that occur within the subunit as determined by census flights (see Appendix 3).

[2] There is no livestock use in this subunit.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] There is no range key area in this subunit.

Subunits F-2

Spruce Allotment

No Key Area
East Dolly Vardens

Period of Use: 4/1 - 10/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./unadj.)[4]	Key Spp. Frequency[4]
1986-87			Not Read	N/A	Not Mapped	N/A	Not Calc.	0.61	Not Calc.	Not Read	Not Read
1987-88			Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	Not Read	Not Read
1988-89			Not Read	N/A	Not Mapped	N/A	Not Calc.	1.10	Not Calc.	Not Read	Not Read
1989-90	2 (WH)		Not Read	N/A	Not Mapped	N/A	Not Calc.	0.95	Not Calc.	Not Read	Not Read
1990-91	159 (WH)		Not Read	N/A	Not Mapped	N/A	Not Calc.	0.89	Not Calc.	Not Read	Not Read
1991-92	764 (WH)		Not Read	N/A	Not Mapped	N/A	Not Calc.	0.68	Not Calc.	Not Read	Not Read
1992-93	617 (WH)		Not Read	N/A	Not Mapped	N/A	Not Calc.	0.72	Not Calc.	Not Read	Not Read
1993-94	415 (WH)		Not Read	N/A	Not Mapped	N/A	Not Calc.	1.28	Not Calc.	Not Read	Not Read
Avg.	489 (WH)										

[1] Actual use is wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/90 with the start of the intensive seasonal flights (see Table 32 in allotment evaluation). WH actual use for 1989-90 was not included in the average because this use only represented one month for that year. Carrying capacity in this subunit is 396 WH AUMs (56 head) from 4/1-10/31 (summer use area by WH). The carrying capacity is based on the capacity of the winter range. The number of WHs in this subunit is based on the % of horses that occur within the subunit as determined by census flights (see Appendix 3).

[2] There is no livestock use in this subunit.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] There is no range key area in this subunit.

Subunits G

Spruce Allotment

No Key Area

Bald Mountain Sheep Use Area

Period of Use: 5/1 - 9/11

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./unadj.)[4]	Key Spp. Frequency[4]
1986-87			Not Read	N/A	Not Mapped	N/A	Not Calc.	1.17	Not Calc.	Not Read	Not Read
1987-88			Not Read	N/A	Not Mapped	N/A	Not Calc.	0.88	Not Calc.	Not Read	Not Read
1988-89	0 (S) 118 (WH)		Not Read	N/A	Not Mapped	N/A	Not Calc.	0.63	Not Calc.	Not Read	Not Read
1989-90	1,081 (S) 816 (WH)	5/14/89-9/10/89	50 (UPM)	N/A	MODERATE	10/19/89	1,897	0.94	2,018	Not Read	Not Read
1990-91	921 (S) 816 (WH)	5/16/90-9/11/90	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.82	Not Calc.	Not Read	Not Read
1991-92	1,139 (S) 593 (WH)	5/2/91-9/24/91	50 (UPM)	N/A	MODERATE	11/7/91	1,732	0.61	2,839	Not Read	Not Read
1992-93	846 (S) 430 (WH)	5/18/92-9/6/92	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.75	Not Calc.	Not Read	Not Read
1993-94	984 (S) 519 (WH)	5/26/93-9/18/93	Not Read	N/A	Not Mapped	N/A	Not Calc.	1.42	Not Calc.	Not Read	Not Read
Avg.	994 (S) 996 (WH)		50				1,815[5]				

[1] Actual use is sheep (S) and wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/89 with the start of the intensive seasonal flights (see Table 31 in allotment evaluation). WH actual use for 1988-89 was not included in the average because this use only represented one month for that year.

[2] The period of use shown is only sheep use. There is no sheep use prior to 1988-89 because Paris did not start his sheep operation until 1989.

[3] CAF = Climatic Adjustment Factor (Ruby Lake Weather Station).

[4] There is no range key area in this subunit.

[5] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit. Actual use from 4/1 - 3/31 and a 50% utilization objective was used in calculating capacity on this subunit..

Subunit H

Spruce Allotment

Key Area SP-13

Range Site: Coarse Gravelly Loam 6-8 (28B-75)
Key Species: EULA5, ARSP5, ORHY, and SIHY
Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[2]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (Adj./Unadj.)[3]	Key Spp. Frequency[4]
1986-87	1,578 (L)	4/1/86-5/9/86 11/3/86-3/30/87	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.96	Not Calc.	Not Read	Not Read
1987-88	1,036 (L)	4/21/87-5/1/87 6/27/87-6/28/87 11/11/87-3/13/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.86	Not Calc.	MID 35 980 / 841	EULA5 40.0 ARSP5 54.5 ORHY 10.5 SIHY 28.5
1988-89	304 (L)	4/17/88-5/3/88 6/12/88-6/13/88 10/20/88-10/21/88	EULA5 41	6/12/89	MODERATE	6/12/89	408	0.63	648	Not Read	Not Read
1989-90	303 (L)	4/29/89-5/1/89 10/3/89-11/29/89 3/14/90-3/20/90	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	Not Read	Not Read
1990-91	481 (L)	4/26/90-5/1/90 10/27/90-10/28/90 3/6/91-3/31/91	ORHY 38	5/20/91	Not Mapped	N/A	696	0.70	994	MID 48 591 / 414	EULA5 37.5= ARSP5 38.0- ORHY 7.0= SIHY 6.5-
1991-92	992 (L)	4/1/91-5/2/91 6/21/91-9/30/91 2/29/92-3/31/92	EULA5 ORHY 68	5/8/92	Not Mapped	N/A	802	0.56	1,432	Not Read	Not Read
1992-93	582 (L)	4/1/92-4/21/92 10/29/92-11/12/92	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.80	Not Calc.	Not Read	Not Read
1993-94	528 (L)	12/1/93 2/23/94-3/31/94	Not Read	N/A	Not Mapped	N/A	Not Calc.	1.05	Not Calc.	Not Read	Not Read
Avg.	726 (L)		49				749[5]		1,213	786 / 628	

[1] Actual use is only livestock actual use from 4/1 - 3/31.

[2] CAF = Climatic Adjustment Factor (Wells Weather Station).

[3] Adj. = Production data adjusted to CAF. Unadj. = Production data unadjusted to CAF.

[4] = No significant change + Significant increase - Significant decrease

[5] The blocks that are highlighted indicate years that correlate. The average that is highlighted indicates the average for the key area used in determining the final carrying capacity for the subunit.

Subunits I

Spruce Allotment

No Key Area
Curtis Spring

Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./unadj.)[4]	Key Spp. Frequency[4]
1986-87	29 (L)	4/30/86 5/3/86 6/25/86 9/27/86 10/31/86	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.96	Not Calc.	Not Read	Not Read
1987-88	18 (L)	5/2/87 6/27/87-6/28/87 9/20/87-9/21/87	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.86	Not Calc.	Not Read	Not Read
1988-89	18 (L)	5/4/88 6/15/88 10/2/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.63	Not Calc.	Not Read	Not Read
1989-90	28 (L)	5/3/89 10/3/89 10/11/89	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	Not Read	Not Read
1990-91	22 (L)	5/2/90 6/14/90 10/2/90	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.70	Not Calc.	Not Read	Not Read
1991-92	14 (L)	5/3/91 7/8/91 11/19/91	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.56	Not Calc.	Not Read	Not Read
1992-93	33 (L)	4/22/92 10/28/92	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.80	Not Calc.	Not Read	Not Read
1993-94	37 (L)	5/21/93-5/22/93 6/3/93-6/4/93 12/1/93	Not Read	N/A	Not Mapped	N/A	Not Calc.	1.05	Not Calc.	Not Read	Not Read
Avg.	25 (L)										

[1] Actual use is livestock (L) use from 4/1 - 3/31. Carrying capacity in this subunit was based on average actual use. This subunit is used for trailing.

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Wells Weather Station).

[4] There is no range key area in this subunit.

Subunits J

Spruce Allotment

No Key Area
Goshute Mountains

Period of Use: 4/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./unadj.)[4]	Key Spp. Frequency[4]
1986-87			Not Read	N/A	Not Mapped	N/A	Not Calc.	0.61	Not Calc.	Not Read	Not Read
1987-88			Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	Not Read	Not Read
1988-89			Not Read	N/A	Not Mapped	N/A	Not Calc.	1.10	Not Calc.	Not Read	Not Read
1989-90	15 (WH)		Not Read	N/A	Not Mapped	N/A	Not Calc.	0.95	Not Calc.	Not Read	Not Read
1990-91	240 (WH)		Not Read	N/A	Not Mapped	N/A	Not Calc.	0.89	Not Calc.	Not Read	Not Read
1991-92	155 (WH)		Not Read	N/A	Not Mapped	N/A	Not Calc.	0.68	Not Calc.	Not Read	Not Read
1992-93	389 (WH)		Not Read	N/A	Not Mapped	N/A	Not Calc.	0.72	Not Calc.	Not Read	Not Read
1993-94	510 (WH)		Not Read	N/A	Not Mapped	N/A	Not Calc.	1.28	Not Calc.	Not Read	Not Read
Avg.	324 (WH)										

[1] Actual use is wild horse (WH) use from 4/1 - 3/31. Wild horse actual use begins 3/90 with the start of the intensive seasonal flights (see Table 33 in allotment evaluation). WH actual use for 1989-90 was not included in the average because this use only represented one month for that year. Carrying capacity in this subunit is 324 WH AUMs (27 head) from 4/1-3/31 (yearlong use by WH). The carrying capacity is based on average actual use (see Appendix 3).

[2] There is no livestock use in this subunit.

[3] CAF = Climatic Adjustment Factor (Montello Weather Station).

[4] There is no range key area in this subunit.

Subunits K-1

Spruce Allotment

No Key Area

North Valley Mountain

Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./unadj.)[4]	Key Spp. Frequency[4]
1986-87	45 (L)	4/1/86-4/2/86 4/29/86 6/25/86 9/27/86 11/1/86-11/2/86	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.96	Not Calc.	Not Read	Not Read
1987-88	21 (L)	5/2/87 6/27/87-6/28/87 9/20/87-9/21/87 11/4/87	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.86	Not Calc.	Not Read	Not Read
1988-89	37 (L)	5/4/88 6/14/88 10/19/88 11/21/88-11/22/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.63	Not Calc.	Not Read	Not Read
1989-90	36 (L)	5/2/89 6/14/89 10/12/89 11/30/89 3/13/90	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	Not Read	Not Read
1990-91	25 (L)	6/14/90 10/2/90 10/29/90	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.70	Not Calc.	Not Read	Not Read
1991-92	14 (L)	5/3/91 7/8/91 11/19/91	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.56	Not Calc.	Not Read	Not Read
1992-93	0 (L)		Not Read	N/A	Not Mapped	N/A	Not Calc.	0.80	Not Calc.	Not Read	Not Read
1993-94	14 (L)	5/20/93 6/2/93	Not Read	N/A	Not Mapped	N/A	Not Calc.	1.05	Not Calc.	Not Read	Not Read
Avg.	27 (L)										

[1] Actual use is livestock (L) use from 4/1 - 3/31. Carrying capacity in this subunit was based on average actual use. This subunit is used for trailing.

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Wells Weather Station).

[4] There is no range key area in this subunit.

