



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

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BUREAU OF LAND MANAGEMENT
IN REPLY REFER TO:
4130
(NV-03580)

JAN 13 1995


Dear Interested Party:

Enclosed for your review are the Churchill Canyon, Mill Canyon, Rawe Peak, and Clifton Allotment Evaluations. These evaluations address the remaining four allotments contained in the northern Pine Nut Herd Management Area (HMA). You should have received the other five evaluations some time between February 11, 1994 and the end of December, 1994.

As you may recall from my earlier cover letters, the Walker Resource Area has been working on the evaluation of monitoring data for grazing allotments in the Pine Nut HMA. During the development of earlier evaluations, a key question asked by the Walker Resource Area Staff was how to meet the requirements of the allotment evaluation process while still recognizing the mandate to manage wild horses within the HMA, not within each allotment. It was decided that the evaluations should not set an Appropriate Management Level (AML) for each allotment but should, instead, set a potential stocking level for each segment of the HMA based on monitoring data and then define an AML for the combined potential stocking levels of all the allotments.

By defining a potential stocking level for each portion of the HMA in lieu of an "AML" for each allotment, provision is made for the movement of horses within the HMA since utilization by wild horses is based on the availability of forage, not on a predetermined number of horses for an allotment. This is the basis for providing nine allotment evaluations before establishing a "due date" for comments. **Comments on these and the other five allotment evaluations are due no later than February 27, 1995.**

Sincerely,


John Matthiessen
Area Manager
Walker Resource Area

4 Enclosures:

1. Churchill Canyon Allotment Evaluation
2. Mill Canyon Allotment Evaluation
3. Rawe Peak Allotment Evaluation
4. Clifton Allotment Evaluation

UNITED STATES
DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT
CARSON CITY DISTRICT OFFICE
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RAWE PEAK ALLOTMENT EVALUATION

January, 1995



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I. INTRODUCTION

In June, 1992, the Bureau of Land Management issued its *Strategic Plan for Management of Wild Horses and Burros on Public Lands*. One of the objectives is to establish initial Appropriate Management Levels (AMLs) for all herd areas by 1995. In order to establish an AML for wild horses in the Pine Nut Herd Management Area (HMA), it is necessary to evaluate resource management within all the allotments included within the HMA. One of these allotments is Rawe Peak.

Specifically, the purpose of this allotment evaluation is to determine if current grazing practices are consistent with attainment of Land Use Plan (LUP) and allotment specific objectives. If current grazing practices are not consistent with attainment of these objectives, appropriate changes in management will be identified and implemented. The allotment is classified as category C¹. It was classified as category C because the majority of the acreage was in an early seral status², had low production and low potential. The evaluation period is from 1986 to 1993.

II. INITIAL STOCKING LEVEL

A. Livestock Use

1. Preference (AUMs)

ALLOTMENT NUMBER	ALLOTMENT NAME	SEASON OF USE	% PUB. LAND	AUMS
03580	RAWE PEAK	5/16 TO 7/31	96	552

2. Other Information

Rolling A Ranch controls the grazing permit in this allotment.

At the time of adjudication, April 9, 1962, the active preference was reduced from 784 AUMs to 552 AUMs. A change in class of livestock was made from sheep to cattle in the 1963-64 grazing season.

The allotment is located approximately seven miles southeast of Dayton, Nevada. It is bounded on the west by Eldorado allotment, the north by Clifton allotment, the south by Sunrise allotment, and the east by Mill Canyon and Churchill Canyon allotments (Refer to Map No. 1, Appendix I).

¹ "Custodial" - manage in a custodial capacity, while protecting existing resource values.

² Ecological status is use-dependent and defined as the present state of the vegetation and soil protection of an ecological site in relation to the potential natural community for that site. Potential natural community is a biotic community that would become established if all successional sequences were completed without interference by man under present environmental conditions. Four seral stage classes are identified with corresponding numerical ratings. These are 0-25 (early seral), 26-50 (mid seral), 51-75 (late seral), and 76-100 (potential natural community).

Documented improvements within the allotment are:

<u>NAME</u>	<u>TOWNSHIP</u>	<u>RANGE</u>	<u>SECTION</u>	<u>SUBDIVISION</u>
Sheep Bed PJ Thin #1	15 N	22 E	11	NENE
Sheep Bed PJ Thin #2	15 N	22 E	2	SESW
Gumbc Spring	15 N	22 E	2	SESE
Greg's Cabin Fence	15 N	23 E	7	NWSW
Rawe Peak Spring	16 N	22 E	36	NWSE

Locations are shown on Map No. 2, Appendix I.

There are 6,648 acres of Public land in the allotment.

B. Wild Horse Use

1. Management Level

The LUP identified 379 AUMs as the existing demand for wild horses. The AML for the Pine Nut HMA will be based on stocking levels for wild horses determined for all the allotments within the HMA. The stocking level for Rawe Peak will be determined through the analysis of monitoring data contained within this evaluation.

2. Herd Management Area within the Allotment

The Pine Nut HMA encompasses all public land within the Rawe Peak allotment. The allotment comprises ten percent of the total acreage contained within the HMA (Refer to Map No. 3, Appendix I).

C. Wildlife Use

1. Mule Deer (*Odocoileus hemionus*).

a. Existing Demand

Existing demand for mule deer identified in the LUP is 208 AUMs.

b. Key and Crucial Areas

The majority of Rawe Peak contains key summer range. The northeast portion is classified as winter range. (Refer to Map No. 4, Appendix I).

2. Wildlife - General

Upland and non-game wildlife occur throughout the allotment. Common furbearing species are coyote (*Canis latrans*), bobcat (*Felis rufus*), badger (*Taxidea taxus*), mountain lion (*Felis concolor*) and kit fox (*Vulpes macrotis*).

Upland game species include mountain cottontail (*Sylvilagus nuttallii*), desert cottontail (*Sylvilagus audubonii*), mourning dove (*Zenaidura macroura*), California quail (*Lophortyx californicus*), and chukar (*Alectoris chukar*).

Raptors inhabiting the allotment include the prairie falcon (*Falco mexicanus*), red-tailed hawk (*Buteo jamaicensis*), golden eagle (*Aquila chrysaetos*), and American kestrel

(*Falco sparverius*).

Also present are a host of small mammals, birds, and reptiles.

III. ALLOTMENT PROFILE

A. Description

1. Topography

The area is best characterized as mountainous. Elevations range from approximately 6200 to 8343 feet. Roads in the area are located primarily in major draws and gently rolling hill portions of the allotment.

2. Soils/Range Sites

The soils in the allotment are typical of the Western Great Basin and exhibit wide ranges in depth, drainage class, percent surficial and subsurface rock fragments, pH, and other diagnostic soil properties. For a more detailed description, refer to the Reno Grazing Environmental Impact Statement (1982), Appendix E, Section 1, pages 5-25 to 5/39.

Accelerated erosion within the allotment is mostly confined to small areas adjacent to seeps/springs, shallow/lithic soils and steep slopes. A complete description of range sites can be found in the Lyon County Soil Survey compiled by the Soil Conservation Service. Field work for the soil survey was done between 1968 and 1979. Statements in the document are based on information from 1980.

The primary range sites in Rawe Peak are:

- 26-05 (Loamy 12-14 precipitation zone)
- 26-09 (Mahogany Slope 14 -18 precipitation zone)
- 26-10 (Loamy 10-12 precipitation zone)
- 26-23 (Claypan 10-12 precipitation zone)

3. Water Resources

For some of the following sites, BLM write-ups have been completed that indicated water availability and the functionality³ of these sites.

<u>Township</u>	<u>Range</u>	<u>Section</u>	<u>Subdiv</u>	<u>Name</u>	<u>Water</u>	<u>Rating</u>
15 N	22 E	2	SESE	Gumbo Spring	No	Not rated
15 N	22 E	2	SWSE	Upper Gumbo Spring	No	Not rated
15 N	22 E	12	NENW	Lower Gumbo Spring	No	Not rated
15 N	22 E	25	NENW	Upper Stone Spring	Unk	Not rated
15 N	22 E	24	NWSW	North Stone Spring	Unk	Not rated
16 N	22 E	36	NWSE	Rawe Peak Spring	No	Not rated
15 N	23 E	7	NWSW	Greg's Cabin Spring	Yes	Functional at Risk
15 N	22 E	15	NWSE	Tailing Pond #1	Yes	Proper Functioning
15 N	22 E	15	NWSE	Tailing Pond #2	Yes	Proper Functioning

Locations are shown on Map No. 5, Appendix I.

On the eastern border of the allotment, Greg's Cabin Spring provides water for a meadow area. This water source services a fractional part of the allotment. A portion of the meadow was fenced in 1989 for protection from grazing. Within the exclosure, the area is considered to be in proper functioning condition. The wet area and spring located outside of the exclosure has been classified as functional - at risk due to excessive use by wild horses.

On the southern border, Upper Stone Spring provided limited water in 1988 and subsequently went dry. Two tailing ponds provide water to the southwestern portion of the allotment. In the northern portion of the allotment, there are no producing springs.

4. Vegetation

The majority of the allotment is pinyon (*Pinus monophylla*)/juniper (*Juniperus osteosperma*) woodland. Pinyon is the dominant species. Interspersed and associated vegetative sites contain low sage (*Artemisia arbuscula*) and big sage (*Artemisia tridentata*) communities. In addition, bitterbrush (*Purshia tridentata*) is scattered throughout the allotment.

5. Key Species

a. Uplands

No key areas have been established that identify specific key species. Important to cattle and wild horses are grasses. Bitterbrush is important for mule

³ Proper Functioning Condition, as defined in Technical Reference 1737-9 (1993), Riparian Area Management, *Process for Assessing Proper Functioning Condition*, is when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high waterflows, thereby reducing erosion and improving water quality; filter sediment, capture bedload, and aid floodplain development; improve flood-water retention and ground-water recharge; and support greater biodiversity. The functioning condition of riparian-wetland areas is a result of interaction among geology, soil, water, and vegetation.

deer and will be utilized by cattle. Cheatgrass is important for chukar. Meadow vegetation is important for sage grouse because of the production of insects and succulent forage, particularly dandelion (*Taraxacum sp.*).

b. Riparian

Vegetation located in and around water sources is composed of cottonwood (*Populus sp.*), willow (*Salix sp.*), rushes (*Juncus sp.*), wild rose (*Rosa sp.*) and sedges (*Carex sp.*). Watercress (*Nasturtium officinale*) is also present in the shady areas where pooling and/or overland flow occurs.

6. Threatened and Endangered Species

a. Vegetation

There are no threatened, endangered, or sensitive plant species known to inhabit the allotment.

b. Wildlife

Category 2⁴, Candidate species, as defined by the U.S. Fish and Wildlife Service, that may occur in the allotment are the pygmy rabbit (*Brachylagus idahoensis*) and the spotted bat (*Euderma maculatum*). While they are not listed as threatened or endangered, in order to avoid further jeopardizing their existence, the Bureau treats candidate species the same as threatened or endangered. No other threatened, endangered, or sensitive animals are known to inhabit the allotment.

