2210

ENVIRONMENTAL ASSESSMENT REPORT

FOR

SUPERIOR ALLOTMENT MANAGEMENT PLAN

Region 3
USDA Forest Service
Tonto National Forest
Globe Ranger District

Report Prepared by Robert H. Maxwell _____
Range Substaff — Date

Report Reviewed by George C Martin 4/12/79
Range and Wildlife Staff — Date

Report Recommended by Wallace L Ruthledge 4/13/79
District Forest Ranger — Date

TABLE OF CONTENTS

I. INTRODUCTION

The nature of the decision to be made is to implement a management alternative which will correct the unsatisfactory resource conditions induced by long-term overgrazing of the Superior Allotment. A brief history of the allotment will aid in understanding why this decision is necessary. Grazing permit records date back to 1915, when a permit was issued for 800 cattle yearlong plus natural increase. Until the middle 1950's, grazing use ranged from 431 to 1,856 cattle yearlong plus natural increase. Not counted in the demand were numerous trespass cattle, wild horses, burros, and goats. It is very plain to understand action is necessary, at the present time, to implement a management alternative which will correct the severe damage which resulted because of past abuse of the Superior Allotment.

II. AFFECTED ENVIRONMENT

The current demand for the grazing resource on the Superior Allotment totals 315 cattle yearlong, plus approximately 161 natural increase from 1/1 to 5/31. The 1962 allotment analysis indicated a capacity of 5,300 animal months. At present the allotment is stocked at approximately 4,585 AUM's. The 1962 analysis indicates the range is mostly in poor or very poor condition. Recent range inspections indicate condition and trend have not changed since 1962, except in the highlands, which indicate an upward trend. All of the areas rated poor or very poor are located in the lowlands and continue to be a problem. The highlands would probably rate high fair or low good. The following narratives describe environmental factors which could be affected as a result of implementing a management alternative.

A. Watershed

Drainage is primarily into Queen Creek. While the allotment is in a low water-yielding zone, it is in a high silt-yielding zone. Effective ground cover is highly important in keeping as much silt as possible from entering the main drainage. Livestock grazing has in the past severly abused watershed conditions by reducing ground cover, particularly in the lowlands and easily accessible areas. Continued use of the watershed by livestock at current levels is intolerable. Reducing the undesirable impacts of grazing will allow perennial grass to reestablish itself. As herbaceous vegetation increases in density the watershed will be restored to within its current capability.

B. Soils

Soils over the allotment vary to a great extent. The lower elevation soils and valley bottoms are primarily a sandy loam, derived from a mixed alluvium and granite. The higher elevations generally have a heavy clay-type soil in the browse type.

Severe sheet and rill erosion from both water and wind is evident over the entire lower country. The area around the town of Superior has the most severe erosion conditions. This area has very few perennial grass species established and gully erosion is very common. It is also possible to reduce this problem by reducing livestock pressure from these problem areas. The opportunity for this lies with the best livestock management system possible. For further technical explanation refer to Soil Scientist's Comments and Suggestions, dated November 21, 1978, in the appendix.

C. Wildlife

1. Deer are present on the allotment in moderate numbers. These animals are essentially confined to the higher elevations of the allotment most of the year. Habitat in the lower portion is sparse due to lack of cover; however, they do make use of this area in the winter and spring.

Peccary, quail and dove find the lower elevations much more important for habitat than the higher elevations, due to a few riparian zones in the valley bottoms. Livestock compete with these wildlife for food and cover and within these riparian zones, especially around water. The impact is greatest during the hottest part of the summer. Intensive management can reduce livestock impacts and improve wildlife habitat in these important areas.

2. Special consideration must be given to the following threatened and unique wildlife:

a. Zone-tailed hawk (habitat exists on the Superior Allotment in riparian zones where cottonwood and sycamore trees exist.)

b. Desert tortoise (forages on perennial grass species; therefore, good habitat depends upon the condition of perennial grass.)

c. Gila monster (much the same as the Desert tortoise.)

d. Gila top minnow (habitat in few select locations and they exist near the Boyce Thompson Arboretum.)

e. Southern bald eagle (requires a fishery for adequate habitat, but on the Superior Allotment use is only incidental.)