Subunits K-2

Spruce Allotment

No Key Area
South Valley Mountain

Period of Use: 11/1 - 3/31

Year	Actual use (AUMs)[1]	Periods of Use[2]	KMA Util. (%)	Dates read	KMA Use-Pat. Results	Dates mapped	Pre-CAF cap.(AUMs)	CAF[3]	Post-CAF cap.(AUMs)	Ecological Stat.&Prod. (adj./unadj.)[4]	Key Spp. Frequency[4]
1986-87			Not Read	N/A	Not Mapped	N/A	Not Calc.	0.96	Not Calc.	Not Read	Not Read
1987-88			Not Read	N/A	Not Mapped	N/A	Not Calc.	0.86	Not Calc.	Not Read	Not Read
1988-89	7 (L)	12/23/88	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.63	Not Calc.	Not Read	Not Read
1989-90			Not Read	N/A	Not Mapped	N/A	Not Calc.	0.90	Not Calc.	Not Read	Not Read
1990-91	15 (L)	12/7/90	Not Read	N/A	Not Mapped	N/A	Not Calc.	0.70	Not Calc.	Not Read	Not Read
1991-92			Not Read	N/A	Not Mapped	N/A	Not Calc.	0.56	Not Calc.	Not Read	Not Read
1992-93			Not Read	N/A	Not Mapped	N/A	Not Calc.	0.80	Not Calc.	Not Read	Not Read
1993-94			Not Read	N/A	Not Mapped	N/A	Not Calc.	1.05	Not Calc.	Not Read	Not Read
Avg.	11 (L)										

[1] Actual use is livestock (L) use from 4/1 - 3/31. Carrying capacity in this subunit was based on average actual use. This subunit was historically used for trailing and currently only receives incidental livestock use on the lower areas.

[2] The period of use shown is only livestock use.

[3] CAF = Climatic Adjustment Factor (Wells Weather Station).

[4] There is no range key area in this subunit.

Appendix 2

Pre-Livestock Use by Wild Horses

Appendix 2

Pre-Livestock Use by Wild Horses

Key Areas showing HMA, subunit, key area number, season of use, and wild horse utilization prior to livestock turnout.

HMA	Subunit	KA	Season of use[1]	Date Read	% Use
Mav-Med	A-2	SP-05	Y	10/92	44%
				11/93	7%
		SP-06	Y	10/91	32%
				10/92	80%
				11/93	30%
		SP-24	Y	10/92	15%
				11/93	<5%
		SP-27	Y	10/92	34%
				11/93	27%
		SP-30	Y	10/92	70%
				11/93	27%

[1] W = winter use; Y = yearlong use

HMA	Subunit	KA	Season of use[1]	Date Read	% Use
Sp-Peq	B-1	SP-07	W	11/92	35%
				10/93	11%
		SP-08	W	11/92	17%
				10/93	21%
	C-1	SP-09	Y	11/92	5%
				10/93	2%
		SP-12	W	10/93	26%
		SP-23	W	10/93	7%

[1] W = winter use; Y = yearlong use

HMA	Subunit	KA	Season of use[1]	Date Read	% Use
Ant Val	B-2	SP-10	Y	11/90	13%
				10/91	33%
				11/92	44%
				10/93	27%
		SP-11	Y	11/90	23%
				10/91	10%
				11/92	32%
				10/93	5%
	C-1a	SP-20	Y	10/90	31%
				10/91	23%
				10/92	46%
				10/93	44%
	C-4	SP-14	Y	10/90	48%
				11/91	27%
				11/92	57%
				10/93	40%
		SP-15	Y	10/90	<5%
				11/91	<5%
				11/92	33%
				10/93	7%
		SP-16	Y	10/90	21%
				11/91	44%
				11/92	48%
				10/93	59%
		SP-17	Y	10/90	26%
				11/91	48%
				11/92	54%
				10/93	18%

[1] W = winter use; Y = yearlong use

HMA	Subunit	KA	Season of use[1]	Date Read	% Use
Goshute	C-3	SP-18	W	10/93	2%
		SP-19	W	10/93	0%
		SP-21	W	10/93	16%
		SP-22	W	10/93	6%

[1] W = winter use; Y = yearlong use

Appendix 3

Carrying Capacity Analysis and Livestock Conversions

Appendix 3

Carrying Capacity Analysis and Livestock Conversions

Introduction

The following is a summary of the carrying capacity calculations for livestock and wild horses by subunit, appropriate management level (AML), and conversions from sheep to cattle as established for the allotment as a whole. A summary of final numbers by allotment, should the allotment be divided into the Spruce and Valley Mountain Allotments, is also provided.

Carrying Capacity Analysis

Table 3-1 shows a summary of the calculations. The footnotes listed in the table are explained below.

1. Actual use was calculated annually from 4/1 to 3/31. These 12 months were used because 3/31 is the end of the dormant season. The critical growing season starts 4/1. However, it may start as early as 3/1 depending on the year.

   In the spring/summer/fall range (Subunits D-1-3, E-1-4, and G), actual use was calculated from 4/1 to 3/31. However, in calculating carrying capacity, only actual use from 4/1 to 10/31 was used because the utilization collected on the summer range represents use from the start of growth (4/1) through 10/31 (when cattle start moving in the winter range). The actual use (combined livestock and wild horse) for all of the subunits in Table 3-1 represents use from 4/1 to 3/31. The individual data summary matrices for Subunits D-1-3, and E-1-4, and G in Appendix 1 show actual use (combined livestock and wild horse) from 4/1-1031.

2. Livestock actual use AUMs are based on an average of 8 years from 1986 to 1994, except as follows:

   Subunit E-3 - No use was made by livestock from 3/1/92 to 3/31/94.
   Subunit E-4 - No use was made by livestock during the 1989, 1991, and 1993 grazing seasons.
   Subunit G - Average actual use was for 5 years (Paris started using the Bald Mountain Sheep Use Area in 1989).
   Subunit I, K-1, and K-2 - Actual use AUMs in these subunits reflect trail use only.

3. The number in parenthesis reflects the number of years averaged to determine wild horse actual use. Actual use for wild horses was calculated beginning with the 1989 seasonal flight census. This was the beginning of the intensive census flights that allowed for separation of wild horses by subunit to determine actual use by subunit. Using the census flight information, wild horse actual use was calculated for 12 months from 4/1 to 3/31 using wild horse numbers from census to census.

   Years for which census data was available for only a couple of months during the year or no wild horses were observed, were not included in the average. This is why some years show an average of 1, 2, and 3 years. Tables 31 through 34 in the allotment evaluation show when census flights were conducted and total number of wild horses were observed by year by HMA.

4. The carrying capacity on the Spruce Allotment was calculated using the following formula:

Winter Range:

$$\text{C.C.} = \frac{\text{Actual Use (Livestock and Wild Horses from 4/1-3/31) x KA Util. Obj. (55\%)}}{\text{Utilization recorded at the KA}}$$

Summer Range:

$$\text{C.C.} = \frac{\text{Actual Use (Livestock and Wild Horses from 4/1-10/31) x KA Util. Obj. (50\%)}}{\text{Utilization recorded at the KA}}$$

5. Carrying capacity was determined for each year in each key area that utilization data was collected. An average of those years that correlated were averaged for determination of the carrying capacity for each key area.

If more than one key area was within each subunit, an average of those key areas was used to determine the overall carrying capacity for the subunit. In some instances, when a key area had only 2 years of utilization data and one year correlated with the average of the other key areas within the subunit, that one year was used as part of the average for total carrying capacity for the subunit.

6. There were two methods used to determine wild horse AML. This depended on whether the area was within common use areas by livestock and wild horses on the winter range.

a. If areas were used in common by livestock and wild horses in the winter range, carrying capacity AUMs were based on 10% use by wild horses prior to livestock turnout. The 10% objective level was identified in the Well RMP Wild Horse Amendment.

To calculate carrying capacity AUMs in these winter ranges, the winter range became the limiting factor. The capacity of the winter range determined the capacity of the summer range.

Calculations were similar to total carrying capacity AUMs. The formula used to calculate wild horse AUMs is as follows:

$$\text{C.C.} = \frac{\text{Wild Horse Actual Use (4/1-10/31) x Pre-livestock Use KA Obj. (10\%)}}{\text{Pre-livestock use recorded at KA}}$$

This carrying capacity figure basically states that wild horse AUMs at the calculated capacity will ensure 10% use by wild horses prior to livestock turnout.

For those years where there was livestock use from 4/1 to 10/31, the pre-livestock use was proportioned based on percent of actual use by wild horses and livestock and then the new figures were run through the formula.

Carrying capacity was determined for each key area for each year for which pre-livestock use was collected. An average of those years that correlated were averaged to determine carrying capacity for wild horses from 4/1 to 10/31 in the same manner as total carrying capacity for each subunit was determined.

There is a time of transition between winter and summer when we are calculating pre-livestock use, i.e. we are considering summer use from 4/1 to 10/31 and winter from 11/1 to 3/31. However, wild horses are coming into the winter range prior to 11/1 since we are recording pre-livestock use. A cut-off date of 10/31 was used because season of use for the winter range by cattle is 11/1 - 3/31. If we limit wild horses to 10% prior to livestock turnout, use at the end of dormancy will not exceed objective use levels. The amount of pre-livestock use during the critical part of the growing season is very crucial to long-term survival of the plants.

b. If areas were not used in common by livestock and wild horses on the winter range or use by wild horses has been below the objective use level of 10% and wild horses make use of the area yearlong, total carrying capacity AUMs was based on a proportion of the percent of average actual use by wild horses and livestock.

In those areas where only wild horse use occurs, carrying capacity AUMs was based on average actual use.

7. Appropriate Management Level (AML) was determined for the Spruce Allotment using the calculated carrying capacities for the wild horses. Table 3-2 summarizes AML for the Spruce Allotment and compares how AML compares to initial herd size identified in the Wells RMP Wild Horse Amendment.

8. Average actual use is used as the carrying capacity for Subunit C-2. This subunit has been grazed in conjunction with the private seedings in Flowery Lake. Therefore, it has been difficult to determine how much use is actually made on the public portion. A technical recommendation to fence the private portion has been made in this allotment evaluation. Fencing the private land will allow for better data to establish a carrying capacity in the subunit.

The recommended livestock carrying capacity for Subunit C-2 is 492 AUMs (983 divided by 2). Because of the conjunctive use of private and public land, the recommended carrying capacity for C-2 will be limited to half of the carrying capacity. The permittee has traditionally licensed about half of his livestock when using Subunit C-2 to compensate for unfenced private land. However, actual use reports show total livestock numbers.

9. Average actual use AUMs is used as the carrying capacity for Subunits I, K-1, and K-2. Historically, these subunits have received trail use. These AUMs for trail use will continue to be authorized. Trail use in Subunit K-2 was historically by sheep. Also, as in the case of Subunit J, Subunit K-2 receives cattle use on the lower areas. However, this use is insignificant and the total cattle use has been averaged into the use in Subunit A-1. These trail AUMs in Subunit K-2 will be authorized to allow for that insignificant cattle use.

10. Subunits C-1a, C-1, B-1, and B-2 divide the use areas for the Von Sorensen and Ken Jones cattle operations. Von Sorensen operates in Subunits C-1a and C-1 while Ken Jones operates in B-1 and B-2. The permittees have attempted to rotate use within Steptoe Valley to prevent mixing of cattle. However, there is still drift in that area that results in inaccuracies in actual use reports. Subunits, C-1a, C-1, and B-2, all showed overall reductions or about equal use from actual use to carrying capacity calculations. Subunit B-1 was the only subunit to show a significant increase. Because of the inaccuracies in actual use and apparent drift problems, the carrying capacity for Subunit B-1 will be based on the average actual use.