The spotted bat spends daylight hours and reproduces in caves, cliffs and talus slopes. It generally feeds on flying insects in the vicinity of juniper grasslands and tall sagebrush. The pygmy rabbit reproduces and feeds in sagebrush/grasslands and riparian habitats. Since these habitats occur throughout the Pine Nut Range, there is a possibility that both species occur in the allotment.

B. Allotment Specific Objectives

Objectives taken from the LUP are as follows:

1. Short Term

- a. Provide for 552 AUMs of livestock use. There will be no initial change in active preference.
- b. Manage so that mule deer habitat does not decline.
- c. Initially manage wild horses in current herd use areas at present estimated population levels. Existing demand of 379 AUMs in Rawe Peak. Manage remaining

⁴Category 2: Taxa for which existing information indicates that the listing may be warranted, but for which substantial biological information to support a proposed rule is lacking.

horses to maintain viable herd compatible with other resources.

2. Long Term

- a. With the exception of wild horses, maintain existing situation through custodial management.
- b. Maintain current range condition.
- c. Manage wildlife habitat for a long term goal of providing forage for reasonable numbers of big game (229 AUMs).
- d. Manage big game habitat to fair or good condition to support big game populations.
- e. Protect and improve riparian areas to a good or better condition class.
- f. Develop and implement the Pine Nut Herd Management Area Plan (HMAP) for wild horses and burros.
- g. If monitoring programs indicate there are significant resource problems developing, the allotment could be added to Category I.
- h. Continue rangeland and watershed monitoring to determine if management objectives are being met and what future adjustments in grazing use are necessary.

IV. MANAGEMENT EVALUATION

A. Actual Use

1. Livestock

There has been no livestock use in the allotment during the evaluation period. The extent of pinyon/juniper woodlands coupled with a lack of water severely limits use.

2. Wild Horses

Aerial census data was collected in 1993, 1992, 1990, 1989, and 1986 for wild horses in the Pine Nut HMA. No wild horses were observed during the 1993 census. The small percentage of open areas are receiving substantial use. This is a result of horses moving in and out from adjacent allotments.

3. Wildlife

The allotment is contained within Nevada Division of Wildlife (NDOW) Management Unit 291, Pinenut Range, Carson City, Douglas and Lyon Counties. Mule deer population estimates for this unit provided by NDOW is as follows:

1993	932 head
1992	1311 head
1990	942 head

Allotment specific information projected from the NDOW

population estimates is as follows:

NUMBER	TYPE USE	PRORATED (AUMS)
25	Year-round	70
50	Summer	<u>70</u>
	Total	140

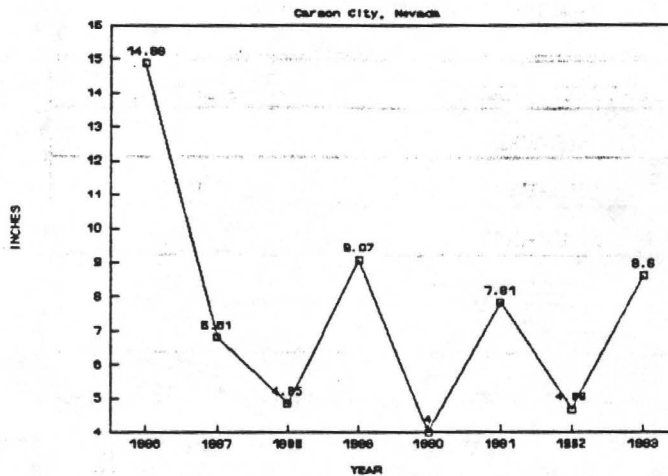
LUP identified 208 AUMs Existing Demand

B. Precipitation

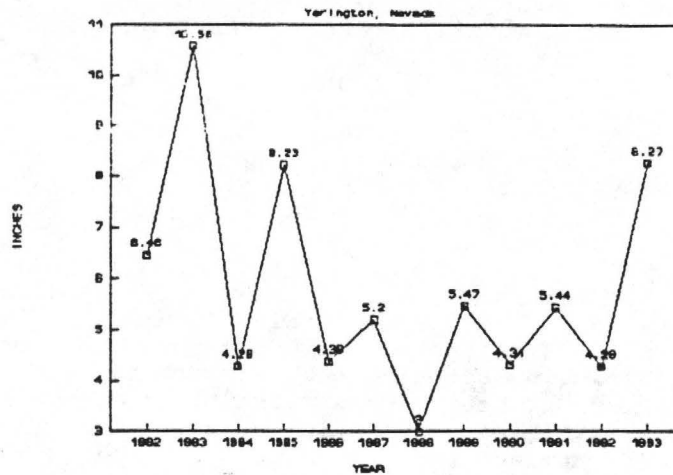
Carson City and Yerington, Nevada are weather stations that depict weather patterns that may affect this allotment. The mean annual precipitation is 10.98 inches for Carson and 5.38 inches for Yerington. Depending upon the path, intensity, and duration of storms, the Pine Nut Mountains and the Sierra Nevadas can influence precipitation amounts in the allotment. Therefore the data presented provides the reader with an idea of what may have occurred over the evaluation period. The higher elevations of the allotment receive larger amounts of precipitation than what is recorded at the stations.

Data presented for Yerington for the years 1988, 1990, and 1991 is incomplete. One or more months of data must be absent for the information to be considered incomplete.

ANNUAL PRECIPITATION



ANNUAL PRECIPITATION



C. Use Pattern Mapping

Use pattern mapping data was gathered in 1993 (Refer to Map No. 6, Appendix I). Data collected was specific to wild horses. Results are as follows:

1993 USE PATTERN MAPPING

UTILIZATION CLASS	ACREAGE
SEVERE	0
HEAVY	873
MODERATE	296
LIGHT	102
SLIGHT	73
NO USE	5304

As a result of the high occurrence of trees and the lack of water, use by horses is sporadic. This may explain why no horses were observed in the allotment during the latest aerial census.

D. Trend

Two photo trend plots are located in the allotment (Refer to Map No. 7, Appendix I).

Plot #1 - It has been photographed seven times, beginning in 1976 and ending in 1993. Panoramic photo comparison shows tree cover has dramatically increased on the upland site. Grasses appear to be scarce. Bitterbrush, located in the plot, has increased in size. Vigor appears to be good. Within this small plot, the trend is upward. Over the long term, as pinyon/juniper woodlands expand the result will be loss of plants, including the

bitterbrush plant within the photo trend plot. Based upon the panoramic view, the trend is probably in a downward.

Plot #2 - It has been photographed eight times, beginning in 1976 and ending in 1993. By 1977, grasses in the open areas had disappeared. Shrubs increased in size. It appears that surface runoff has resulted in soil displacement. The 1993 photo shows much more rock exposed and a greater amount of surface gravel. Overall trend appears to be downward. The limiting factor is lack of vegetative cover for soil binding.

E. Range Survey Data

An ocular reconnaissance survey was completed by BLM personnel in 1962. This resulted in the establishment of the current active preference, mentioned at the beginning of this document (II. A. 1.).

F. Ecological Condition

Information provided in the LUP, taken from the 1979 soil/vegetation inventory, showed the allotment as having 887 acres in mid seral, 5,387 acres in early seral, and 374 acres as unsuitable. Trend was downward.

G. Wildlife Habitat

Habitat condition rating for key mule deer summer range shows the area to be in fair/good condition. Cattle have not grazed the area during the evaluation period. Use has been made exclusively by wild horses and confined to the non-wooded areas.

H. Riparian Habitat

Refer to Section III. A. 3. for a discussion of riparian areas.

I. Wild Horse Habitat

The entire allotment is within the Pine Nut HMA. Use by wild horses is confined to the non-wooded areas. Concentration areas are located in the northern and eastern portions of the allotment. It appears that the limited forage precludes horses from permanently residing in the allotment.

V. CONCLUSIONS

The accomplishment of the objectives shown in Section III. B. are discussed below.

A. Short Term

1. Provide for 552 AUMs of livestock use. There will be no initial change in active preference.

The allotment has had no livestock grazing during the evaluation period. Useable areas are limited due to the extent of pinyon/juniper woodlands and the insignificant forage production in the understory. Plant diversity is lacking. Available forage which is located in open sites spread amongst the woodlands is utilized by wild horses. Due to the potential for a heavy snowpack, use is confined to the spring/summer/fall periods. Use during the critical

growth period (spring) is contributing to the downward trend. Given the current situation, the objective of providing 552 AUMs to livestock can't be achieved.

The objective has not been met.

2. **Manage so that mule deer habitat does not decline.**

The habitat rating for the key mule deer summer range is fair/good condition. A limiting factor is the pinyon/juniper woodlands. Although it provides adequate thermal and hiding cover there is also a reduction in forage abundance and diversity. An opportunity exists, through intensified management of the woodlands, to improve the quality and quantity of key mule deer summer range.

The objective has been met.

3. **Initially manage wild horses in current herd use areas at present estimated population levels. Existing demand of 379 AUMs in Rawe Peak. Manage remaining horses to maintain viable herd compatible with other resources.**

The AUMs identified for wild horses was a target level. It was identified for the purpose of monitoring. Future evaluations, such as this one, are used to determine the potential stocking level for wild horses. The allotment is contained entirely within the HMA.

No wild horses were observed in the allotment during the 1993 aerial census. Sporadic use is occurring in the open areas that provide grazing opportunities. Forage production is severely lacking. Horses apparently move in and out from Mill and Churchill Canyon allotments. The abundance of pinyon/juniper woodlands precludes the use of a majority of the allotment. The existing demand identified in the LUP is not achievable.

The objective has not been met.

B. Long Term

1. **With the exception of wild horses, maintain existing situation through custodial management.**

Ecological status based on professional judgement has not changed. Livestock use has not occurred during the evaluation period. Wildlife use has remained constant and at a low level.

The objective has been met.

2. **Maintain current range condition.**

The allotment, for a majority of the acreage, remains in an early seral status. Of concern is the apparent continuing downward trend.

It contains an extensive pinyon/juniper woodland. This inhibits the amounts of grass, forb, and shrub production. Open areas that do contain forage and are accessible are receiving use throughout the critical growth period. This

can result in a downward trend. Calculations of acreage for natural occurring pinyon/juniper woodlands, based on range sites identified in the Lyon County Soil Survey, shows that 33% of the acreage should support pinyon/juniper woodlands. Currently 81% is covered by these woodlands.

Research points to the effectiveness of pinyon/juniper woodlands to intercept moisture. This provides a tremendous advantage for the trees to out-compete and ultimately eliminate other plant species where they have established themselves.

The objective has not been met.

3. **Manage wildlife habitat for a long term goal of providing forage for reasonable numbers of big game (229 AUMs).**

Reasonable numbers identified in the Land Use Plan were a target level. This figure is used for analysis/evaluation.

The most current data (1991) showed that 140 AUMs were being provided (61% of target level). Based on current conditions, the existing situation may be near the maximum that can be expected. The extent of existing pinyon/juniper woodlands is the major limiting factor to providing for 229 AUMs.