D. Range

In the past, the allotment has been grazed yearlong with cattle grazing the same areas all season yearly. Distribution has been much improved, through the development of new waters during the past 20 years. However, many of these developments are becoming nonfunctional due to siltation of ponds, worn out watering troughs and broken waterlines.

Vegetative species, such as perennial grass and palatable browse species, have been abused in years past. Perennial grass is nearly nonexistant in the lowlands where cattle currently concentrate. Some areas in the highlands have improved significantly, but cattle do not graze these areas due mostly to lack of water. Good opportunities exist to further improve the distribution of cattle on this allotment. Several management alternatives will be identified in this environmental assessment, one of which will best serve to manipulate livestock, improve distribution and minimize grazing impacts on sore spots.

E. Human Values

Grazing, recreation, archeology, aesthetics and mineral exploration and harvest of jojoba beans as a substitute for whale oil are the more important human values available on this allotment. Economically, mineral exploration, grazing and the harvest of jojoba beans are the most important value. Most of the allotment is staked to some kind of mineral exploration. Recreation is mostly confined to four-wheel driving, dirt bike riding, hunting and open space.

Many historical properties, such as old mining towns and old structures exist throughout the allotment. Archeological sites exist on many portions of the allotment, mainly on ridgetops and around some springs.

Aesthetics deal with the natural and cultural environment. Most of man's perception is based on sight. Sight-seeing on the Superior Allotment occurs primarily from roads. Management practices involving some range improvement structures, though scientifically correct, do not always produce visually acceptable landscapes (National Forest Landscape Management, volume 1, Agricultural Handbook Nr 434).

Livestock grazing will have no adverse affect on most of these human values with the exception of jojoba bushes since livestock browse on this plant, particularily on the lowlands. Overgrazing can have a detrimental affect on this valuable resource. Archeological and aesthetic values may be affected upon implementation of the management plan. This includes new water developments and fence construction. However, prudence in the construction of these projects should mitigate most of these short-term adverse effects.

F. Rare and Endangered Vegetative Species

The following is a list of some rare and endangered vegetative species which may or may not exist on the allotment:

1. Golden barrel cactus - Ferocactus acanthodes-eastwoodiae
2. Echeveria collomae
3. Echeveria rusbyi

4. Agave toumeyana, bella
5. Giant dropseed - sporobolus giganteus

Impact of livestock grazing or trampling may only be negligible on these species, with the exception of giant dropseed. However, it may be possible for the grazing impact to be heavy enough to destroy valuable microclimate necessary for seedling establishment of these species. Giant dropseed is a close relative to sporobolus cryptandrus and contractus and is palatable to livestock. Since this species is found mainly at the 4,000 to 6,000 foot level, the grazing impact upon this species may be negligible. In any case, a management alternative, which distributes and reduces cattle grazing pressure on sore spots, is very favorable to these species.

G. Land Ownership and Status

The Superior Allotment is located all or in part within T 2 S., R. 11 E.; T 1 S., R 11 E; T. 1 N., R. 11 E; T. 1 N., R 12 E.; T. 1 S., R. 12 E.; T. 2 S., R. 12 E.; T. 3 S., R. 12 E.; T. 3 S., T. 13 E.; T. 2 S., R. 13 E., and T. 1 S., R. 13 E. It encompasses 62,257 gross acres of land, 3,725 acres are under private ownership to various individuals in and around the town of Superior, Arizona. In addition, there are numerous patented and unpatented mining claims scattered throughout the allotment. Approximately 58,492 acres are classified as National Forest land.

All activities proposed in this report are confined to areas classified as National Forest land.

H. Fire

Placement of the allotment under management may impact fire-related activities by increasing the fire hazard as an accumulation of flashy fuels occurs. Since the ecotype evolved with fire as part of the natural process, the effects of fire may actually enhance the area.