Table 3-1
Actual Use and Carrying Capacity Summary for the Spruce Allotment

Subunit	Average Actual Use - 4/1/86-3/31/94[1]			Carrying Capacity[3]			AML[7]	Recommended Livestock CC (AUMs)
	Livestock AUMs[2]	Wild Horse AUMs[3]	Total Actual Use AUMs	Livestock AUMs[5]	Wild Horse AUMs[6]	Total CC AUMs		
A-1	1,168	99 (2)	1,267	1,355	Incidental	1,355	Incidental	1,355
A-2	900	1,248 (5)	2,148	1,318	357	1,675	30	1,318
B-1	1,035	6 (1)	1,041	1,989	Incidental	1,989	Incidental	1,035[10]
B-2	625	650 (4)	1,275	745	165	910	33	745
C-1a	491	250 (4)	741	771	60	831	12	771
C-1	1,602	142 (3)	1,744	886	352	1,238	71	886
C-2	992	46 (1)	1,038	983	55	1,038[8]	11	492[8]
C-3	1,663	232 (3)	1,895	1,697	231	1,928	19	1,697
C-4	1,113	853 (4)	1,966	942	110	1,052	22	942
D-1,2,3	1,283	11 (2)	1,294	1,273	Incidental	1,273	Incidental	1,273
E-1	979	42 (2)	1,021	649	42	691	6	649
E-2	822	112 (2)	934	803	106	909	15	803
E-3	626[2]	189 (3)	815	343	317	660	45	343
E-4	462[2]	173 (3)	635	127	113	240	16	127
F-1	0	91 (4)	91	0	75	75	11	0
F-2	0	489 (4)	489	0	396	396	56	0
G	994[2]	996 (5)	1,990	907	908	1,815	76	907
H	726	0	726	749	0	749	0	749
I	25[2]	0	25	25	0	25[9]	0	25
J	0	324 (4)	324	0	324	324	27	0
K-1	27[2]	0	27	27	0	27[9]	0	27
K-2	11[2]	0	11	11	0	11[9]	0	11
Total	**15,544**	**5,953**	**21,497**	**15,600**	**3,611**	**19,211**	**301**	**14,155**

Table 3-2
Summary of Initial Herd Size and AML for the Spruce Allotment

HMA	Initial Herd Size (RMP Amend.)[1]	Avg. % of Total WH in Spruce Allot.[2]	No. of WHs in Spruce Allot.[3]	Subunits in HMA	AML & Season of Use	How Determined:	Total AML[4]
Antelope Valley	240	48	115	B-2	33/Winter	Based on 10% utilization prior to livestock turnout.	67
				C-1a	12/Winter		
				C-4	22/Winter		
				F-1	11/Summer	Based on the carrying capacity of the winter range. Number of WHs in the subunits is based on % of WHs that occur within the subunits as determined by census flights.	
				F-2	56/Summer		
Goshute	160	19	30	C-3	19/Yearlong	Based on proportion of average actual use by livestock and WHs. Pre-livestock use in this subunit indicated very low utilization levels prior to livestock turnout.	46
				J	27/Yearlong	Based on average actual use.	
Maverick-Medicine	332	42.8	142	A-1	Incidental		106
				A-2	30/Yearlong	Based on 10% utilization prior to livestock turnout.	
				G	76/Yearlong	Based on proportion of average actual use by livestock and WHs.	
Spruce-Pequop	82	100	82	B-1 D-1,2,3	Incidental	No problems by WHs on the winter or summer ranges have been identified in the Spruce-Pequop HMA. The initial herd size identified in the Wells RMP Wild Horse Amendment will remain as the AML. Number of WHs in the subunits is based on % of WHs that occur within the subunits as determined by census flights.	82
				E-1	6/Summer		
				E-2	15/Summer		
				E-3	45/Summer		
				E-4	16/Summer		
				C-1	71/Winter	See discussion for summer range.	
				C-2	11/Winter		
Totals	814	-	369				301

[1] This column represents initial herd size for the Wells Resource Area.
[2] The average percent of total WHs in the Spruce Allotment is based on Tables 31 through 34 in the Spruce Allotment Evalutaion.
[3] Based on initial herd size and census data, this column represents the number of wild horses that should be within the Spruce Allotment.
[4] This column represents AML for the Spruce Allotment by HMA.

Livestock Conversions

Table 3-3 shows a summary of the calculated carrying capacity by operator and subunit.

Table 3-3. Summary of Calculated Capacities by Allotment.

Operator	Subunit	Carrying Capacity
Kenneth Jones Winter Operation - Cattle (11/1-3/31)	A-1	1,355
	A-2	1,318
	B-1	1,035
	B-2	745
	K-2	11
Total for Kenneth Jones		**4,464**
Bertrand Paris and Sons Sheep Operation (5/1-9/11)	G	907
Total Bertrand Paris and Sons		**907**
Von L. and Marian Sorensen Secret Pass Herd - Cattle Winter Operation (11/1-3/31)	C-1a	771
	C-1	886
	H	749
	K-1	27
	I	25
Total for Secret Pass Herd		**2,458**
Von L. and Marian Sorensen Spruce Mountain Herd - Cattle Winter (11/1-3/31)	C-2	492
	C-3	1,697
	C-4	942
Total for Spruce Mountain Herd - Winter		**3,131**
Von L. and Marian Sorensen Spruce Mountain Herd - Cattle Spring/Summer/Fall (5/1-10/31)	D-1,2,3	1,273
	E-1	649
	E-2	803
	E-3	343
	E-4	127
Total for Spruce Mountain Herd - Summer		**3,195**
Total All Operators		**14,155**

Table 3-4 shows how the total preference (sheep AUMs) would be converted to cattle AUMs as calculated in this allotment evaluation. A technical recommendation was made in this allotment evaluation to divide the Spruce Allotment. Should the allotment be divided, Table 3-4 also shows the preference by operator within the allotment.

Table 3-4. Summary of Pre- and Post-Evaluation Grazing Preference.

Permittee	Pre-Evaluation			Post-Evaluation		
	Active Pref. (Sheep)	Susp. (Sheep)	Total Pref. (Sheep)	Active Pref. (CA/SH)[1]	Susp. (Sheep)	Total Pref. (CA/SH)[1]
Valley Mountain Allotment						
Kenneth Jones	12,117	125	12,242	4,464	0	4,464
Bertrand Paris and Sons	1,320	0	1,320	907	413	1,320
Spruce Allotment						
Von L. and Marian Sorensen	22,128	395	22,523	8,784	0	8.784
Total	**35,565**	**520**	**36,085**	**14,155**	**413**	**14,568**

[1] All of the preference for Kenneth Jones and Von L. and Marian Sorensen was converted to cattle (CA). Bertrand Paris and Sons will continue running sheep (SH).

Appendix 4

Grazing System Options and Proposed Range Improvements for the Spruce and Valley Mountain Allotments

Appendix 4

Grazing System Options and Proposed Range Improvements for the Spruce and Valley Mountain Allotments

A. Introduction

Through this evaluation process, it was determined that multiple use objectives for the Spruce and Valley Mountain Allotments are not being attained, therefore, changes in current livestock management practices are needed. There are several alternatives that could be considered for grazing systems on these allotments. This appendix discusses the proposed grazing systems by allotment and permittee.

Three grazing system options are outlined below for winter cattle grazing on the Spruce and Valley Mountain Allotments. The three options are as follows:

1. A grazing system with no proposed seedings, use on the salt-desert shrub communities (native winter range) from 11/1-3/31 with maximum livestock numbers and maximum use on the winter range, and proposed fencing and water projects to improve livestock management.

2. A grazing system with proposed seedings to provide spring forage (after 4/1), use on the salt-desert shrub communities from 11/1-3/31 with reduced livestock numbers and reduced use on the winter range, and proposed fencing and water projects to improve livestock management.

3. A grazing system with proposed seedings to provide spring forage (after 4/1), use on the salt-desert shrub communities from 11/1-3/31 with maximum livestock numbers and maximum use on the winter range, and proposed fencing and water projects to improve livestock management.

In all instances, cattle must be removed from the winter range by 3/31. As per the analysis of the available data in this allotment evaluation, it has been determined that changes in the salt-desert shrub communities are mainly caused by variations in climate and selective removal of plant parts by grazing animals.

Long-term studies at the Desert Experimental Range in southwestern Utah have shown that heavy grazing seriously injures or kills desirable forage species, whereas moderate grazing allows substantial increases in desirable species. In addition, desirable species are damaged by grazing in the spring during the critical season of plant growth. Therefore, a wise management policy for grazing salt-desert shrub communities includes moderate grazing during winter dormancy and removal of livestock before the period of active physiological growth (generally 4/1 in this area).

Without the development of seedings, as described in Option 1, it would be the permittees responsibility to find a place for livestock after 3/31. Kenneth Jones would need a place for livestock from 4/1 through 5/15 and the Secret Pass Herd would need a place for livestock from 4/1-5/31.

The development of the proposed seedings in Option 2 would not only provide spring forage for livestock, but also reduce use on the native winter range (salt-desert shrub communities).

The development of the proposed seedings in Option 3 would also provide spring forage for livestock. However, under this option, maximum use of the native winter range would be allowed.

Seedings, as an option, are only being considered for the Secret Pass Herd in the Spruce Allotment and the Kenneth Jones winter cattle grazing operation in the Valley Mountain Allotment. The existing seeding in Independence Valley has been determined to provide sufficient spring and fall forage for the Spruce Mountain Herd. However, approximately 400 acres of seeding are proposed in Independence Valley as a result of a wildfire in 1985. The burned area did not respond and currently the area is comprised of halogeton and cheatgrass. Seeding this area would reduce the presence of halogeton and cheatgrass. Refer to the proposed range improvements section of this appendix for total proposed acres of seeding through this allotment evaluation.

An Option 4 is also presented for the Secret Pass Herd and Ken Jones winter grazing operation. This option outlines a grazing system that could be used in the interim should either Options 2 or 3 be selected.

Whether the decision is made to develop or not develop seedings, interior fencing and additional stockwater facilities are necessary to ensure proper livestock distribution and control. Refer to the section in this appendix on proposed range improvement projects for a summary of proposed acres of seeding, interior fencing, and stockwater facilities.

All grazing system options are designed to:

a. Improve the ecological status and trend of the salt-desert shrub communities in the winter range by eliminating cattle use during the critical growth period which begins around 4/1.

b. Improve or maintain the ecological status and trend on the summer range on Spruce Mountain by increasing spring and fall use on the existing seeding in Independence Valley, allowing for deferment of summer cattle use on Spruce Mountain until 7/1 annually.

c. Improve crucial deer winter range in the Boone Springs Area by establishing a rest rotation grazing system with cattle to decrease use of and improve age class of bitterbrush.

d. Improve seasonal antelope habitats by eliminating use during the crucial growing season allowing for increased forage diversity.

e. Improve cattle utilization patterns on the salt-desert shrub winter range by establishing a deferred rotation grazing system and utilizing stockwater facilities to govern use areas. All the stockwater facilities identified in the grazing systems within each subunit will be operable when livestock are scheduled to be in the subunit to ensure optimum livestock distribution.

f. Establish maximum allowable AUMs by subunit.

B. Grazing System Options

1. Valley Mountain Allotment

a. Ken Jones Winter Cattle Operation

Option 1. Winter Cattle Operation - No Proposed Seedings
The grazing system outlined in Table 4-1 allows for livestock grazing use from 11/1 to 3/31 annually with a maximum of 899 head of cattle and 4,464 AUMs annually. No seedings would be proposed under this option.

Table 4-1. Option 1 - Grazing system for Kenneth Jones winter cattle operation (no proposed seedings).