Woodlands are/will have a detrimental effect on the potential for providing a reasonable amount of forage for mule deer. This is substantiated from observations made by Bureau range and wildlife personnel in many portions of the Pine Nut Mountain Range. The goal of reasonable numbers is not achievable with the existing situation.

4. **Manage big game habitat to fair or good condition to support big game populations.**

As pointed out in V. A. 2. along with information contained in Appendix III, a threat to the condition of big-game habitat is the pinyon/juniper woodlands. The current habitat condition is most likely very close to conditions that existed during development of the LUP. Habitat rating data, taken in 1994, showed the area to be in fair/good condition. Many bitterbrush plants are decadent. Propagation is present but not to the extent that is desirable.

In the interim the objective is being met.

5. **Protect and improve riparian areas to a good or better condition class.**

Lower Gumbo and Greg's Cabin Meadow Fence (the latter being located on the allotments eastern boundary) are both constructed for the purpose of protecting the riparian areas. Both improvements are in good condition and serving their purpose. Only Greg's Cabin Spring has water flowing. The other springs in Rawe Peak (Upper Stone and North Stone Springs) currently have no water or flows are intermittent. They are not being adversely impacted by any grazing animal. This is evidenced by use pattern mapping and the licensed/actual use records. Based upon professional

judgement and in part, data contained within Appendix III, they are probably being dried up by the influence of pinyon-juniper woodlands in the watersheds above them. The continuing drought certainly is also affecting these waters.

The objective has been met.

6. Develop and implement the Pine Nut Herd Management Area Plan (HMAP) for wild horses and burros.

Issuance of this document for public review/input initiates a process that will ultimately result in the preparation of the Pine Nut HMAP.

Steps are being taken to meet this objective but to date the objective has not been met.

7. If monitoring programs indicate there are significant resource problems developing, the allotment could be added to Category I.

There are not any significant resource problems developing or existing that were not present at the time the allotment was categorized. Upgrading the categorization to an "I" won't provide additional alternatives or accelerate changes beyond what the process currently allows.

This objective is not applicable.

8. Continue rangeland and watershed monitoring to determine if management objectives are being met and what future adjustments in grazing use are necessary.

Aerial census of wild horses, actual use for livestock, use pattern mapping, and continuation of photographing the trend plots have all been completed during the evaluation period. Riparian functionality has also been evaluated.

The results of this monitoring data indicates that adjustments in management are needed.

The objective has been met.

VI. TECHNICAL RECOMMENDATIONS

A. Potential Stocking Level - Wild Horses

Factors affecting ecological condition are 1) the lack of control in the amount of time that grazing animals are in contact with plant species during active growth, 2) the extent and influence of pinyon/juniper woodlands, and 3) the continuation of the drought.

In order to maintain and protect resources and provide a viable habitat for all grazing/browsing animals, it is necessary to determine the potential stocking level for wild horses and livestock within that portion of the HMA found in the allotment. The calculations, contained in Appendix II, reflects the potential stocking level. The potential stocking level for wild horses has been determined to be 54 AUMs.

B. Potential Stocking Level - Livestock

At the time of conversion from sheep to cattle in Rawe Peak during the early sixties, grass production and the acres available for grazing were probably much greater than now. Over the years, pinyon/juniper has increased its influence over the majority of the allotment. The ability of these woodlands to out-compete other vegetation and intercept/utilize precipitation has resulted in declines of desirable forage for livestock, wild horses, and mule deer (Refer to Appendix III). This may also be having an adverse effect on spring flows, in conjunction with the drought, throughout the Pine Nut Mountain Range where similar conditions exist. These factors are apparently a few of the reasons why livestock have not been grazed in the allotment during the evaluation period. Economically, it appears grazing may not be feasible.

Based upon the potential stocking level calculations found in Appendix II the following is recommended:

Active preference for cattle be adjusted from 552 AUMs to 54 AUMs.

The existing season of use is from 5/16 to 7/31. The allotment lacks water to distribute cattle. Springs are either dry or produce water in such limited quantity that livestock cannot use them. This in effect renders the allotment useless. In order to effectively use the allotment during this season of use, water hauling is necessary. This is not economically feasible.

A fall/winter use period would be more beneficial for grazing in this allotment. It would provide the means to more uniformly distribute livestock throughout the allotment by using snow as a water source. Too much snow or an intensive storm would drive and/or scatter livestock throughout the area (adjoining allotments). The permittee would have to actively manage livestock and monitor locations and movements of the herd. The following is recommended:

Establish the season of use from 11/1 to 3/31 which would coincide with the optimum period in which snow is available.

The allowable use level objective be established at 55% for both cattle and wild horses as identified in Appendix II.

The possibility of the allotment being transferred and converted to sheep is remote. Wool subsidies are being eliminated thereby reducing the profitability in the sheep industry. However, this option should not be overlooked. The 1962 range survey identified winter/spring grazing as the preferred period of use. Sheep AUMs calculated from this survey identified 825 AUMs available, based upon an allotment acreage of 7061 acres. Due to the presence of substantial acres of pinyon/juniper woodlands and the 6648 acres of public land recognized in the allotment, only 1344 acres were used in 1992 (from use pattern mapping) or 20 percent of the allotments acreage. Approximately 1907 acres could realistically be utilized by sheep. Based upon the 1962 range survey, a total of 301 AUMs are available to sheep. It is therefore recommended that if the allotment were converted from cattle to sheep, the following would apply:

**The active preference for sheep be established at 301 AUMs.
The authorized season of use be established from 11/1 to 3/31.**

C. Pinyon-Juniper woodlands

Rawe Peak lacks diversity due to the influence of pinyon/juniper woodlands (Refer to Appendix III for a detailed discussion). The natural site for these woodlands, based upon the Lyon County Soil Survey and Soil Conservation Service Range Site Write-ups, is located on the shallow talus slopes. They provide cover and bind soil to protect these rocky, inhospitable sites. The balance of the range sites where they are located are lacking in vegetative production and diversity of both flora and fauna.

Bitterbrush, a key species for mule deer, is gradually being crowded out of the community. Moisture interception, prevention of water infiltration into the soil, and the blocking of sunlight are major influences. In some instances, with the exception of the loss of sunlight, this is resulting in loss of some riparian habitat (vegetation and water).

Fire hazard potential continues to increase. Fuel build-up is providing the opportunity for a devastating wildland fire.

Based on the data analyzed in this evaluation, an ecosystem without human intervention would have probably resulted in a potential natural plant community of approximately 33% pinyon-juniper woodlands. Instead, as determined in this evaluation and during preliminary research, human activities including fire suppression have resulted in an 81% pinyon/juniper dominated plant community. This, in turn, has resulted in a significant, adverse effect on biological diversity and therefore on wildlife, wild horse and livestock habitat. Therefore, an opportunity exists in the allotment for habitat improvement even though the potential is low.

Since pinyon/juniper woodlands have potential ecological, economic, aesthetic, cultural, and recreational values, it is important to manage for a long term ecosystem to include all these values for a viable pinyon/juniper woodland.

Therefore, it is recommended that long term management in the allotment be directed toward achieving an ecosystem containing a natural balance of pinyon/-juniper woodland, and other ecological sites.

D. Modification of Existing Objectives

With the emphasis on riparian management and new definitions associated with assessing riparian areas, it is recommended that the following objective be changed.

FROM: Protect and improve riparian areas to a good or better condition class.

TO: Protect and improve riparian areas to a proper functioning condition.

This change is consistent with with the Bureau-wide mandate to "restore and maintain riparian-wetland areas so that seventy-five

percent or more are in proper functioning condition by 1997⁵.

⁵ BLM, Riparian-Wetland Initiative for the 1990's, page 16 (Goal Number 1 - Restoration and Maintenance). It is important to remember that seral stage does not determine whether a riparian area is healthy and functioning. BLM Technical Reference 1737-5 states that relating riparian health to ecological site status "...is a dangerous and functionally impossible view of how riparian systems operate." This same idea was recognized in the Riparian-Wetland Initiative for the 1990's, which states (emphasis added): "The overall objective is to achieve and advanced ecological status, except where resource objectives, including proper functioning condition, would require and earlier successional stage."