A large fire could result in a financial loss to the permittee; however, ~~this impact~~ fire should not produce long-term negative effects. In the event a fire were to occur on the allotment, the prime consideration would be to allow adequate recovery time prior to grazing. Failure to address this concern would negate any beneficial effect of fire in the ecosystem. A good management system would allow for flexibility in the event of a large fire.

A 6,000-acre fire occurred on the allotment in 1976. The benefits cannot be overlooked and unless pointed out, little evidence remains to indicate a fire occurred in the area.

III. EVALUATION CRITERIA

The Tonto National Forest range rescource goals emphasize a program which will:

1. Bring the range under proper stocking.
2. Correct unsatisfactory watershed conditions.
3. Provide forage without impairing land productivity to the extent benefits are commensurate with costs.

Long-term goals for the Superior Allotment are as follows:

1. Insure the allotment has an opportunity to produce forage at its potential.
2. Improve watershed conditions through increased grass/plant density, litter accumulation, and reduction of soil compaction by livestock trampling.
3. Improve soil conditions by minimizing soil erosion.
4. Protect and enhance wildlife habitat with special consideration for rare and endangered nongame species.
5. Protect and enhance rare and endangered vegetative species.
6. Improve visual resources.

The following are management objectives to be attained within a 10-year period following implementation of a sound management system:

1. Increase the production of desirable forage on key grazing areas in the lowlands, from approximately 50 lbs. per acre to 200 lbs. per acre.
2. Reverse the downward trend in range conditions (measurable by condition and trend clusters).
3. Increase desirable plant composition and effective ground cover at least by 20% (measurable by condition and trend clusters).
4. Maintain the following allowable use levels on perennial grass:

    a. Very poor range condition - 25% average.
    b. Poor condition range - 25% average.
    c. Fair condition range - 40% average

5. Regenerate riparian vegetation along water courses.
6. Improve vigor of desirable browse species.

Management objectives to be attained with implementation of an improved management system:

1. Provide spring/summer rest, back-to-back, 2 out of 3 years.
2. Allow plants to meet their physiological growth requirements.
3. Improve livestock grazing patterns so traditional grazing patterns are broken up.

4. Provide for the protection and enhancement of threatened and unique wildlife species.

5. Preserve riparian vegetation and contrasting Sonoran desert vegetation for optimum visual variety of the visual resource.

Each alternative to be described will be evaluated and screened using the goals and objectives set forth for range, wildlife, watershed, and soils presented in the Tonto National Forest Mission Statement of 1977, which reflects the recommended RPA goals.

Sources of evaluation criteria were obtained from the following:

1. Martin, S. Clark, 1975, Ecology and Management of Southwestern Semidesert Grass/Shrub Ranges: The Status of our Knowledge, USDA, Forest Service Research Paper, RM-156, P. 14-17.

2. Martin, S. Clark and Hudson G. Reynolds, 1968, Managing Grass/Shrub Cattle Ranges in the Southwest, USDA, Forest Service, Agricultural Handbook #162.

3. Allotment Analysis Handbook, 1978, USDA, Forest Service, Southwestern Region.

IV. ALTERNATIVES CONSIDERED

A. Process used in formulating alternatives.

1. Range inspections and tours were used as tools to gain an understanding of the allotment needs. Most of the time was spent on horseback covering each pasture to learn of grazing patterns, vegetative conditions and soil condition.

2. The rancher was consulted to help formulate different alternatives consistent with the Forest Service goals and objectives.

B. Description of Alternatives

Alternative #1

This alternative consists of taking no action and continuing with the present system of management. A total of 4,600 AUM's would be allowed to graze under this proposal.