Subunit	Maximum AUMs Allowed	Stockwater Facilities to be used:	1996	1997	1998
A-1 K-2	1,366	Butte Valley Road Well Little Ruby Well Murphy Well Christiansen Well	12/16 - 1/24 3/26 - 3/31	2/14 - 2/28 3/1 - 3/31	Repeat Cycle
A-2	1,318	Frenchy Well Quilici Spring (private) Basque Well Medicine Spring (private) Ruby Wash Well	11/1 - 12/15	11/1 - 12/15	
B-1	1,035	South Spruce Well Gulf Well	2/19 - 3/25	1/10 - 2/13	
B-2	745	East Railroad Well Cordano Well	1/25 - 2/18	12/16 - 1/9	
Total	4,464				

As per this option, all livestock must be off of public lands within the Valley Mountain Allotment by 3/31. Under this option, the permittee is responsible for finding a location to place cattle after 3/31. The permittee currently grazes cattle in an adjacent BLM allotment (Big Meadows). However, as per the Final Multiple Use Decision for the Big Meadows Allotment signed January 8, 1991, turnout can vary from 4/16 - 5/15, depending on forage conditions and the permittee's logistical needs. Therefore, the permittee would need to find a location for his cattle for approximately 2-4 weeks in the spring.

This grazing system option allows for rotation of calving on the east and west sides of Highway 93. This option places another constraint on the permittee in that calving is done in March annually. By having to move cattle off by 3/31, extra stress is being placed on the animals. When calving occurs on the east side of Highway 93, (Subunits B-1 and B-2), cows and calves are having to travel long distances too soon after calving.

Option 2. Winter Cattle Operation - Proposed Seedings - Reduced Use on Native
The grazing system outlined in Table 4-2 allows for livestock grazing use from 11/1 to 5/15 annually with a maximum of 693 head of cattle and 4,464 AUMs. Under this option, approximately 6,150 acres of seeding would be developed.

Table 4-2. Option 2 - Grazing system for Kenneth Jones winter cattle operation (with proposed seedings and reduced use on the native).

Subunit	Maximum AUMs Allowed	Stockwater Facilities to be used:	1996	1997	1998
A-1 K-2	1,066	Butte Valley Road Well Little Ruby Well Murphy Well Christiansen Well	12/14 - 1/29	2/13 - 3/31	Repeat Cycle
A-2	997	Frenchy Well Quilici Spring (private) Basque Well Medicine Spring (private) Ruby Wash Well	11/1 - 12/13	11/1 - 12/13	
B-1	791	South Spruce Well Gulf Well	2/25 - 3/31	1/9 - 2/12	
B-2	585	East Railroad Well Cordano Well	1/30 - 2/24	12/14 - 1/8	
Proposed Seeding	1,025	Proposed water development	4/1 - 5/15	REST	
Proposed Seeding		Liza Jane Well	REST	4/1 - 5/15	
Total	4,464				

This grazing system option also allows for rotation of calving on the east and west sides of Highway 93. This system, however, allows for spring use on the proposed seedings from 4/1 - 5/15 annually. Cattle would use half of the seeded area one year, resting the other half in order that "old feed" will be available for early spring use the next year. Cattle would be allowed to enter the seeded area as early as 3/15.

With this option, not only would livestock numbers be reduced, but also livestock use on the salt-desert shrub winter range would be reduced. The reduced use on the native range would allow for mulitple use objectives to be attained sooner and allow for improved plant vigor. The drought that has affected this area since about 1987 has resulted in poor plant vigor and reduced species diversity (Professional Judgement).

Option 3. Winter Cattle Operation - Proposed Seedings - Maximum Use on Native
The grazing system outlined in Table 4-3 allows for livestock grazing use from 11/1 to 5/15 annually with a maximum of 899 head of cattle and 5,794 AUMs. Under this option, approximately 7,980 acres of seeding would be developed.

Table 4-3. Option 3 - Grazing system for Kenneth Jones winter cattle operation (with proposed seedings and maximum use on the native).

Subunit	Maximum AUMs Allowed	Stockwater Facilities to be used:	1996	1997	1998
A-1 K-2	1,366	Butte Valley Road Well Little Ruby Well Murphy Well Christiansen Well	12/16 - 1/30	2/14 - 3/31	Repeat Cycle
A-2	1,318	Frenchy Well Quilici Spring (private) Basque Well Medicine Spring (private) Ruby Wash Well	11/1 - 12/15	11/1 - 12/15	
B-1	1,035	South Spruce Well Gulf Well	2/25 - 3/31	1/10 - 2/13	
B-2	745	East Railroad Well Cordano Well	1/31 - 2/24	12/16 - 1/9	
Proposed Seeding	1,330	Proposed water development	4/1 - 5/15	REST	
Proposed Seeding		Liza Jane Well	REST	4/1 - 5/15	
Total	5,794				

This grazing system option also allows for rotation of calving on the east and west sides of Highway 93. The proposed seedings would also provide spring forage from 4/1 - 5/15 annually with half of the seeding rested annually in order that "old feed" be available for early spring use the next year. Cattle would also be allowed to enter the seeded area as early as 3/15.

The major difference between Options 2 and 3 is that Option 3 allows for maximum use of winter range with maximum livestock numbers. The development of the seedings would allow for livestock use from the recommended carrying capacity level of 4,464 AUMs to 5,794 AUMs.

Option 4. Winter Grazing Operation - Interim Schedule
The grazing system outlined in Table 4-4 allows for livestock grazing use from 11/1 - 5/15 with a maximum of 693 head of cattle and 4,464 AUMs. This grazing system is an interim schedule that could be used should either Options 2 or 3 be selected.

Table 4-4. Option 4 - Grazing system for Kenneth Jones winter cattle operation (interim schedule).

Subunit	Maximum AUMs Allowed	Stockwater Facilities to be used:	1996	1997	1998
A-1 K-2	1,366	Butte Valley Road Well Little Ruby Well Murphy Well Christiansen Well	12/29 - 2/18 5/8 - 5/15	3/17 - 5/15	Repeat Cycle
A-2	1,318	Frenchy Well Quilici Spring (private) Basque Well Medicine Spring (private) Ruby Wash Well	11/1 - 12/28	11/1 - 12/28	
B-1	1,035	South Spruce Well Gulf Well	3/24 - 5/7	1/31 - 3/16	
B-2	745	East Railroad Well Cordano Well	2/19 - 3/23	12/29 - 1/30	
Total	4,464				

This grazing system would allow for spring use by cattle from 4/1 - 5/15 until the seedings were developed. Upon developing the seedings there is a two year rest period to allow the seeding to establish. During the interim, use on the native salt-desert shrub winter range would be alternated between North Ruby Valley (Subunit A-1) and South Steptoe Valley (Subunit B-1) and Currie Canyon (Subunit B-2). With this interim schedule, livestock numbers would be reduced to ensure use is within the carrying capacity of the subunits.

b. Bertrand Paris and Sons Sheep Grazing Summer Operation

Option 1. Bertrand Paris and Sons Sheep Grazing Operation
Only one option is provided for the Paris sheep operation. The grazing system outlined in Table 4-5 allows for livestock grazing use from 5/1 to 9/11 annually with a maximum of 1030 head of sheep and 907 AUMs.

Table 4-5. Grazing schedule for Bertrand Paris and Sons Sheep Operation (Bald Mountain Sheep Use Area)

Subunit	Maximum AUMs Allowed	Stockwater Facilities to be used:	Annual Use
G	907	Mud Springs Bald Mtn. Sheep Troughs	5/1 - 9/11

Use pattern maps indicate the sheep use is concentrated on the eastern portion of the Bald Mountain Sheep Use Area. Currently water is hauled to two locations when snow is no longer available for water. At least one additional water hauling area needs to be located. The above system identifies maximum use for the eastern portion of the sheep use area.

If the permittee is willing to haul water or a water is developed in the western portion of the sheep use area, additional use by sheep would be available during the same period of use as the eastern portion. One of the problems associated with water hauling is accessibility for a water tender.

2. Spruce Mountain Allotment

a. Von L. and Marian Sorensen Winter Cattle Operation - Secret Pass Herd

Option 1. Secret Pass Herd - No Proposed Seedings
The grazing system outlined in Table 4-6 allows for livestock grazing use from 11/1 to 3/31 annually with a maximum of 495 head of cattle and 2,458 AUMs.

Table 4-6. Option 1 - Grazing schedule for Von L. and Marian Sorensen Winter Cattle Operation - Secret Pass Herd (no proposed seedings).

Subunit	Maximum AUMs Allowed	Stockwater Facilities to be used:	1996	1997	1998
I K-1 H	801	Government Spring Curtis Spring Deep Well Middle Well South Well Spruce Well	11/1 - 12/12 3/25 - 3/31	11/1 - 11/15 2/25 - 3/31	Repeat Cycle
C-1	886 This area is for trailing between Clover and Steptoe Valleys.	Gravel Pit Well East Highway Well	12/13 - 12/19 3/18 - 3/24	11/16 - 11/22 2/18 - 2/24	
C-1		Tom Eagar Well Lower Spruce Well Crane Well Warehouse Well	1/30 - 3/17	1/9 - 2/17	
C-1a	771	Goshute Well Old Mizpah Well Mizpah Point Well	12/20 - 1/29	11/23 - 1/8	
Total	2,458				

The rotation system for use in Steptoe Valley is designed to prevent mixing of cattle from this herd with the Spruce Mountain Herd. During even number years, more use is made early in the winter in Clover Valley (Subunit H) while in odd number years, more use is made in Clover Valley later in the winter. The use is rotated with use in North Steptoe Valley (Subunit C-1) and Mizpah Point (Subunit C-1a).

Subunit I (Curtis Spring) and Subunit K-1 (North Valley Mountain) are spring and fall trail areas.

As per this option, all livestock must be off the public lands within the allotment by 3/31. Under this option, the permittee would be responsible for finding a location to place cattle after 3/31. Currently the permittee moves off of the Spruce Allotment

around mid May. Movement off of the allotment is dependent on snow conditions and the amount of water in the meadows in North Ruby Valley (Secret Pass), where private lands area located. Therefore, the permittee would need to find a location for his cattle for approximately 1½ - 2 months in the spring.

Option 2. Secret Pass Herd - Proposed Seedings - Reduced Use on Native
The grazing system outlined in Table 4-7 allows for livestock grazing use from 11/1 to 5/31 annually with a maximum of 353 head of cattle and 2,458 AUMs. Under this option, approximately 4,248 acres of seeding would be developed.

Table 4-7. Option 2 - Grazing schedule for Von L. and Marian Sorensen Winter Cattle Operation - Secret Pass Herd (with proposed seedings and reduced use on the native).

Subunit	Maximum AUMs Allowed	Stockwater Facilities to be used:	1996	1997	1998
I K-1 H	577	Government Spring Curtis Spring Deep Well Middle Well	11/1 - 12/19	11/1 - 11/15 2/25 - 3/31	Repeat Cycle
C-1	630 This area is for trailing between Clover and Steptoe Valleys.	Gravel Pit Well East Highway Well	12/21 - 12/27 3/25 - 3/31	11/16 - 11/22 2/18 - 2/24	
C-1		Tom Eagar Well Lower Spruce Well Crane Well Warehouse Well	2/13 - 3/24	1/9 - 2/17	
C-1a	543	Goshute Well Old Mizpah Well Mizpah Point Well	12/28 - 2/12	11/23 - 1/8	
Proposed Seeding	708	Gravel Pits Well East Highway Well	4/1 - 5/31	REST	
Proposed Seeding		Spruce Well South Well	REST	4/1 - 5/31	
Total	**2,458**				

This grazing system option allows for winter use between Clover and Steptoe Valleys with spring use on the proposed seedings from 4/1 - 5/31 annually. Cattle would also be allowed to enter the seeded area as early as 3/15.

As with Option 2 for Ken Jones winter grazing operation, not only would livestock numbers be reduced, but also livestock use on the salt-desert shrub winter range would be reduced. The reduced use on the native range would allow for mulitple use

objectives to be attained sooner and allow for improved plant vigor. The drought that has affected this area since about 1987 has resulted in poor plant vigor and reduced species diversity (Professional Judgement).