APPENDIX I

MAP NO. 1.....LAND STATUS

MAP NO. 2.....RANGE IMPROVEMENTS

MAP NO. 3.....HERD MANAGEMENT AREA

MAP NO. 4.....MULE DEER HABITAT

MAP NO. 5.....WATER RESOURCES

MAP NO. 6.....USE PATTERN MAPPING

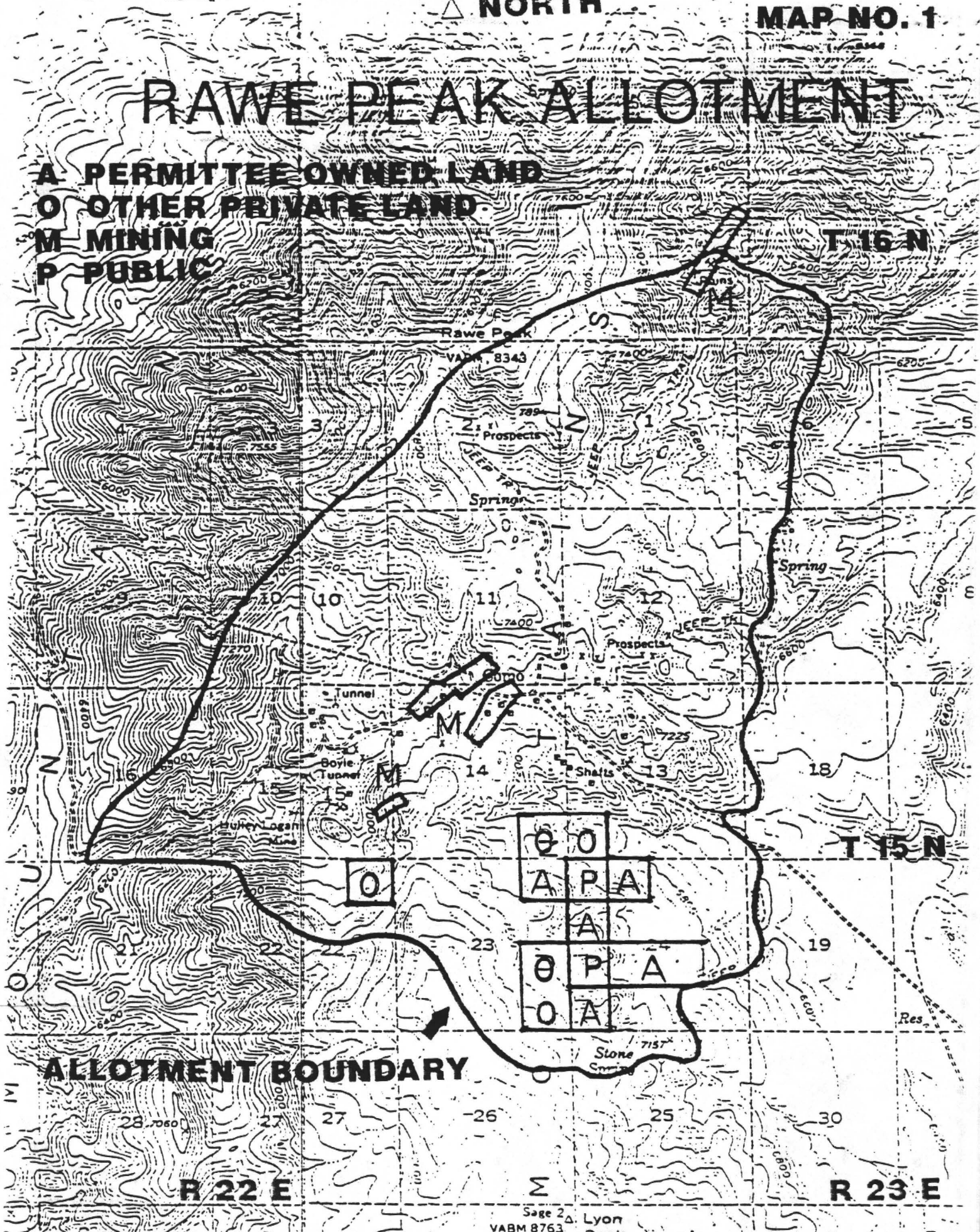
MAP NO. 7.....PHOTO TREND PLOTS

△ NORTH

MAP NO. 1

RAWE PEAK ALLOTMENT

A PERMITTEE OWNED LAND
O OTHER PRIVATE LAND
M MINING
P PUBLIC



ALLOTMENT BOUNDARY

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A	P	A
	A	
O	P	A
O	A	

R 22 E

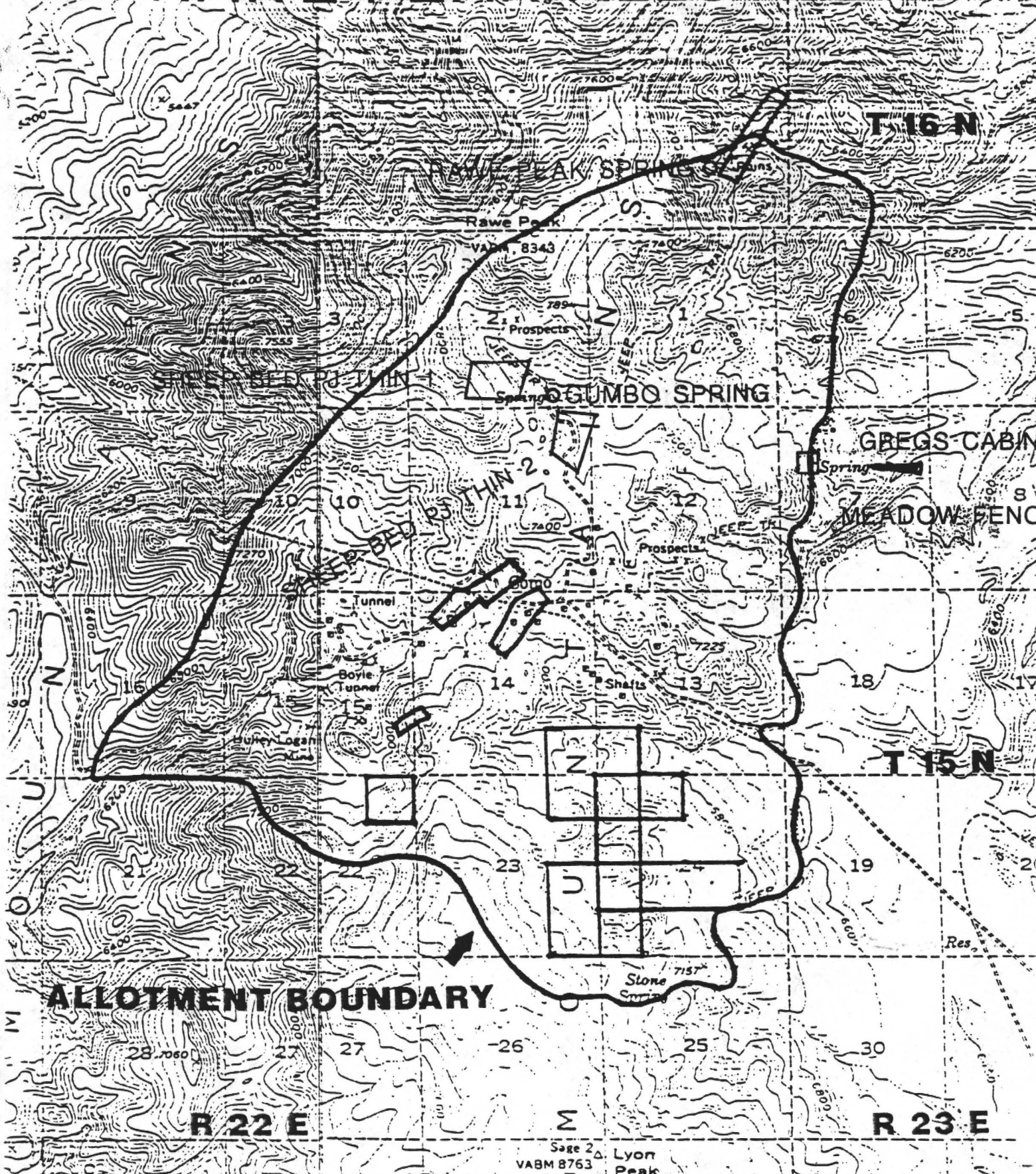
R 23 E

Sage 2
VABM 8763

△ Lyon Peak

SCALE APPROXIMATELY 1.38 INCHES PER MILE

RAWE PEAK ALLOTMENT



ALLOTMENT BOUNDARY

R 22 E

R 23 E

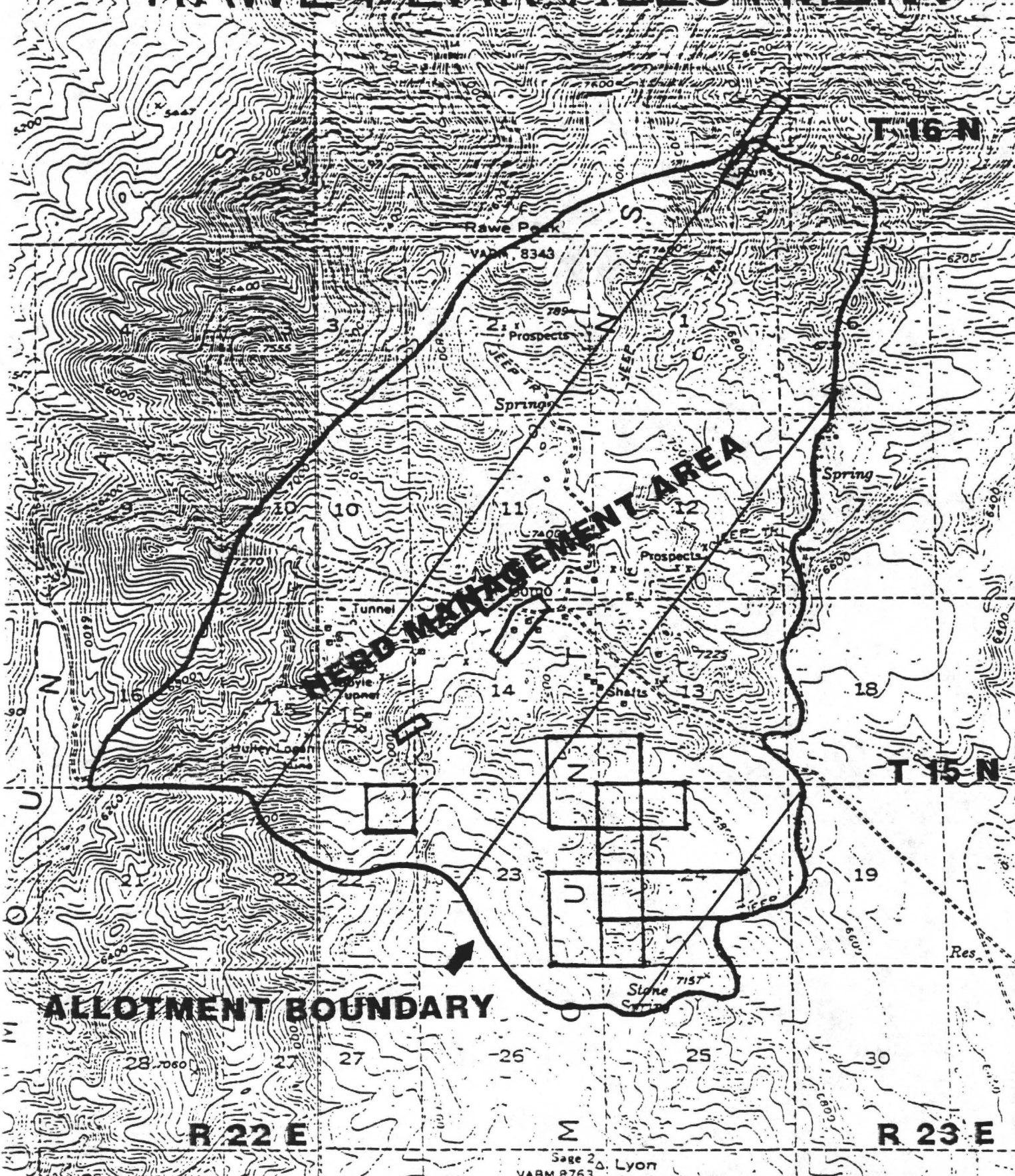
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Lyon Peak