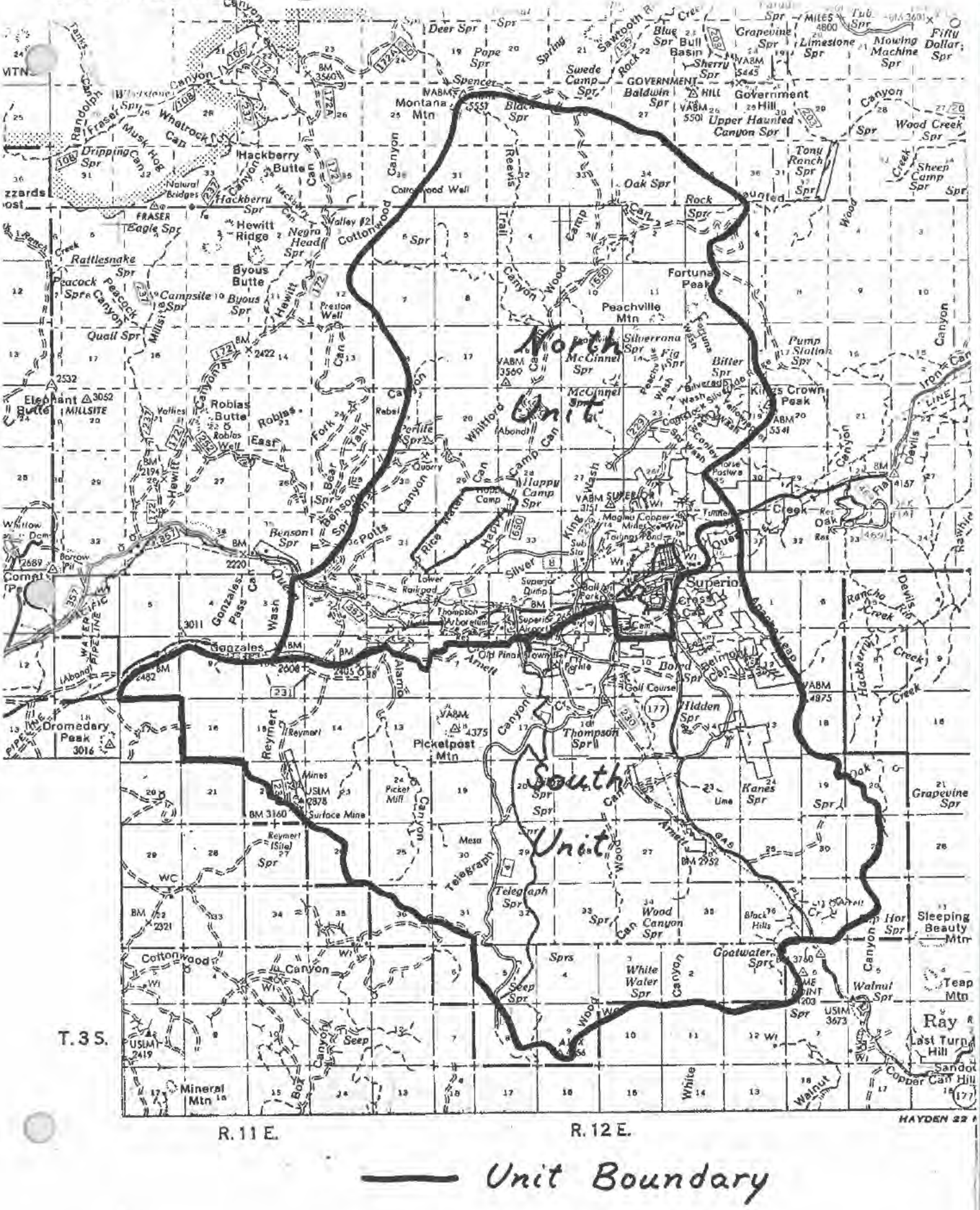
On 3/7/59, a grazing management plan was signed by the permittee and District Forest Ranger. The allotment is grazed as two units, north and south. Each unit is grazed one year followed by a full year's rest.

The rotation scheme is diagramed as follows:

Year	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
1.						Graze North Unit						
2.						Graze South Unit						
3.						Graze North Unit						
4.						Graze South Unit						
5.						Graze North Unit						

No new improvements are associated with this alternative.

Alternative #1



Alternative #2

This alternative consists of grazing 4,600 AUM's under a 3-pasture rest-rotation system. This system has been implemented to some degree in the last few years.