Option 3. Secret Pass Herd - Proposed Seedings - Maximum Use on Native
The grazing system outlined in Table 4-8 allows for livestock grazing use from 11/1 to 5/31 annually with a maximum of 495 head of cattle and 3,451 AUMs. Under this option, approximately 5,958 acres of seeding would be developed.

Table 4-8. Option 3 - Grazing schedule for Von L. and Marian Sorensen Winter Cattle Operation - Secret Pass Herd (with proposed seedings and maximum use on the native).

Subunit	Maximum AUMs Allowed	Stockwater Facilities to be used:	1996	1997	1998
I K-1 H	801	Government Spring Curtis Spring Deep Well Middle Well	11/1 - 12/19	11/1 - 11/15 2/25 - 3/31	Repeat Cycle
C-1	886 This area is for trailing between Clover and Steptoe Valleys.	Gravel Pit Well East Highway Well	12/21 - 12/27 3/25 - 3/31	11/16 - 11/22 2/18 - 2/24	
C-1		Tom Eagar Well Lower Spruce Well Crane Well Warehouse Well	2/13 - 3/24	1/9 - 2/17	
C-1a	771	Goshute Well Old Mizpah Well Mizpah Point Well	12/28 - 2/12	11/23 - 1/8	
Proposed Seeding	993	Gravel Pits Well East Highway Well	4/1 - 5/31	REST	
Proposed Seeding		Spruce Well South Well	REST	4/1 - 5/31	
Total	**3,451**				

This grazing system option allows for winter use between Clover and Steptoe Valleys with spring use on the proposed seedings from 4/1 - 5/31 annually. As with the Von Sorensen winter grazing operation (option 2), cattle would graze only half of the seeded area annually and maximum livestock numbers and maximum livestock use on the salt-desert shrub winter range would be allowed. Cattle would also be allowed to enter the seeded area as early as 3/15. The development of the seedings would allow for livestock use from the recommended carrying capacity level of 2,458 AUMs to 3,451 AUMs

Option 4. Secret Pass Herd - Interim Schedule

The grazing system outlined in Table 4-9 allows for livestock grazing use from 11/1 - 5/31 with a maximum of 353 head of cattle and 2,458 AUMs. This grazing system is an interim schedule that could be used should either Options 2 or 3 be selected.

Table 4-9. Option 4 - Grazing schedule for Von L. and Marian Sorensen Winter Cattle Operation - Secret Pass Herd (interim schedule).

Subunit	Maximum AUMs Allowed	Stockwater Facilities to be used:	1996	1997	1998
I K-1 H	801	Government Spring Curtis Spring Deep Well Middle Well South Well Spruce Well	11/1 - 1/1 5/25 - 5/31	11/1 - 11/15 4/6 - 5/31	Repeat Cycle
C-1	886 This area is for trailing between Clover and Steptoe Valleys.	Gravel Pit Well East Highway Well	1/2 - 1/8 5/18 - 5/24	11/16 - 11/22 3/30 - 4/5	
C-1		Tom Eagar Well Lower Spruce Well Crane Well Warehouse Well	3/16 - 5/17	1/27 - 3/29	
C-1a	771	Goshute Well Old Mizpah Well Mizpah Point Well	1/9 - 3/15	11/23 - 1/26	
Total	**2,458**				

This grazing system would allow for spring use by cattle from 4/1 - 5/31 until the seedings were developed. Upon developing the seedings there is a two year rest period to allow the seeding to establish. During the interim, use on the native salt-desert shrub winter range would be alternated between Clover Valley (Subunit H) and North Steptoe Valley (Subunit C-1) and Mizpah Point (Subunit C-1a). With this interim schedule, livestock numbers would be reduced to ensure use is within the carrying capacity of the subunits.

b. Von L. and Marian Sorensen Yearlong Cattle Operation - Spruce Mountain Herd

Option 1. Spruce Mountain Herd
Only one option is provided for the Spruce Mountain Herd Operation. The grazing system is outlined in Table 4-10 below. Because of the differences in capacities between the spring/summer/fall range and the winter range, the maximum number of livestock that can graze from 5/1 to 10/31 can vary annually. In even number years, when Subunit E-3 (Boone Springs) is rested, the maximum number of AUMs allowed on the spring/summer/fall range is 2,852 with a maximum of 470 head of cattle.

In odd number years when Subunit E-4 (Ninemile Canyon) is rested, the maximum number of AUMs allowed on the spring/summer/fall range is 3,068 with a maximum of 500 head of cattle.

This grazing system allows for spring and fall use on the seedings in Independence Valley (Subunits D-1 and D-2). Use in Jasper Well (Subunit D-3) is mostly trail use between winter and spring/fall areas.

The seedings are scheduled for use in October. However, cattle may start drifting down from the summer range (Spruce Mountain) as early as 9/1. By the first of October, all livestock should be off of the summer range. After calves are shipped, cattle move into the winter range, which is about 11/1. On odd number years, Subunit D-1 is scheduled for fall use. However, during shipping, use of Feedlot Well (in Subunit D-2) will be allowed as the corrals nearby are used for shipping. Without any cross fencing within the seeded area, livestock use will continue to be controlled by water. Cross fencing is proposed in the section on proposed range improvement projects in this appendix.

The winter use area (Subunits C-2, 3, & 4) in Goshute and Antelope Valleys is from 11/1 to 3/31 annually with a maximum of 630 head of cattle and 3,131 AUMs. On even number years, cattle will rotate in counter clockwise direction (C-2, C-4, C-4). On odd number years, cattle will rotate in a clockwise direction (C-3, C-4, C-2).

Crane Well, Lower Spruce Well, Warehouse Well and Goshute Well will be used for trailing purposes only when cattle are moving from C-4 to C-2 (odd number years). The primary use of this wells is by the Secret Pass Herd.

Fencing of the private land in Flowery Lake to control livestock on the private land will allow for better data on the public land in Subunit C-2 to calculate a more accurate carrying capacity.

Table 4-10. Grazing schedule for Von L. and Marian Sorensen Yearlong Cattle Operation - Spruce Mountain Herd

Subunit	Maximum AUMs Allowed	Stockwater Facilities to be used:	1996	1997	1998
Spring/Summer/Fall Range (4/1 - 10/31)					Repeat Cycle
Private Seedings - Flowery Lake			4/1 - 4/30	4/1 - 4/30	
D-1	1,273	East Spruce Well Latham Spring Pipeline	5/8 - 6/30	10/1 - 10/24	
D-2		Ninemile Well Feedlot Well	10/1 - 10/24	5/8 - 6/30	
D-3		Jasper Well	5/1 - 5/7 10/25 - 10/31	5/1 - 5/7 10/25 - 10/31	
E-1	649	All	7/1 - 9/30	7/1 - 9/30	
E-2	803	All	7/1 - 9/30	7/1 - 9/30	
E-3	343	All	REST	7/1 - 9/30	
E-4	127	All	7/1 - 9/30	REST	
Total	**3,195**		**2,852**	**3,068**	
Winter Range (11/1 - 3/31)					
C-2	492	Windmill Well (private) Warehouse Well Crane Well Lower Spruce Well Goshute Well	11/1 - 11/24	3/8 - 3/31	
C-3	1,697	Shafter Well No. 3 Basque Well Black Point Wells Itcaina Black Point Well	1/9 - 3/31	11/1 - 1/21	
C-4	942	Antelope Well Dolly Varden Well Dolly Varden Spring Well	11/25 - 1/8	1/22 - 3/7	
Total	**3,131**				
Total Spruce Mtn. Herd	**6,326**				

B. Proposed Range Improvement Projects

1. Acres of Proposed Seeding

The amount of acres of proposed seeding is based on the capacity of the winter range and is summarized in Tables 4-11 and 4-12 below.

Table 4-11 shows the amount of seeding required as per the grazing systems described in Option 2 for Ken Jones and the Secret Pass Herd and Option 1 for the Spruce Mountain Herd. Under this proposal, development of the seedings would result in reduced livestock numbers and reduced use on the native salt-desert shrub communities to help attain multiple use objectives sooner and allow for improved plant vigor (Professional Judgment).

Table 4-11. Acres of Proposed Seeding on the Spruce and Valley Mountain Allotments (reduced use on the native).

Allotment/Herd	# Lvsk.	Pd. of Use	Forage Demand (AUMs)	Seeding Required (Acres)[1]	Total Seeding Required to Rest Half (Acres)[2]
Valley Mountain/ Ken Jones Winter	693 Cattle	4/1 - 5/15	1,025	3,075	6,150
Spruce Allotment/ Secret Pass Herd	353 Cattle	4/1 - 5/31	708	2,124	4,248
Spruce Allotment/ Spruce Mtn. Herd					400[3]
Total			**1,733**		**10,798**

[1] Estimated acres for seeding is based on an assumed carrying capacity of 3 acres/AUM.

[2] Acreage is doubled to ensure half of the seeded area can be rested annually so that "old feed" will be available for early spring use the next year.

[3] Proposed seeding in Subunit D-1 (West Independence Valley) as a result of a wildfire in 1985.

Table 4-12 shows the amount of seeding required as per the grazing systems described in Option 3 for Ken Jones and the Secret Pass Herd and Option 1 for the Spruce Mountain Herd. Under this proposal, development of the seedings would allow for maximum livestock numbers and maximum use on the native salt-desert shrub communities.

Table 4-12. Acres of Proposed Seeding on the Spruce and Valley Mountain Allotments (maximum use on the native).

Allotment/Herd	# Lvsk.	Pd. of Use	Forage Demand (AUMs)	Seeding Required (Acres)[1]	Total Seeding Required to Rest Half (Acres)[2]
Valley Mountain/ Ken Jones Winter	899 Cattle	4/1 - 5/15	1,330	3,990	7,980
Spruce Allotment/ Secret Pass Herd	495 Cattle	4/1 - 5/31	993	2,979	5,958
Spruce Allotment/ Spruce Mtn. Herd					400[3]
Total			**2,323**		**14,338**

[1] Estimated acres for seeding is based on an assumed carrying capacity of 3 acres/AUM.

[2] Acreage is doubled to ensure half of the seeded area can be rested annually so that "old feed" will be available for early spring use the next year.

[3] Proposed seeding in Subunit D-1 (West Independence Valley) as a result of a wildfire in 1985.

A seeding had been proposed in Subunit I (Curtis Spring) in the 1998 draft Spruce AMP and 1993 Spruce Interim AMP. However, because of the potential conflicts with sage grouse strutting grounds in this area, this seeding will no longer be considered.

2. Summary of All Range Improvement Projects Proposed

Tables 4-13 through 4-15 below summarize all of the proposed projects for the Spruce and Valley Mountain Allotments and identifies under which grazing system options the projects would be necessary. All proposed projects would be completed in cooperation with the Bureau and the permittee.

Table 4-13. Proposed Range Improvement Projects on the Valley Mountain Allotment.

Allotment	Type of Improvement	Grazing System Options		
		Option 1 No Proposed Seeding	Option 2 Prop. Sdgs. Reduced Use	Option 3 Prop. Sdgs. Maximum Use
Valley Mountain	Seeding (7,980 acres)			✓
	Seeding (6,150 acres)		✓	
	Seeding Protection Fences (~8 miles)[1]		✓	✓
	Seeding Wells/Pipeline (1)[1]		✓	✓
	Pipeline on existing well for Sdg (2)[1] Liza Jane Butte Valley Road Well		✓	✓
	Currie Canyon Well	✓	✓	✓
	Quilici Well	✓	✓	✓
	South Medicine Well	✓	✓	✓
	Delcer Buttes Well	✓	✓	✓
	Division Fence (Subunit A)[2]	✓	✓	✓
	Water hauling locations for Sheep or water development (at least one)	✓	N/A[3]	N/A[3]

[1] If the seedings are developed, associated fencing and water developments will be constructed simultaneously. A minimum of two years rest will be made on the seedings prior to authorizing grazing use to ensure establishment.