SCALE APPROXIMATELY 1.38 INCHES PER MILE

△ NORTH

MAP NO. 3

RAWE PEAK ALLOTMENT



ALLOTMENT BOUNDARY

R 22 E

R 23 E

Sage 2
VABM 8763

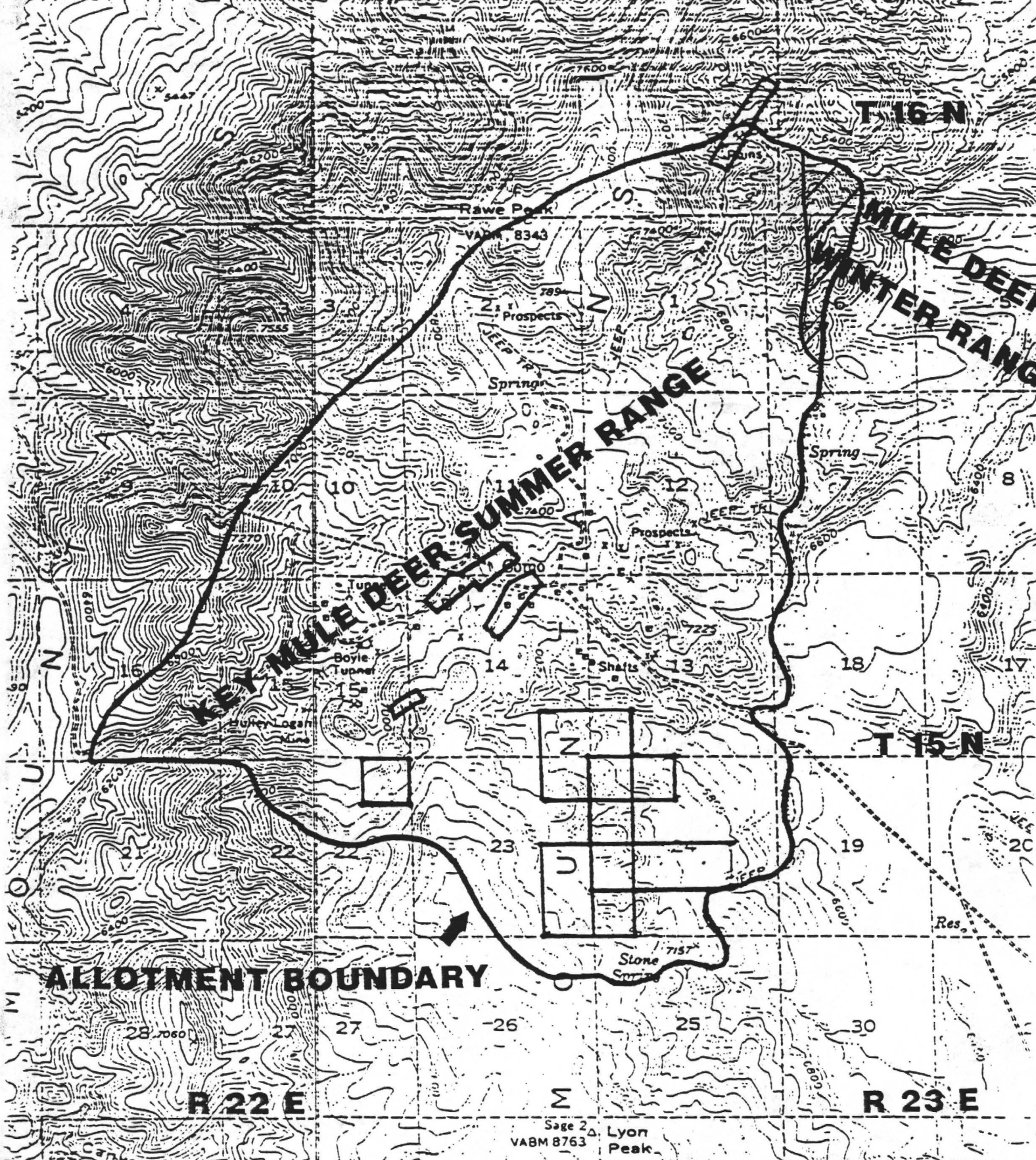
△ Lyon Peak

SCALE APPROXIMATELY 1.38 INCHES PER MILE

▲ NORTH

MAP NO. 4

RAWE PEAK ALLOTMENT



ALLOTMENT BOUNDARY

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R 23 E

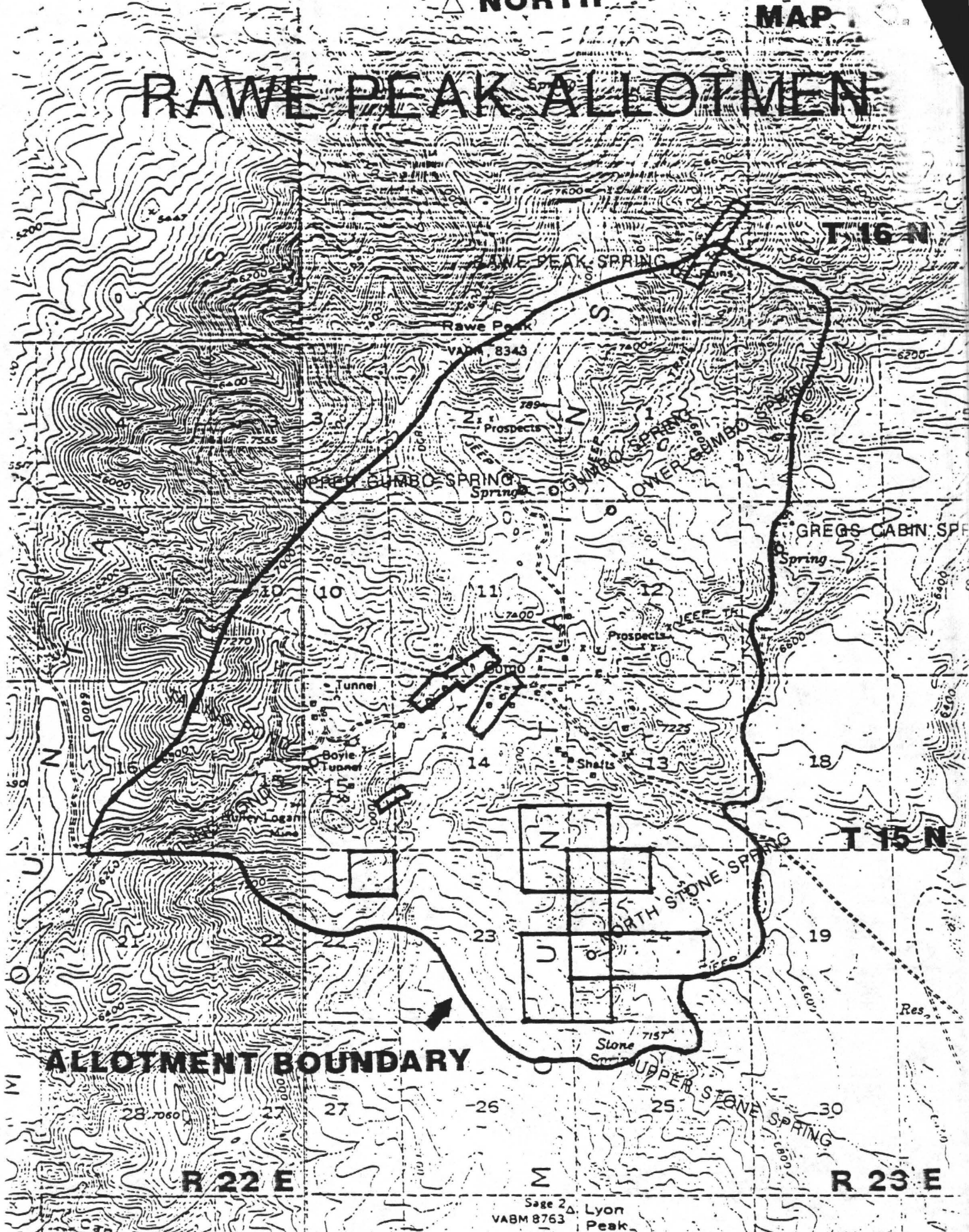
Sage 2
VABM 8763 Lyon Peak

SCALE APPROXIMATELY 1.38 INCHES PER MILE

△ NORTH

MAP

RAWE PEAK ALLOTMENT



T 16 N

T 15 N

ALLOTMENT BOUNDARY

R 22 E

R 23 E

Sage 2
VABM 8763
Lyon Peak

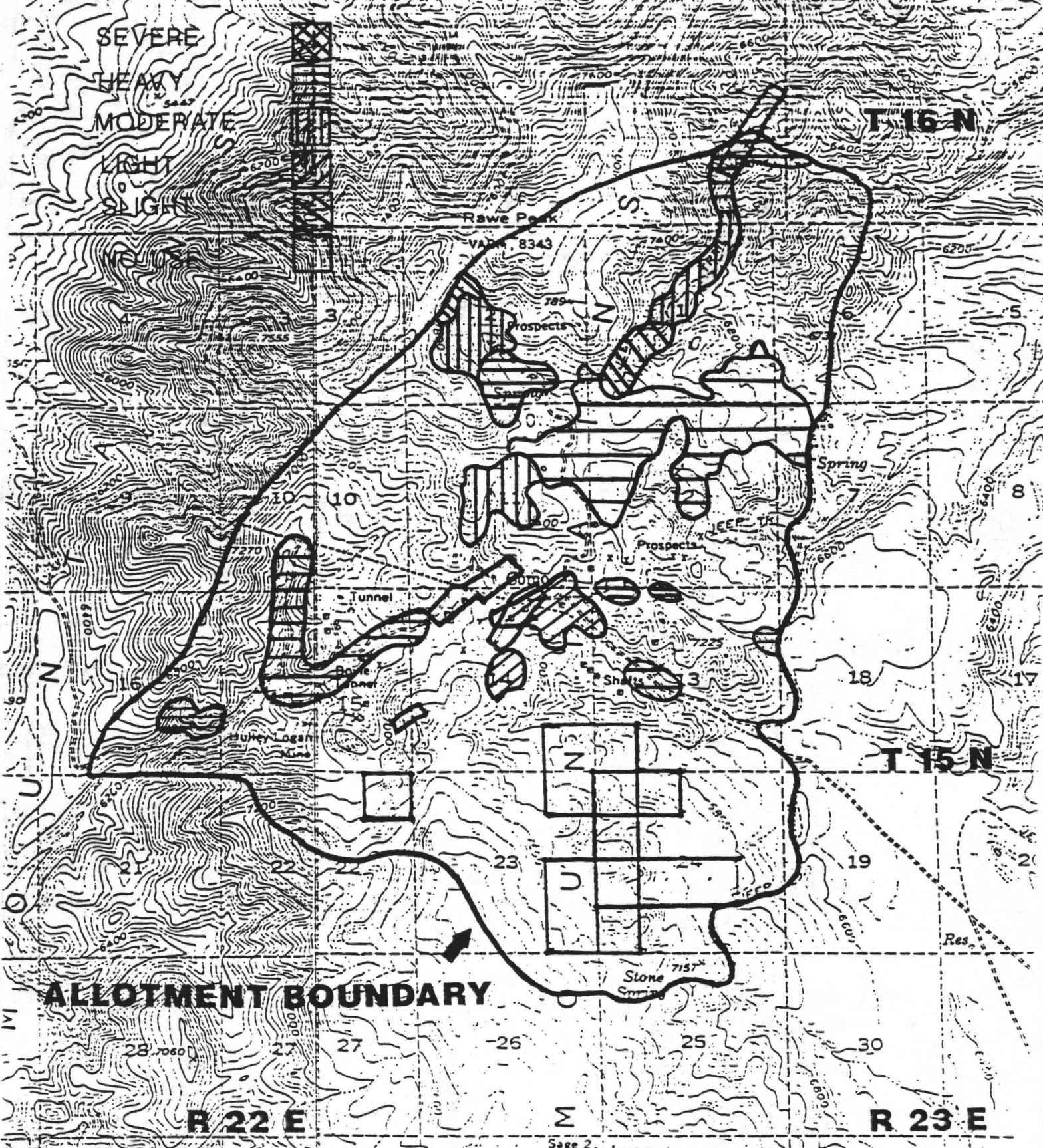
SCALE APPROXIMATELY 1.38 INCHES PER MILE