The following is a schematic of the rotation system:

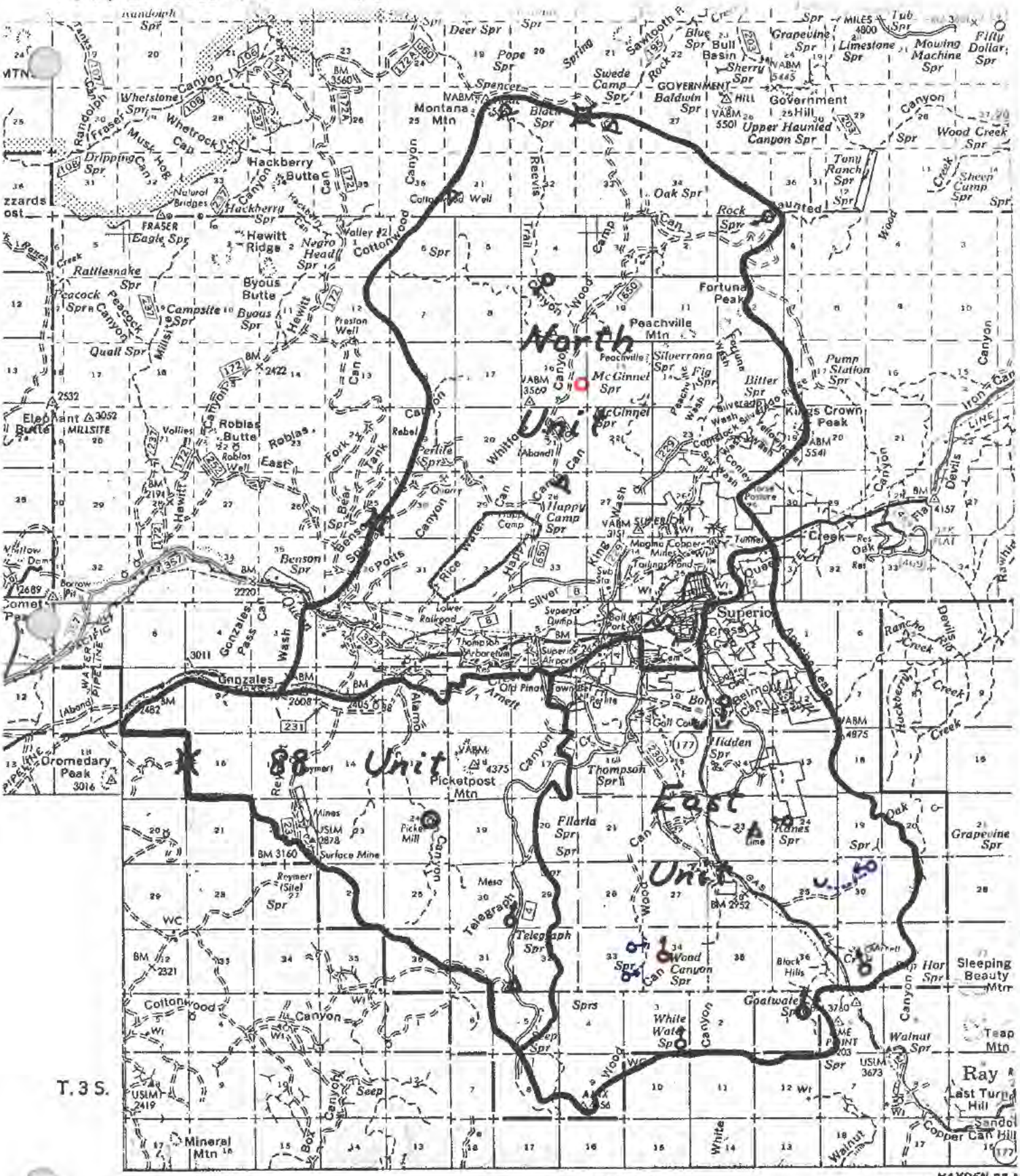
Year.	Dec. Jan. Feb. Mar. Apr. May	June July Aug. Sept. Oct. Nov.
1.	88 Unit	North Unit
2.	East Unit	88 Unit
3.	North Unit	East Unit
4.	88 Unit	North Unit
5.	East Unit	88 Unit

Each pasture receives one full year's rest following a 6-month grazing treatment.