[2] The proposed division fence in Unit A (Subunits A-1 and A-2 in Ruby Valley), will only be constructed if the additional proposed stockwater developments are not sufficient to control livestock.

[3] N/A = Not applicable. Only one option is considered for the Paris sheep operation.

Table 4-14. Proposed Range Improvement Projects on the Spruce Allotment.				
Allotment	**Type of Improvement**	**Grazing System Options**		
		Option 1 No Proposed Seeding	**Option 2 Prop. Sdgs. Reduced Use**	**Option 3 Prop. Sdgs. Maximum Use**
Spruce Mountain	Seeding (5,958 acres)			✓
	Seeding (4,248 acres)		✓	
	Wildfire Seeding (400 acres)	✓	✓	✓
	Seeding Protection Fences (~8 miles)[1]		✓	✓
	Pipeline on existing well for Sdg (3)[1] East Highway Well South Well Spruce Well		✓	✓
	Sprucemont Pipeline for Seeding[1]		✓	✓
	Basco Spring Pipeline Extension[2]	✓	✓	✓
	Spruce Spring Pipeline Extension[2]	✓	✓	✓
	Latham Spring Pipeline Extension[2]	✓	✓	✓
	Independence Valley Seeding Fences (~15 miles)	✓	N/A[3]	N/A[3]
	Whitesage Well	✓	✓	✓
	Sweet Sage Well	✓	✓	✓

[1] If the seedings are developed, associated fencing and water developments will be constructed simultaneously. A minimum of two years rest will be made on the seedings prior to authorizing grazing use to ensure establishment.

[2] The three pipeline systems in the Spruce Allotment (Basco, Spruce, and Latham Spring Pipelines), will be completed before the pipeline extensions are authorized.

[3] N/A = Not Applicable. Only one option is considered for the Spruce Mountain Herd.

Table 4-10. Proposed Range Improvement Projects on the Spruce and Valley Mountain Allotments.				
Allotment	**Type of Improvement**	**Grazing System Option**		
		Option 1 No Proposed Seeding	**Option 2 Prop. Sdgs. Reduced Use**	**Option 3 Prop. Sdgs. Maximum Use**
Both Allotments	Spruce Division Fence	✓	✓	✓
The Spruce Division Fence is essential for livestock control in Steptoe Valley and ensure the multiple use objectives are attained.				

Goshute Valley Well will be evaluated and equipped by the permittee for use in Subunit C-3 (East Goshute Valley).

The proposed wells in both allotments will help improve livestock distribution within the allotment. Also, the wells will also provide water for wildlife and wild horses.

Refer to Maps 7 and 8 for location of existing and proposed range improvement projects.

A site specific environmental assessment will be completed for each proposed range improvement project.

Appendix 5

Spruce and Valley Mountain Allotments
Multiple Use Objectives

Appendix 5

Spruce and Valley Mountain Allotments
Multiple Use Objectives

1. General Land Use Plan (LUP) Objectives

a. Provide for livestock grazing consistent with other uses.

b. Manage wild horses outside of checkerboard areas where land ownership patterns are not a problem for management.

c. Manage wild horses within HMAs and to maintain a thriving natural ecological balance consistent with other resource needs.

d. Combine portions of the wild horse herd areas where horses intermix between herd areas.

e. Conserve and/or enhance wildlife habitat to the maximum extent possible.

f. Eliminate all of the fencing hazards in crucial big game habitat, most of the fencing hazards in non-crucial big game habitat.

g. Eliminate all of the high and medium priority terrestrial riparian habitat conflicts in coordination with other resource uses.

h. Prevent undue degredation of all riparian habitat due to other uses.

i. Lands with woodland products will be managed under the principle of sustained yield, manintaining an allowable harvest to provide a permanent source of wood products for future generations.

2. Rangeland Program Summary (RPS) Objectives

a. Improve livestock distribution in Ruby Valley (near Delcer Buttes), Steptoe Valley (north of Mizpah Point), Antelope Valley (north and east of Dolly Varden Spring), and Spruce Mountain (in the areas of Basco Spring, Spruce Spring, Latham Spring, and Coyote Basin).

b. Improve ecological status of whitesage and saltbush winter use areas in Antelope, Steptoe, Clover, and Ruby Valleys.

c. Develop an allotment management plan (AMP) to be signed in fiscal year 1987.

d. Improve or maintain all seasonal big game habitat in the Spruce Allotment to good or excellent condition to provide forage and habitat capable of supporting the following reasonable numbers and forage demands:

Reasonable numbers of Big Game on the Spruce Allotment.		
Big Game Species	**Reasonable Numbers**	**AUMs**
Mule Deer	8,838	6,510
Antelope	180	432
Bighorn Sheep	120	288

e. Reintroduce bighorn sheep in the Goshute Mountains.

f. Facilitate big game movements by modifying existing fences to Bureau standards, where necessary (46 miles).

g. Improve crucial deer winter habitat by:
- cutting (thinning) within 16,000 acres of the pinyon/juniper forest type.
- chaining or burning and seeding 2,500 acres of sagebrush.

h. Improve, enhance or develop 3 springs to good or excellent condition.

i. Manage for a wild horse herd size which will maintain a thriving ecological balance consistent with other multiple uses while remaining within the wild horse herd boundaries.

j. Delineate and manage wild horses in four HMAs as follows:
-Antelope Valley HMA (includes 44% of the former Cherry Creek Herd Area);
-Goshute Valley HMA;
-Spruce-Pequop HMA; and
-Maverick-Medicine HMA (includes 56% of the former Cherry Creek Herd Area).

k. Remove wild horses from checkerboard areas, which includes all of the Toano Herd Area and portions of the Goshute and Spruce-Pequop Herd Management Areas and manage them as wild horse free areas.

l. Remove sufficient wild horses to attain the initial herd size and maintain populations at a level which will maintain a thriving natural ecological balance consistent with other resource values.

m. Develop eight water sources to improve wild horse distribution, modify approximately one mile of existing fence so as not to impede wild free-roaming behavior, and construct approximately eighteen miles of new fence to prevent the return of wild horses to checkerboard land pattern areas.

n. The 1971 Wild Horse Herd Areas will continue to be maintained.

3. Antelope Valley Herd Management Area Plan (HMAP) Objectives

a. Habitat Objectives

1. Vegetation

Manage for the most appropriate seral stages to provide for desired quantity, quality, and density of forage in order to meet the requirements of the wild horses and other foraging animals. In general, utilization levels will be maintained at approximately 45% on shrubs and 55% on grasses or as identified in the allotment specific utilization objectives, which is in accordance with the recommended utilization levels in the Nevada Rangeland Monitoring Handbook (1984).

2. Distribution and Water Availability

Improve distribution and provide water yearlong for wild horses throughout the HMA where possible.

b. Wild Horse Objectives

1. Multiple Use

The objective in the Antelope Valley HMA is to maintain a healthy, viable population of wild horses in a thriving natural ecological balance with all other resources and users.

2. Appropriate Management Level (AML)

When the allotment evaluations are complete, a total AML for the HMA will be determined. The number of horses will be maintained within a range of $\pm$ 15% of AML. Removals will be scheduled so that each HMA is gathered once every three years.

AML will be maintained using one or more of the following options: periodic removals with no selectivity, selective removals targeting specific age groups, or fertility control.

3. Free-Roaming Characteristics

The wild horses within the Antelope Valley HMA will be managed in a manner that maintains their wild free-roaming characteristics.

4. Color and Conformation

Wild horses within the Antelope Valley HMA wihich exhibit the Spanish Barb characteristics will be maintained within the population. Fertility control treatments and/or removals in the future will exclude those horses that obviously exhibit those traits. No other characteristic or conformations will be selected.

4. Allotment Specific Objectives

a. Range Key Area Objectives

1. Show a static or upward trend in ecological status on all key areas. Upward trend will be identified by a significant increase in percent frequency of occurrence of each key species as defined by Duncan's Multiple Range Test.

2. Improve the ecological status of all key areas to (or maintain in) late seral stage.

3. Manage grazing to obtain an average utilization of 55% on all of the native grasses and salt-desert shrubs while never exceeding 60% in any single year on the winter range (key areas SP-01 through SP-24, SP-27, and SP-30).

Manage grazing to obtain an average utilization of 50% on all of the native grasses while never exceeding 55% in any single year on the summer range (key areas SP-25, SP-26, SP-28, and SP-29).

Manage grazing to obtain an average utilization of 60% on the crested wheatgrass seedings while never exceeding 65% in any single year.

Maximum allowable use by livestock on bitterbrush is 25% (SP-25 and SP-26).

4. In areas grazed in common by wild horses and livestock, manage for an average of 10 percent use on key forage species by wild horses prior to entry by livestock on winter range (pre-livestock use).

b. Wildlife Objectives

1. Improve the crucial deer winter range in the Spruce Spring area from fair to good habitat condition, improve the crucial deer winter range in the Basco Spring area from poor to good habitat condition, and maintain the current good habitat conditions of crucial deer winter range in the Black Forest and Boone Springs areas.

2. Improve all yearlong antelope range within the Spruce and Valley Mountain Allotments to good habitat condition.

3. Improve three springs and/or wet meadow complexes located within the Spruce and Valley Mountain Allotments to good or excellent condition.