△ NORTH

MAP NO. 6

RAWE PEAK ALLOTMENT

SEVERE
HEAVY
MODERATE
LIGHT
SLIGHT



ALLOTMENT BOUNDARY

R 22 E

R 23 E

Sage 2
VABM 8763

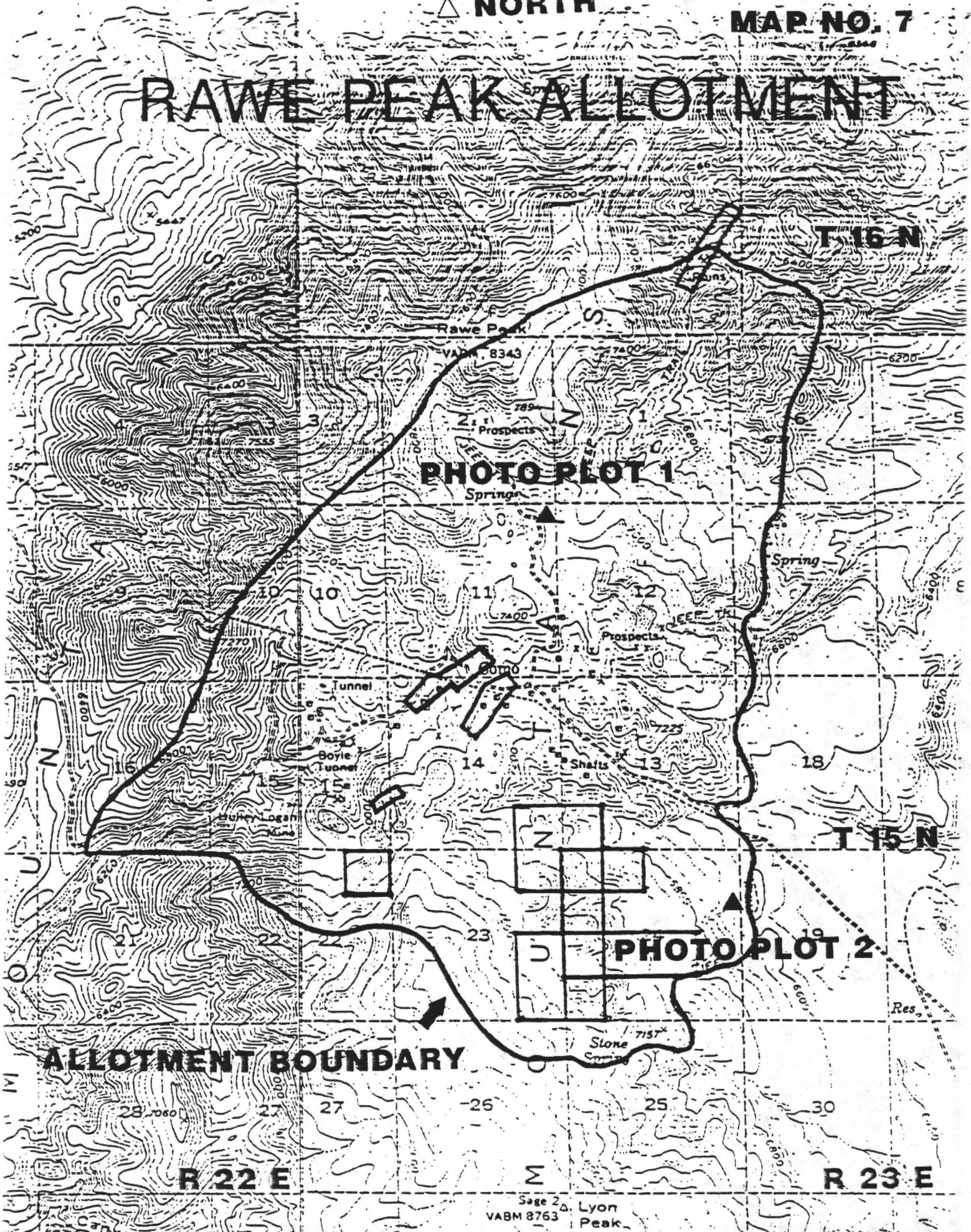
△ Lyon Peak

SCALE APPROXIMATELY 1.38 INCHES PER MILE

△ NORTH

MAP NO. 7

RAWE PEAK ALLOTMENT



ALLOTMENT BOUNDARY

Sage 2
VABM 8763 Lyon Peak

SCALE APPROXIMATELY 1.38 INCHES PER MILE

APPENDIX II
POTENTIAL STOCKING LEVEL CALCULATIONS

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APPENDIX IIA

UTILIZATION BY ALLOTMENT FOR RAWE PEAK/CHURCHILL CANYON/MILL CANYON HORSE BANDS

Utilization Class	Churchill Canyon Acres in HMA by class	Churchill Canyon Acres outside HMA by class	Mill Canyon Acres in HMA by class	Mill Canyon Acres outside HMA by class	Rawe Peak Acres in HMA by class
Slight	0	0	0	0	73
Light	54	2681	69	262	102
Moderate	400	3377	0	786	296
Heavy	3384	76	7090	2736	873
<u>Severe</u>	<u>0</u>	<u>0</u>	<u>181</u>	<u>41</u>	<u>0</u>
TOTALS	3838	6134	7340	3825	1344

UTILIZATION SUMMARY FOR RAWE PEAK/CHURCHILL CANYON/MILL CANYON HORSE BANDS

Utilization Class	(x1) Acres in HMA by class	(x2) Acres outside HMA by class	(y) Class Midpoint	x1 * y Within HMA Acres X Utilization	x2 * y Outside HMA Acres X Utilization
Slight	73	0	10	730	0
Light	225	2943	30	6750	88290
Moderate	696	4163	50	34800	208150
Heavy	11347	2812	70	794290	196840
<u>Severe</u>	<u>181</u>	<u>41</u>	<u>90</u>	<u>16290</u>	<u>3690</u>
TOTALS	12522	9959		852860	496970
Desired Utilization	12522	0	27.5	344355	0

Present Horse Numbers	"PRESENT MULTIPLE" Present sums of Acres X Utilization (1)	"DESIRED MULTIPLE" Desired sums of Acres X Utilization (2)	Number of horses needed to achieve desired utilization (3)
164	1349830	344355	42 (504 AUMs)

- (1) Includes the sum of both inside (852,860) and outside (496,970) the HMA.
- (2) The sum 27.5% desired utilization multiplied by the number of acres of HMA being grazed by these bands of horses.
- (3) Solving for "x" in the ratio equation: $\frac{1,349,830}{164 \text{ horses}} = \frac{344,355}{x \text{ (number of horses to achieve desired utilization levels)}}$

AUMs PROVIDED FOR THE DESIRED NUMBER OF HORSES (42) BY ALLOTMENT:

Mill Canyon	Churchill Canyon	Rawe Peak
296	154	54

APPENDIX IIB

CALCULATION OF HORSE POPULATION LEVEL (AML) AT THE DESIRED FORAGE UTILIZATION LEVELS

	HORSE GROUP				
	Buckeye / Sand Canyon	Eldorado / Hackett Canyon	Clifton	Churchill Canyon/ Mill Canyon/ Rawe Peak	Sunrise
PRESENT POPULATION (Number of horses):	49	43	68	164	35
PRESENT FORAGE PRODUCTION (AUMs)	588	516	816	1968	420
PRESENT AVERAGE UTILIZATION:	27.8%	38.5%	49.8% *	68.1% *	72.5%
"PRESENT MULTIPLE" (from APPENDIX IIA)	423260	345010	669600	1349830	187620
DESIRED UTILIZATION:	27.5%	27.5%	27.5%	27.5%	27.5%
ACRES GRAZED WITHIN HMA:	15252	8957	12770	12522	2588
CALCULATION OF "DESIRED MULTIPLE" (Acres grazed within HMA, multiplied by the 27.5% Desired Utilization)	419430	246318	351175	344355	71170
CALCULATION OF AUMS POTENTIALLY PRODUCED AT "DESIRED MULTIPLE" **	583	368	428	502	159
NUMBER OF HORSES SUPPORTED BY FORAGE AT DESIRED UTILIZATION:	49	31	36	42	13
ALLOWABLE MANAGEMENT LEVEL (AML) AT THE DESIRED UTILIZATION LEVEL				2040 AUMs	
(Sum of forage in AUMs for each horse group at desired level, divided by 12 months):				170 horses	

* INSIDE THE HMA. THERE IS ADDITIONAL UTILIZATION OUTSIDE THE HMA FOR THESE HORSE GROUPS.

** SOLVING FOR "ALLOWABLE USE" IN THE EQUATION: $\frac{\text{PRESENT PRODUCTION}}{\text{"PRESENT MULTIPLE"}}$ $\frac{\text{"ALLOWABLE USE"}}{\text{"DESIRED MULTIPLE"}}$

APPENDIX III

PINYON/JUNIPER WOODLANDS DISCUSSION -POTENTIAL

RAWE PEAK ALLOTMENT EVALUATION
ERRATA AND ATTACHMENTS

Insert the attached Sections VII and VIII after page 15. In the Table of Contents, insert the following under Section VI:

VII. CONSULTATIONS 16
VIII. MANAGEMENT ACTIONS SELECTED 19

VII. Consultation

On July 19, 1993, a letter was sent to persons and organization that have shown interest in resource management in the Walker Resource Area. The purpose of the letter was to gather additional information and to determine who would be interested in participating in the evaluation process on nine allotments in the northern Pine Nut Mountain Range. Rawe Peak was among these allotments.

Sections I (Introduction) through VI (Technical Recommendations) of this evaluation were sent out for public review on January 13, 1995. Fifteen copies were sent to the Nevada State Clearinghouse for distribution among state agencies. In addition, the following were sent copies of this evaluation.

Rolling A Ranch
Nevada Wildlife Federation
Natural Resources Defense Council
Carson City District Grazing
Advisory Board
Resource Concepts Inc.
Rutgers University, S.I. Newhouse
Center of Law and Justice
The Honorable Barbara Vucanovich
The Honorable Richard Bryan
Paul Clifford
Rebecca Kunow
American Mustang and Burro
Association
Nevada Commission for the
Preservation of Wild Horses
U.S. Fish and Wildlife Service,
Reno Field Station

Nevada Division of Wildlife
The Wildlife Society
Sierra Club, Toiyabe Chapter
Nevada Cattlemen's Association
Nevada Woolgrower's Association
Washoe Tribe
Bureau of Indian Affairs,
Western Nevada Agency
The Honorable Harry M. Reid
American Horse Protection Association
Craig C. Downer
Steven Fulstone
Humane Society of Southern Nevada
L.I.F.E. Foundation
Kathy McCovey
Nevada Humane Society
Wild Horse Organized Assistance

Comments concerning Rawe Peak were received from the Nevada Division of Wildlife (NDOW), The Commission for the Preservation of Wild Horses (Commission), Wild Horse Organized Assistance (WHOA), and Craig Downer. Some of the comments showed a general opposition to livestock grazing. The BLM, however, is mandated to support a multiple-use concept while managing for a healthy ecosystem. It is therefore important to seek management goals that are fair to the majority of interests while maintaining or improving the health of the range.

Other questions and comments that relate to the health of the land or address the evaluation of this health are discussed below.

Comment: *We find it surprising that 16 percent of the allotment suffered heavy utilization without livestock or wild horse use. Without verified actual use, it will be difficult to establish a carrying capacity for the allotment.* (NDOW: similar comments were received from the Commission and WHOA)

It may be conceivable that the allotment is used by wild horse each year; however, are there livestock that could have been on the allotment in 1993? The adjacent Churchill Canyon Allotment had livestock use during 1993. (Commission)

Response: Use pattern mapping data shown on page 8 actually reflects 13% of the total acreage receiving heavy utilization. On page 10 of the evaluation, it was noted that "sporadic use is occurring in the open areas that provide grazing opportunities. Forage production is severely lacking. **Horses apparently move in and out from Mill and Churchill Canyon allotments.**"

The bands of the northern Pine Nut Horses ranging upon the Churchill Canyon Allotment also graze the Rawe Peak and Mill Canyon allotments so census and utilization data for these three allotments were combined for analysis. The allotments are not physically separated.

During the collection of utilization data in the Rawe Peak allotment in 1993, it was noted on the utilization forms that horse sign was present (fresh tracks and dung). Although no physical observations were made during this study and the aerial census conducted in 1993, it was evident that horses were using the allotment. There was no livestock sign observed during the data collection.

Based upon the utilization data and mapping of use patterns, the calculations contained in Appendix IIA, established the potential stocking level for cattle and horses in the allotment. Regardless of actually seeing animals, identifying and classifying grazed areas provides adequate information to establish a carrying capacity.

Comment: *We cannot find the procedure used in this evaluation in the Technical Manual 4400-7.* (WHOA)

We cannot find the procedure used in this evaluation in the Technical Manual 4400-7. (Commission)

Appendix IIA We could not determine how procedures within Technical Manual 4400-7 were applied. We would appreciate a better explanation on how the carrying capacity for this allotment was determined. (NDOW)

Response: The potential stocking level calculation found in Appendix II is based on a formula found on page 55 of Technical Reference (TR) 4400-7 (*Rangeland Monitoring Analysis, Interpretation, and Evaluation*). One of the parameters required in this formula is "AVERAGE/WEIGHTED AVERAGE UTILIZATION".

Weighted Average Utilization is determined based on procedures found on page 52 of TR 4400-7.

Comment: *There are 379 AUM, or ca. 31 wild horses, and 552 AUMs, or ca. 46 cattle, in this "Category C" early seral area of low production and potential. You state that you will manage for the status quo in the short term but that in the long term you will except the wild horses in this provision. It is important that the Pinenut herd be increased as a whole to a more substantial, viable herd size, which I suggest to be 1000 breeding adults, though 500 at a minimum, for the long term survival and given the size of contiguous public lands in the Pine Nut Range. (Craig Downer)*

Appendix IIB: I object to these low levels of wild horses and encourage a higher number through an effort on the part of the government authorities to provide a productive and suitable habitat for these animals here in their legal Herd Management Area. (Craig Downer)

Response: The long term objective mentioned in the first comment, above, dealt with checkerboard land patterns. This allotment doesn't meet the criteria and the objective was inadvertently included.

Allotment-based horse numbers are immaterial since the allotment boundaries within the HMA are unfenced and groups of wild horses are free to come and go at will. Therefore it becomes more important to establish wild horse numbers (i.e., the AML) for the entire HMA. Instead of proposing numbers for individual allotments, the allotment evaluations proposed stocking levels based on the availability of forage for wild horses and other considerations such as trend and condition. Based on the combined stocking levels for all nine allotments, no more than 179 wild horses can be supported within the HMA.

VIII. Management Action Selected

Due to the necessity of implementing the wild horse decisions on a herd management area basis, only one Proposed Multiple Use Decision will be issued for all nine allotments in the Pine Nut Herd Management Area.

The potential stocking level for wild horses in the portion of the Pine Nut Herd Management Area (HMA) located within the allotment is 54 AUMs.

The active preference for cattle will be adjusted from 552 AUMs to 54 AUMs. This reduction in active preference will be phased in over a five year period, beginning with the effective date of the Final Multiple Use Decision (1995). The reduction will be implemented as follows:

1995 From 552 AUMs to 386 AUMs
1997 From 386 AUMs to 220 AUMs
1999 From 220 AUMs to 54 AUMs

A total of 498 AUMs will be suspended.

The authorized season of use will be changed from 5/16 - 7/31 to 11/1 -3/31.

If a conversion is made from cattle to sheep, the active preference for sheep will be initially established at 301 AUMs. This preference will remain in effect for 5 years, after which time a final active preference will be established based on additional monitoring data.

It was decided by the Carson City District staff that, because of the potential economic, aesthetic, cultural and recreational values associated with pinyon-juniper woodlands, the longer term management of the woodlands in the Pine Nut Mountains should be addressed in the upcoming land use plan amendment. At the time of this writing, an amendment team had been formed and letters had been sent out to the public soliciting comments.

MILL CANYON ALLOTMENT
LIVESTOCK GRAZING MANAGEMENT DECISION

Decisions relating to the grazing of livestock on public lands in the Mill Canyon Allotment are as follows:

- A. In accordance with §4130.6-1(a), the active preference for sheep will be maintained at 2049 AUMs. *1/5 = 410 AUM cases*
- B. In accordance with §4110.3 and §4130.6-1(a), if cattle are grazed rather than sheep, the active preference for cattle initially will not exceed 776 AUMs. This preference will remain in effect for 5 years following such conversion, after which time a final active preference will be established based on additional monitoring data.
- C. In accordance with §4130.6-1(a), the authorized season of use will be changed from 11/1 -1/31 and 4/1 -5/31 to 11/1 - 3/31.
- D. In accordance with §4130.6-2, livestock use within the HMA portion of the allotment will be made between 11/1 and 2/28. After 2/28, all livestock use will be shifted outside of the HMA.

RATIONALE

Sheep and horses have a limited dietary overlap. Sheep prefer browse species while horses prefer grasses. The exception to this is during spring green-up, when sheep will also use the grasses. A large portion of the allotment is comprised of low sagebrush. By changing the grazing season of use for sheep from spring to fall/winter, the competition for grasses is eliminated and heavy shrub browsing by sheep will favor the grasses used by horses. Grazing occurs during plant dormancy when they are least vulnerable. Due to these factors, maintaining the active preference for sheep is practical.

Based on information provided in the evaluation it was determined that adequate forage is present to initially support 776 AUMs of cattle use in the event that a conversion is requested. Five years of studies will provide adequate information to determine a final active preference for cattle.

A sage grouse use area is located within the HMA. By removing livestock prior to the initiation of growth (i.e., green shoots of grass, forb production), the competition for this forage between livestock and wild horses will be eliminated. The vegetation along with the associated insect population are important to the sage grouse.

RAWE PEAK ALLOTMENT
LIVESTOCK GRAZING MANAGEMENT DECISION

Decisions relating to the grazing of livestock on public lands in the Rawe Peak Allotment are as follows:

- A. In accordance with §4110.3-2(b) and §4130.6-1(a), the active preference for cattle will be adjusted from 552 AUMs to 54 AUMs. In accordance with §4110.3-3(a) &(b), this reduction in active preference will be phased in over a five year period, beginning with the

effective date of the Final Multiple Use Decision (1995). The reduction will be implemented as follows:

1995 From 552 AUMs to 386 AUMs
1997 From 386 AUMs to 220 AUMs
1999 From 220 AUMs to 54 AUMs

In accordance with §4110.3-2(c), 498 AUMs will be suspended.

B. In accordance with §4130.6-1(a), the authorized season of use will be changed from 5/16 - 7/31 to 11/1 -3/31.

C. In accordance with §4110.3 and §4130.6-1(a), if sheep are grazed rather than cattle, the active preference for sheep will be initially established at 301 AUMs. This preference will remain in effect for five years, after which time a final active preference will be established based on additional monitoring data.

RATIONALE

Insufficient forage is available to provide 552 AUMs for livestock. The influence of pinyon-juniper woodlands severely restricts the areas that produce forage and are usable by cattle. The ability of these woodlands to out-compete other vegetation and intercept/utilize precipitation has resulted in declines of desirable forage for livestock, wild horses, and wildlife. In order to balance grazing with forage production, adjusting the livestock active preference was necessary.

The existing livestock authorized period of use occurs during the active growing season. Wild horse use also occurs throughout the active growing season. This concentration of use, coupled with the problems associated with the influence of the pinyon-juniper woodlands, has resulted in the loss of desirable forage.

Adjusting livestock numbers will, in part, begin to allow those areas that are usable an opportunity to recover. Use can be made by livestock during plant dormancy when they are least vulnerable. Snow, when available, will further help by providing the opportunity to distribute livestock.

SAND CANYON ALLOTMENT LIVESTOCK GRAZING MANAGEMENT DECISION

Decisions relating to the grazing of livestock on public lands in the Sand Canyon Allotment are as follows:

A. In accordance with §4110.3, the active livestock preference is cancelled.

B. In accordance with §4130.4-2, livestock grazing will be authorized on a temporary non-renewable basis.

C. In accordance with §4130.6-2, utilization shall not exceed the Allowable Use Level of 55%. This applies to livestock and wild horses.

June 20, 1994

APPENDIX III

SINGLELEAF PINYON AND UTAH JUNIPER IN THE NORTHERN PINE NUT MOUNTAINS OF NEVADA

In preparation for evaluations on several grazing allotments located in the northern Pine Nut Mountain Range of Nevada, it was necessary to review the current research relating to singleleaf pinyon pine (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*). This report is the culmination of that research.

I. Prehistorical and Historical Overview

A. Prehistory

Single-leaf pinyon pine migrated into the Great Basin between 5,000 to 7,000 years ago, when temperatures reach their maximum during the current (Holocene) epoch [Tausch, Wigand, and Burkhardt (1993)]. Very little documentation could be located when pinyon actually reached the Pine Nut Mountains. Utah juniper has existed in the vicinity much longer than pinyon. Research of a pack rat midden site in western Nevada showed that Utah juniper was present in every sampled stratum of the 30,000 years of the record for this site.

Young (1983) asserted that ecosystems currently dominated by pinyon and juniper evolved under episodes of periodic burning. These fires, which occurred at frequencies between ten and thirty years apart, would have restricted the trees to shallow, rocky soils in rough terrain. This idea is reflected in the climax plant community concept as it is used by the Soil Conservation Service to determine the differences in range sites and woodland suitability groups (Brackley, 1987). Wright et al (1979), on the otherhand, maintained that fire cannot be seperated from drought and competition with grasses as a controlling factor in the distribution of pinyon and junipers, especially junipers. This concept would support a more dynamic environment where trees would expand their distribution during wet years, but decrease their distribution during drought periods and/or period of increased fire activity.

Prior to the first settlers immigrating from the east, the native human population (Washoe Tribe) relied on pinyon nuts harvested in the Pine Nut Range as a major food source. Tribe members would camp in the mountains during the harvest season, removing cones from trees by flailing with long poles. More persistent cones were removed with a primitive 'hook' at the end of the flailing poles. Care was taken to avoid damaging trees during the harvest. Undergrowth was removed around the trees to aid in harvesting and to prevent the spreading of forest fires (Goodwin and Murchie, 1980). John C. Fremont contacted Washoe Tribe in 1844 near Topaz Lake in Antelope Valley, who harvested nuts from the southern

Pine Nut Range. The entry in Fremont's Journal from January 25, 1844 contains the following:

"These (the pinyon nuts) seemed to be a staple of the country, and whenever we met an Indian, his friendly salutation consisted of offering a few nuts to eat and trade..."