4. Maintain good bighorn sheep habitat conditions in the Goshute Mountains (Subunit J).

Maps

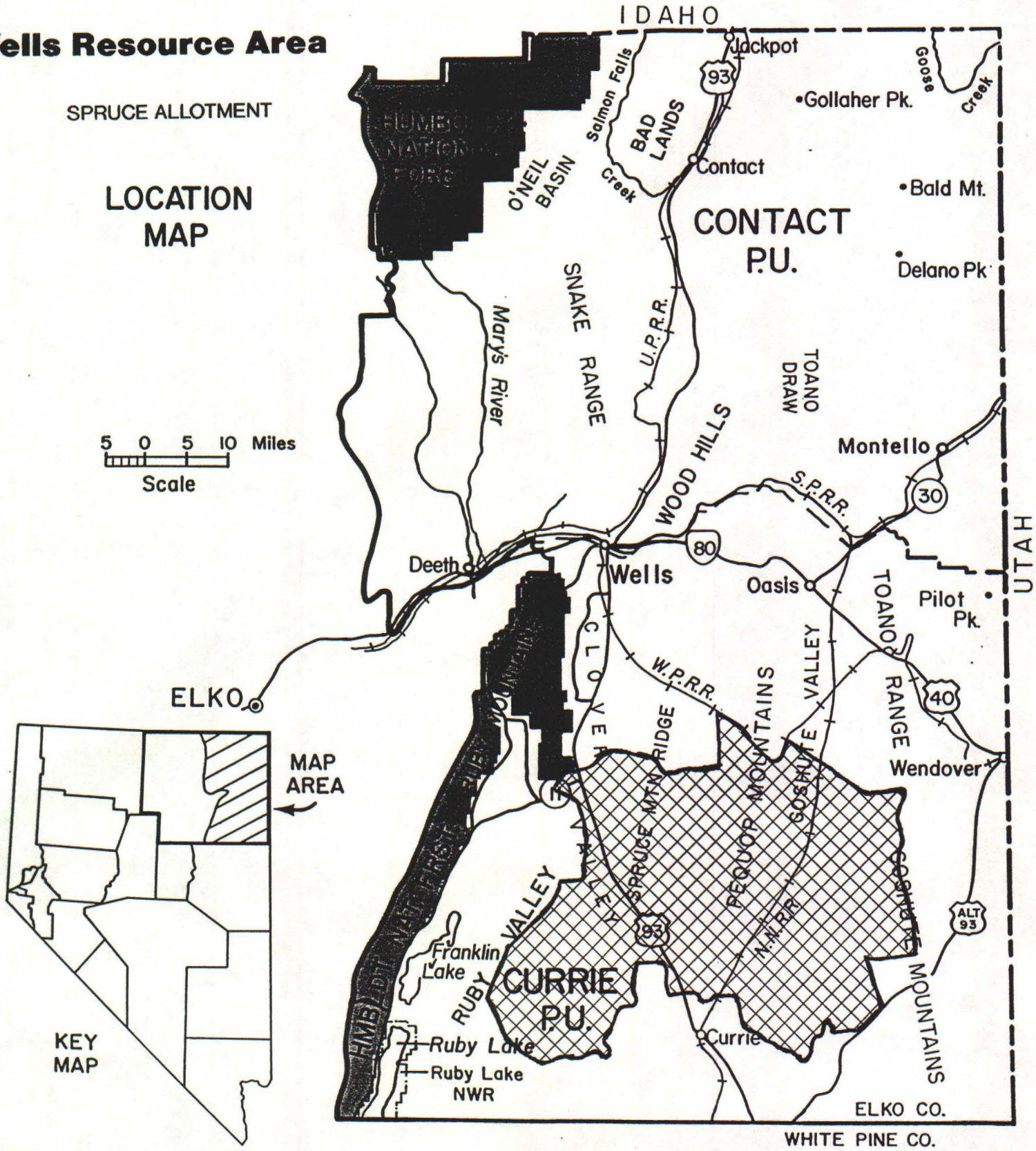
ELKO DISTRICT

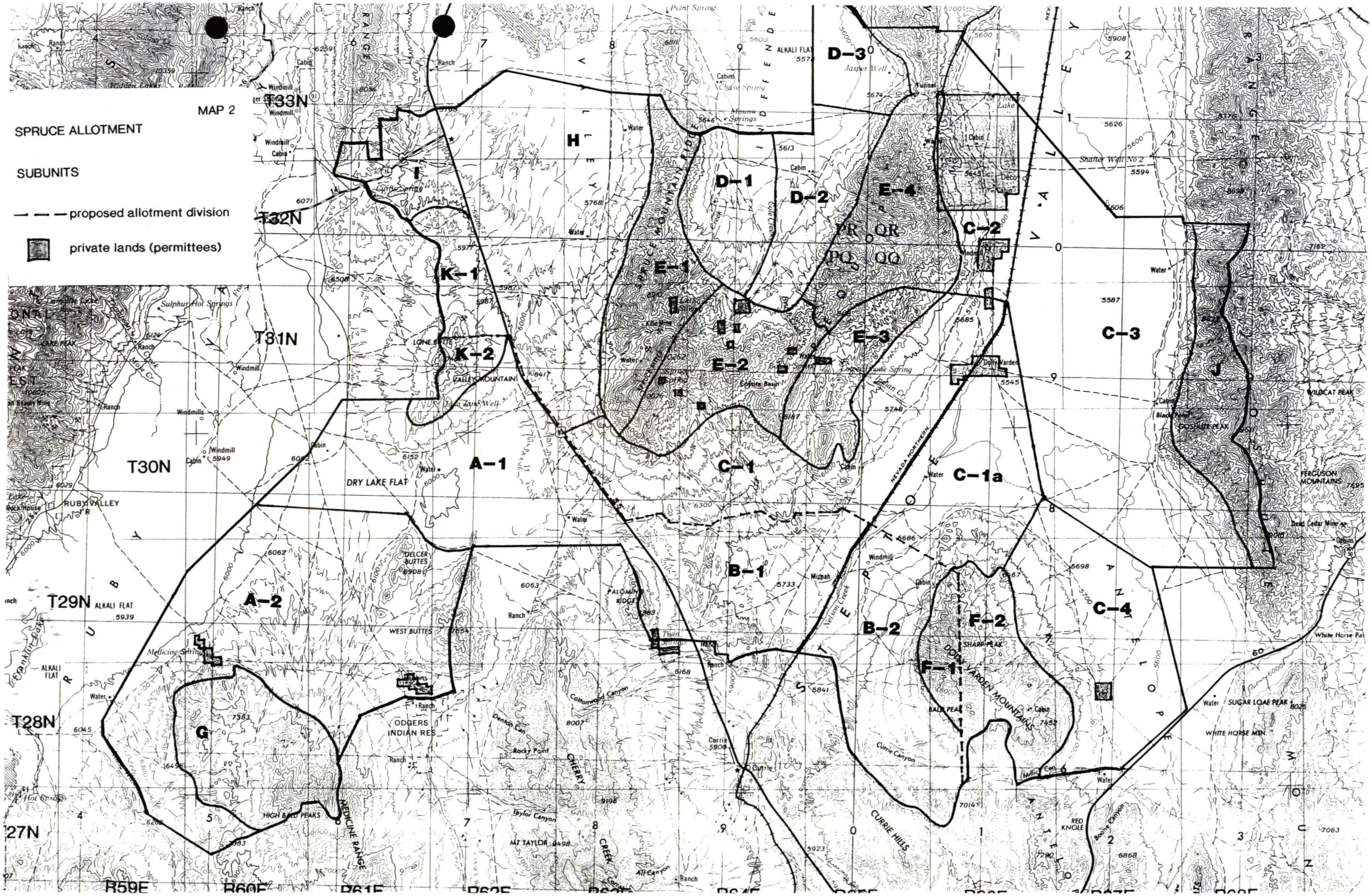
Wells Resource Area

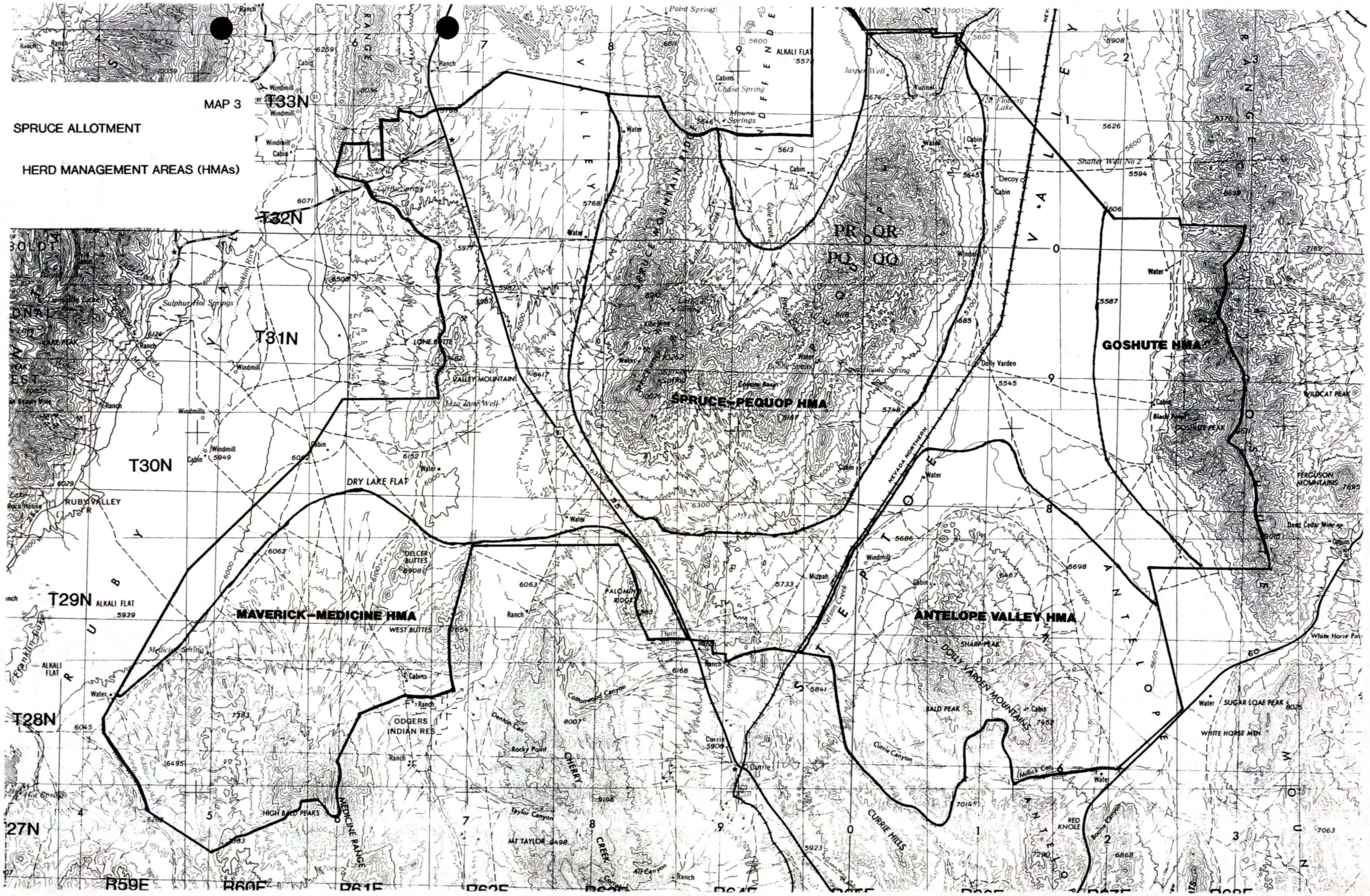
SPRUCE ALLOTMENT

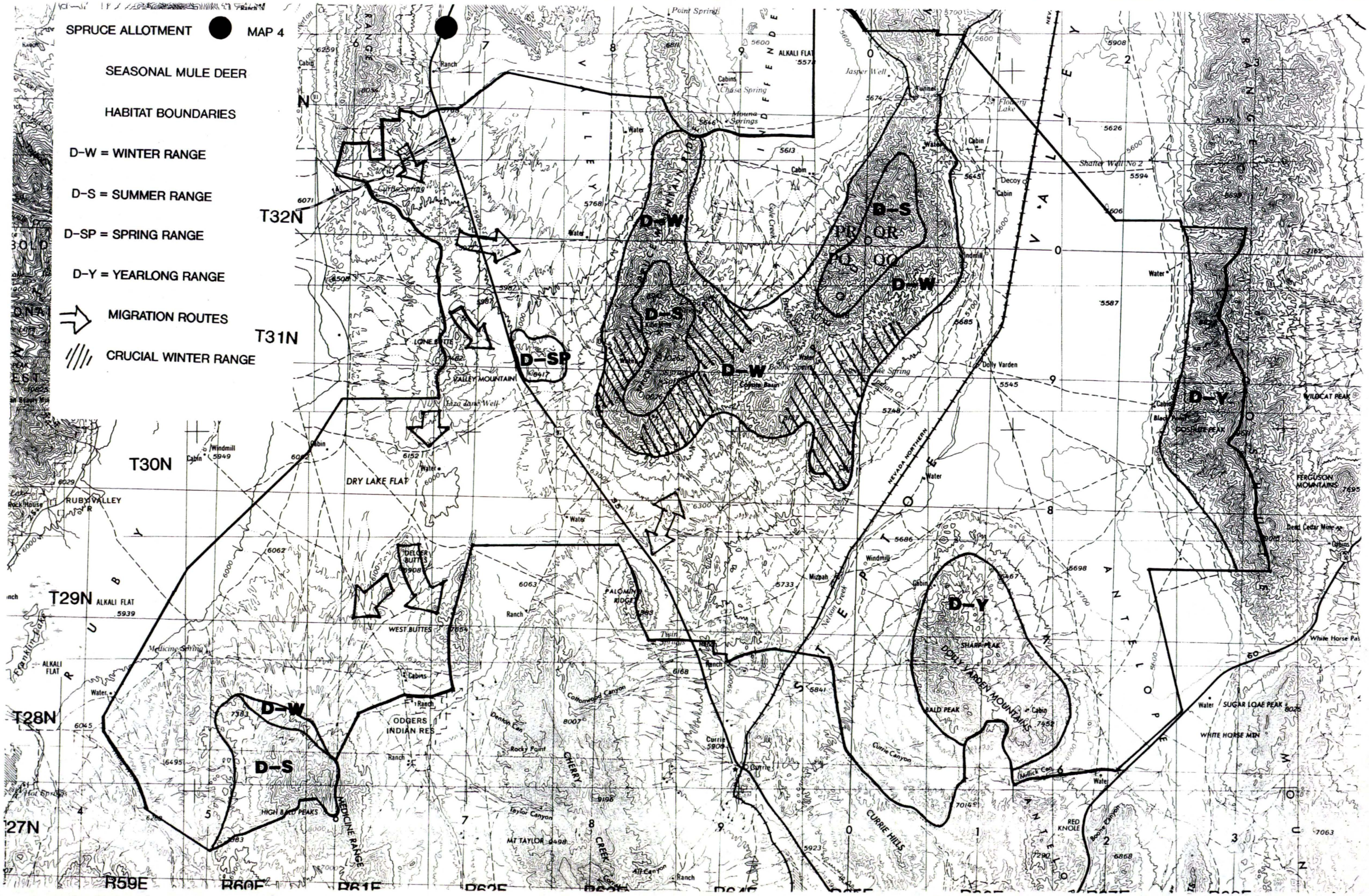
LOCATION MAP

MAP 1




MAP 2
SPRUCE ALLOTMENT
SUBUNITS
proposed allotment division
private lands (permittees)
A-1
A-2
B-1
B-2
C-1
C-1a
C-2
C-3
C-4
D-1
D-2
D-3
E-1
E-2
E-3
E-4
F-1
F-2
G
H
I
J
K-1
K-2
T33N
T32N
T31N
T30N
T29N
T28N
R59E
R60E
R61E
DRY LAKE FLAT
RUBY VALLEY
ALKALI FLAT
DELCER BUTTES
WEST BUTTES
ODGERS INDIAN RES
HIGH BALD PEAKS
MEDICINE RANGE
PALOMINO RIDGE
VALLEY MOUNTAIN
LONE BUTTE
Medicine Spring
Twin Springs
Currie
CURRIE HILLS
Currie Canyon
NEVADA NORTHERN
DOLLY VARDEN MOUNTAINS
SHARP PEAK
BALD PEAK
GOSHUTE PEAK
FERGUSON MOUNTAINS
WILDCAT PEAK
SUGAR LOAF PEAK
WHITE HORSE MTN
White Horse Pass
Dolly Varden
Shafter Well No 2
Coyote Basin
Jasper Well
MT TAYLOR
Cottonwood Canyon
Taylor Canyon
Rocky Point
Nelson Creek
Mizpah
RED KNOLE
Boone Canyon
Dead Cedar Mine
Black Point
Sulphur Hot Springs
Chase Spring
Point Spring


MAP 3
SPRUCE ALLOTMENT
HERD MANAGEMENT AREAS (HMAs)
SPRUCE-PEQUOP HMA
GOSHUTE HMA
MAVERICK-MEDICINE HMA
ANTELOPE VALLEY HMA
T33N
T32N
T31N
T30N
T29N
T28N
27N
R59E
PR
QR
PQ
QQ
SPRUCE MOUNTAIN RIDGE
VALLEY MOUNTAIN
LONE BUTTE
DRY LAKE FLAT
RUBY VALLEY
ALKALI FLAT
DELCER BUTTES
WEST BUTTES
PALOMINO RIDGE
ODGERS INDIAN RES
HIGH BALD PEAKS
MEDICINE RANGE
Medicine Spring
Sulphur Hot Springs
Franklin River
Liza Jane Well
Coyote Basin
Boone Spring
Lower Boone Spring
Indian Cr
Latham Creek
Cole Creek
Chase Spring
Mound Springs
Point Spring
Jasper Well
Flowery Lake
Shafter Well No 2
Decoy
Dolly Varden
NEVADA NORTHERN
Mizpah
Nelson Creek
Currie
Currie Canyon
CURRIE HILLS
CHERRY CREEK
Cottonwood Canyon
Denton Can
Rocky Point
Taylor Canyon
MT TAYLOR
SHARP PEAK