Although documentation exists to the importance of pine nut harvesting to the native population in the southern Pine Nut Range, very little information could be found of the importance of pinyon pine in the northern portion. Cultural Resource records at the Carson City District have very few prehistoric sites associated with the northern Pine Nuts.

B. Discovery of the Comstock Lode

With the discovery of the Comstock Lode, pinyon and juniper in the vicinity of Virginia City was harvested extensively for fuel, being almost depleted by the 1860s (Van Hooser and Casey, 1987). Once this occurred, wood was harvested from the Sierra Nevadas and probably, to a large degree, throughout the northern Pine Nut Range. The Pine Nut Mountains also supported the needs of communities such as Carson City (1851 to present), Dayton (1853 to present), and Como (1879 to 1881)¹.

A map of the "Washoe" region from 1862 (Paher, 1970, page 42) described the lower and mid fans south of Dayton as "Sage Lands". The northern Pine Nut Mountains were described as "Sparsely Timbered with Scrubby Pine & Cedar". Cadastral Survey plats from between 1861 and 1881 generally described the habitat in the vicinity of Sunrise Pass as "Mountains with Pine and Cedar Timber". Based on the surveyors notes and "Timber Line" drawn on the plats, stands of "Heavy Nut Pine Timber" was frequently interrupted by openings. Due to their location next to roads, some of these openings were presumably from timber harvesting.

Photographs from 1902 in the vicinity of Como (Paher, 1970, page 72) showed very few old pinyon and juniper trees, although young trees were visible. This could be the results of the harvesting during the mining boom.

C. Post Mining Boom

A twenty year depression between 1880 to 1900 resulted in a decline in population and mining activities (Pendleton et al, 1982), which in turn probably resulted in

¹Dates of communities from Pendleton et al, 1982.

a decline in wood harvesting in the northern Pine Nut Range. The heavy livestock grazing in the late 1800s and early twentieth century reduced grass competition and fuel for fires, resulting in an increase in pinyon and juniper.

II. Impacts of Pinyon - Juniper Overstory to Understory Plant Species

Effects on understory decline due to increasing singleleaf pinyon pine and Utah juniper cover was documented by Everett and Sharrow (1983). These effects include the following:

- A. The ability of pinyon to utilize soil moisture before many of the understory species breaks dormancy and the ability of the taproot to draw moisture at greater levels than most understory species gives an extreme competitive advantage.
- B. Duff accumulation inhibits the establishment of understory species.
- C. Shading and/or toxic influences reduces understory species.
- D. As pinyon - juniper cover increase, understory cover decreases as a whole.

Everett and Sharrow (1985) found in studies from west central Nevada that grass cover, yield and nutrient content increased substantially following single-leaved pinyon and Utah juniper harvesting on north and west facing aspects, but minimal response was observed on south aspects. Based on this, tree harvesting for the purpose of improving livestock forage should not be done on south aspects. They also concluded that nitrogen levels in grasses were adequate for livestock during the summer on tree-harvested sites, but nitrogen and phosphorus levels in grasses were inadequate for deer on both harvested and non-harvested sites. Of course, overstory removal would also result in an increase in forbs and shrubs. Transition zones near the edge of wooded areas produced the best quality and quantity of grass. Although this research was directed toward livestock production, the results should be directly applicable to habitat managed for wild horses and many species of wildlife.

Tausch, Nabi, and West (1977) monitored singleleaf pinyon and Utah juniper sites throughout the Great Basin. They noted that there appears to be four stages in the takeover of an understory. The first step is seedling establishment until trees are about the size of the largest shrubs. Trees may not be noticeable in this stage. The second stage is when the trees reach one to two meters (approx. 3 to 6 feet). At the end of this stage, about 1/3 or less of the understory productivity has been lost. The plant community is completely dominated by trees by the end of the third stage, and 2/3s to over 3/4s of the understory productivity has been lost. According to Tausch, Nabi and West, stage one was completed between 1860's and 1890's and stage two was completed

on more productive sites between 1940's and 1950's (this seems to concur with information under Section I of this report). They also state:

Much of the remainder of the Great Basin woodlands where invasion is taking place are moving into stage three and are now undergoing a rapid decline in understory productivity. By the year 2000, all but the more marginal sites of pinyon-juniper woodlands in the Great Basin will have lost most of their productive capability, if present trends continue. Tausch, Nabi and West (1977), page 29.

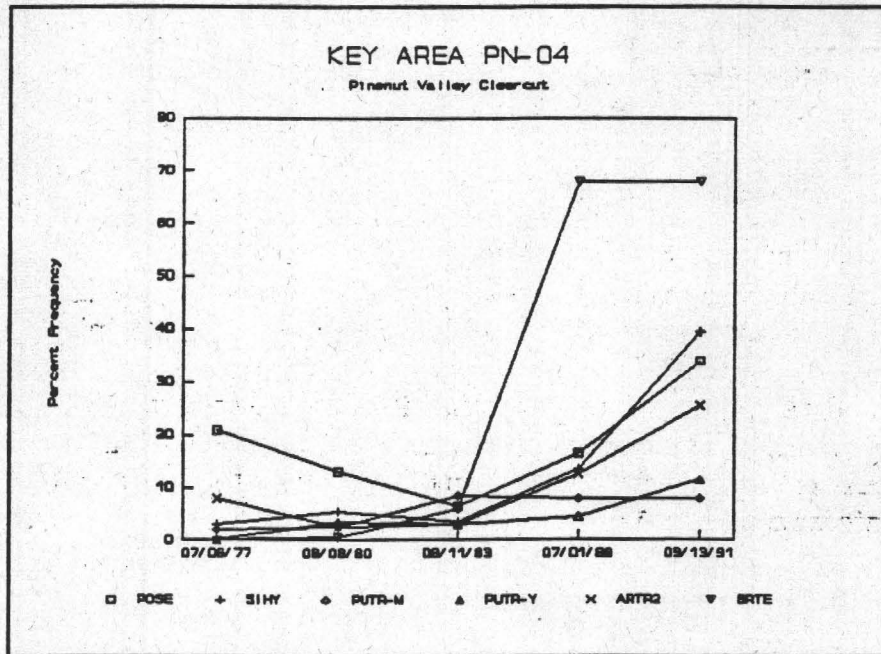
The effects of overstory removal in the Pine Nut Mountains was monitored on a 10 acre experimental pinyon - juniper clearcut done in 1977. Quadrat frequency study data was collected in accordance to procedures adapted from Tueller, etal (1972)². The results are shown in Table 1 and Figure 1. Note that the 1977 recording was done immediately prior to the cut.

Table 1--Major Plant Species at Key Area PNO4 (Pinenut Valley Clearcut).

Plant Code	Common Name	Scientific Name
ARTR2	big sagebrush	<i>Artemisia tridentata</i>
BRTE	cheatgrass brome	<i>Bromus tectorum</i>
POSE	Sandberg bluegrass	<i>Poa secunda</i>
PUTR-M	antelope bitterbrush - mature	<i>Purshia tridentata</i>
PUTR-Y	antelope bitterbrush - young	<i>Purshia tridentata</i>
SIHY	bottlebrush squirreltail	<i>Sitanion hystrix</i>

Figure 1.--Frequency study results for Key Area PNO4 (Pinenut Valley Clearcut).

²Procedures eventually included in BLM Technical Reference 4400-4 (Trend Studies) 1985, pages 29 - 35.



Note that the frequency initially declined or remained static on all species except mature bitterbrush. Based on Carson City and Yerington precipitation data, this coincides with a short drought between 1977 and 1979. After 1983 (a peak precipitation year), Sandberg bluegrass, bottlebrush squirreltail, big sagebrush and cheatgrass showed dramatic increases. Although mature bitterbrush frequency leveled out, young bitterbrush plants increase.

The beneficial effects of reduced overstory competition could be easily negated by improper management of wild horses and livestock. This is quite evident in quadrat frequency and key area utilization data from a chaining and seeding the Sunrise Allotment. Monitoring results showed that significant reductions in crested wheatgrass (*Agropyron cristata*, *A. desertorum*, or crosses) coincided with heavy and severe use levels due primarily to wild horses³.

III. Impacts of Fire on Pinyon - Juniper Community

Based on Wright, et al (1979), pinyon and juniper less than 4 feet in height were killed during spring fires when temperatures were 70 to 74° F. (21 to 23° C.), relative humidity of 20 to 40 percent and wind speeds were 10 to 20 miles/hour. June fires when temperatures were 97° F. resulted in 100 percent kill on trees less than 4 feet, but was no more effective in killing taller trees than the spring burn. Fine fuels in the understory (approximately 600 to 800 lbs/acre) are necessary to carry the fires, which means that the

³This is discussed in the Sunrise Allotment Evaluation completed by the Walker Resource Area on January 11, 1994.

reduced understory from dense stands of pinyon and juniper (495 to 988 trees / acre) may result in reduced tree kill. In this situation, winds greater than 35 mi/h would be required. The "White Pine County Formula" was developed to determine whether pinyon - juniper stands will burn or not:

$$\text{Index} = \text{Maximum wind (mi/hr)} + \text{Shrub and tree cover (\%)} + \text{Air temperature (}^{\circ}\text{F.)}$$

An index higher than 110 will result in the fire being carried and large pinyon and juniper trees being killed. If the index is above 130, the conditions are too dangerous to burn. Pure stands of juniper are more difficult to kill than mixed stands of pinyon and juniper.

However, if fire prescriptions are developed for the northern Pine Nut Mountains, it is important to consider the impacts to other plant species. Tables 2 and 3 are summaries of fire effects on major plant species found in the Pine Nut Mountains. This data is based on information from Wright, et al (1979).



COMMISSION FOR THE
PRESERVATION OF WILD HORSES

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February 10, 1995
(702) 688-2626

Mr. John Singlaub
District Manager
Carson City District
Bureau of Land Management
1535 Hot Springs Road
Carson City, Nevada 89706-0638

Subject: Rawe Peak Allotment Evaluation

Dear Mr. Singlaub:

The Commission for the Preservation of Wild Horses appreciates your consultation concerning the Pine Nut Wild Horse Herd. The Rawe Peak Allotment is alike many of the allotments of the Pine Nut Range with constant wild horse use and infrequent livestock use. Data collected on this allotment is difficult to assess and impossible to use to determine the appropriate management level for this allotment.

Page 6, Actual Use


No data are available to determine a carrying capacity based on 1993 use pattern mapping data.

Page 8, Use Pattern Mapping

It may be conceivable that the allotment is used by wild horses each year; however, are there livestock that could have been on the allotment in 1993? The adjacent Churchill Canyon Allotment had livestock use during 1993.

Appendix II

We cannot find the procedure used in this evaluation in the Technical Manual 4400-7.

Sincerely,

Catherine Barcomb
Director

February 10, 1995

Mr. John Singlaub
District Manager
Carson City District
Bureau of Land Management
1535 Hot Springs Road
Carson City, Nevada 89706-0638

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Sincerely,

DAWN Y. LAPPIN
Director