DOLLY VARDEN MOUNTAINS
BALD PEAK
Millick Can
RED KNOLE
Boone Canyon
GOSHUTE PEAK
WILDCAT PEAK
FERGUSON MOUNTAINS
Dead Cedar Mine
White Horse Pass
SUGAR LOAF PEAK
WHITE HORSE MTN
Black Point



SPRUCE ALLOTMENT
MAP 4
SEASONAL MULE DEER
HABITAT BOUNDARIES
D-W = WINTER RANGE
D-S = SUMMER RANGE
D-SP = SPRING RANGE
D-Y = YEARLONG RANGE
MIGRATION ROUTES
CRUCIAL WINTER RANGE
T32N
T31N
T30N
T29N
T28N
27N
R59E
D-W
D-S
D-SP
D-Y
Point Spring
ALKALI FLAT
Jasper Well
Tunnel
Chase Spring
Cabins
Mouna Springs
Flowery Lake
Shafter Well No 2
Decoy
Cabin
Windmill
Dolly Varden
Boone Spring
Coyote Basin
Indian Cr
Cole Creek
Brush Creek
NEVADA NORTHERN
Water
Ranch
Currie Spring
LONE BUTTE
VALLEY MOUNTAIN
Liza Jane Well
DRY LAKE FLAT
RUBY VALLEY
Rock House
Medicine Spring
DELCER BUTTES
WEST BUTTES
PALOMINO RIDGE
Twin Springs
ODGERS INDIAN RES
HIGH BALD PEAKS
MEDICINE RANGE
Hot Springs
Franklin Lake
Cottonwood Canyon
Denton Can
Rocky Point
CHERRY CREEK
Taylor Canyon
MT TAYLOR
Alf Canyon
Currie
Nelson Creek
Mizpah
Currie Canyon
CURRIE HILLS
SHARP PEAK
DOLLY VARDEN MOUNTAINS
BALD PEAK
Millick Can
RED KNOLE
Boone Canyon
GOSHUTE PEAK
Black Point
WILDCAT PEAK
FERGUSON MOUNTAINS
Dead Cedar Mine
White Horse Pass
SUGAR LOAF PEAK
WHITE HORSE MTN

SPRUCE ALLOTMENT MAP 5

ANTELOPE AND SAGEGROUSE HABITATS

A-W = WINTER RANGE

A-Y = YEARLONG RANGE

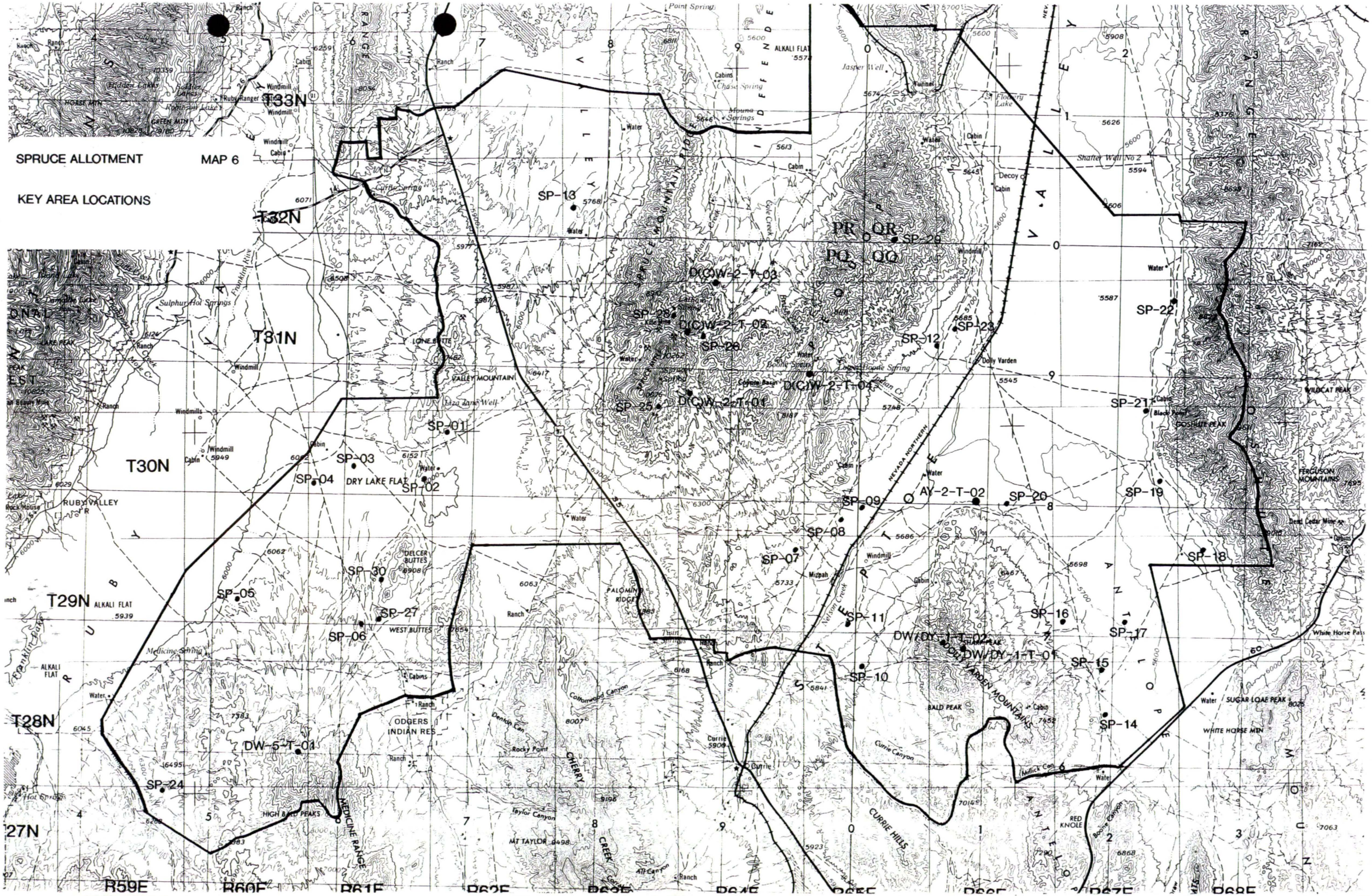
O = NO ANTELOPE USE

● = SAGEGROUSE STRUTTING GROUNDS

//// = CRUCIAL WINTER RANGE

SPRUCE ALLOTMENT MAP 6

KEY AREA LOCATIONS



SPRUCE ALLOTMENT MAP 7

EXISTING RANGE IMPROVEMENT PROJECTS

- fences
- stockwaters
- pipelines
- chainings
- seedings

T32N

T31N

T30N

T29N

T28N

T27N

R59E R60E R61E R62E R63E R64E R65E R66E R67E

SPRUCE ALLOTMENT MAP 8

PROPOSED RANGE IMPROVEMENT PROJECTS

fences

stockwaters

pipelines (extensions)

seedings

T32N

T31N

T30N

T29N

T28N

T27N

R59E R60E R61E R62E R63E R64E R65E R66E R67E R68E