There are three new stock tanks, three cattleguards, four springs plus one mile of pipeline which would have to be developed. In addition, three stock tanks, four springs, two vertical wells, one horizontal well, one corral and one-fourth mile of pipeline would have to be reconstructed to implement this system.

Both the Forest Service and permittee would have to expend a considerable sum of money to implement this system.

Alternative #2



New Construction

Waters

Corrals

Cattleguards

Reconstruction

Waters

Unit Boundary

Alternative #3

This alternative consists of grazing 4,680 AUM's under a 3-pasture rest-rotation system developed on the Santa Rita Experimental Station. Under this system, each of the three pastures would receive spring-summer rest back to back, two years out of three. This treatment has proven to be an effective means of improving range conditions when average utilization is maintained at 40%.

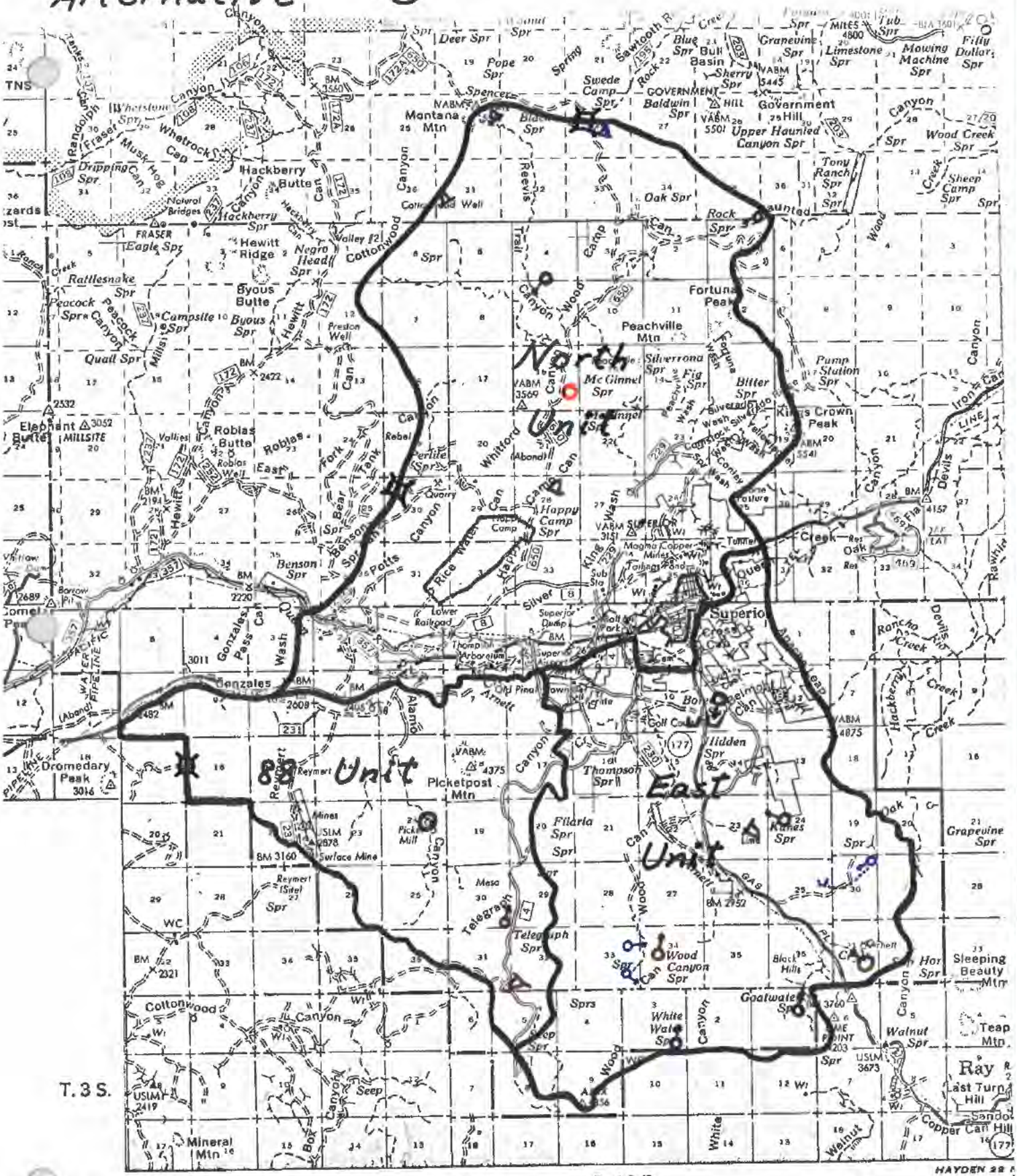
The following is a schematic of the rotation system:

Year	Nov. Dec. Jan. Feb.	Mar. Apr. May June July Aug. Sept. Oct.
1.	North Unit	88 Unit
2.	East Unit	North Unit
3.	88 Unit	East Unit
4.	North	88 Unit
5.	East Unit	North Unit

The improvements associated with this alternative are identical to those presented in Alternative #2. A total of three stock tanks, three cattleguards, four springs, and one mile of pipeline would have to be constructed. There are also three stock tanks, four springs, one horizontal well, two vertical wells, one corral and one-fourth mile of pipeline which require reconstruction to implement this system.

The Forest Service and permittee would have to spend a considerable sum of money to implement this alternative.

Alternative #3



New Construction

Waters

Cattleguards

Corral

Reconstruction

Waters

Unit Boundary

Alternative #4

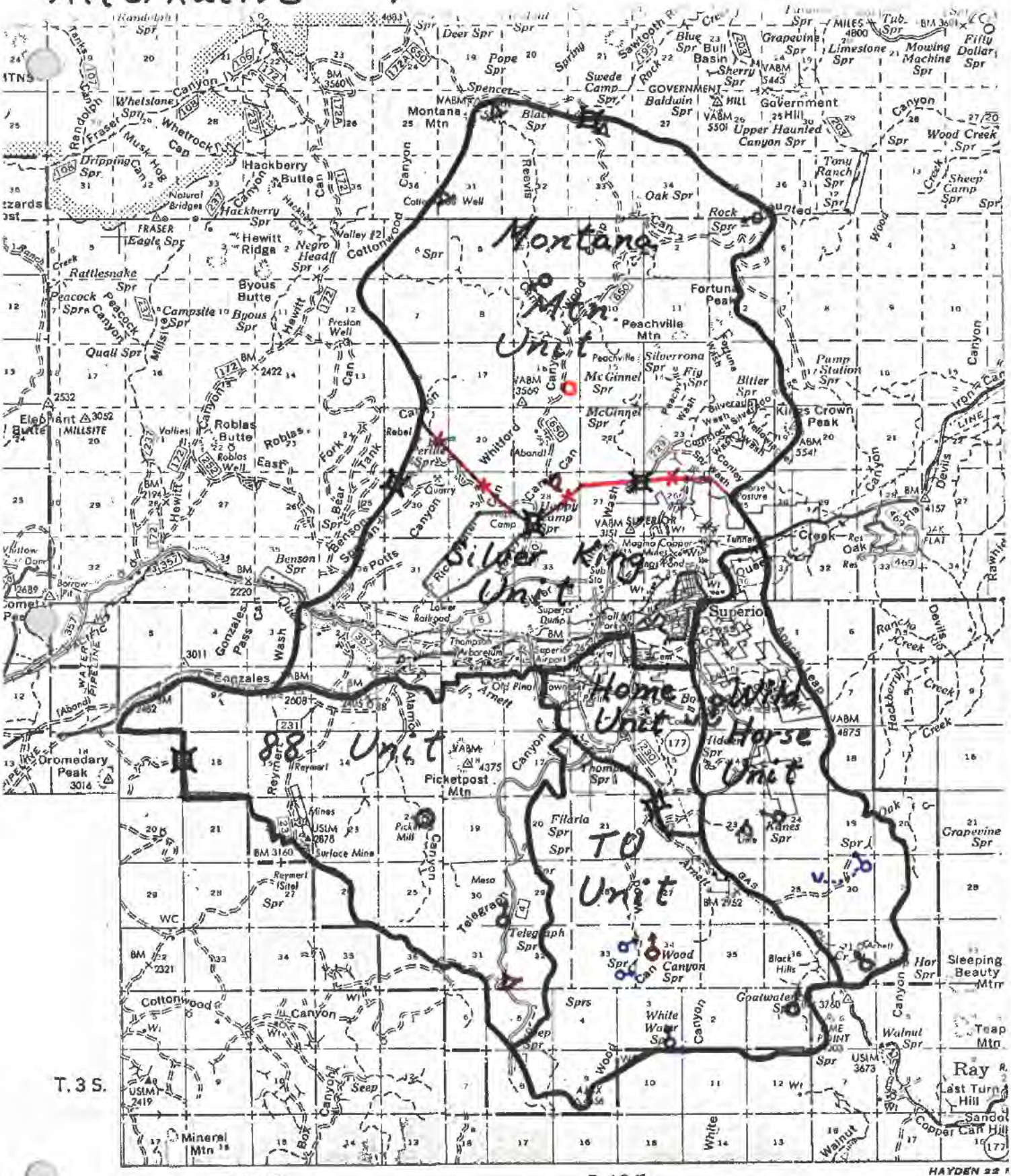
This alternative consists of grazing 4,600 AUM's under a 6-pasture rest-rotation system. It is essentially a combination of the systems presented in Alternatives #2 and #3. This system will provide for extended periods of rest in historically heavy-use areas with a good amount of rest in areas in fair or better condition. The following is an illustration of the proposed system:

Year	Dec. Jan. Feb, Mar. Apr. May	June July Aug. Sept. Oct. Nov.
1.	88 Unit	Home and TU
2.	Montana Mountain	88
3.	Silver King and Wild Horse	Montana Mountain
4.	88 and Home	Wild Horse and TU
5.	Montana Mountain	Silver King and Home

In order to implement this system, a total of three stock tanks, six cattleguards, four springs, developments and one mile of pipeline, plus approximately 5½ miles of fence would have to be constructed. In addition, three stock tanks, four spring developments, one horizontal well, one corral, two vertical wells and one-fourth mile of pipeline would have to be reconstructed.

This alternative entails the most amount of development of the alternatives described.

Alternative #4



New Construction
Waters
Corral
Cattleguards
Fences

Reconstruction
Waters

Unit Boundary

V. EFFECTS OF IMPLEMENTATION

Alternative #1 - No Action

The historic livestock grazing patterns would have to be considered as acceptable. The entire realm of ecological components would continue to be impaired in areas which historically have received the brunt of grazing use. Areas which are not grazed would continue to maintain themselves. There would be no opportunities for increasing the numbers of livestock and pounds of red meat produced. On the contrary, some livestock would have to be removed as resources in lowlands continued to be impaired. Long-term productivity of the land would be impaired.

Economically, this alternative would be advantageous to the permittee because no expenditure would be necessary. In the long term, the economic impacts would be negative because of a subsequent loss in site productivity; hence a loss in permitted numbers.

Alternative #2 - 3-Pasture Rest-Rotation

As with Alternative #1, the historic livestock grazing patterns would have to be considered acceptable. Distribution would be somewhat improved through new water developments but because of the terrain, successful control of livestock would be very difficult. It is anticipated the lowland will continue to deteriorate.

The system proposed provides for late spring and summer growing season rest two years out of three, but research has proven spring-summer rest back to back two years out of three, is essential to improve desert ranges. At the higher elevations, this treatment would allow plants to meet their physiological growth requirements.

Ecological conditions would continue to be impaired in areas historically grazed by livestock.

The opportunities for increasing the numbers of livestock and red meat production could be somewhat improved but is questionable and limited to that obtained from developing waters in areas now receiving limited use.

Long-term productivity and return from the land would not be fully realized under this alternative.

Capital investment to implement this alternative is estimated at $44,000 and is not considered to be cost effective, because the improvements would not serve to increase the production of AUM's.

Installation of the improvements associated with this alternative would require some financial outlay by the permittee. Most of his

contribution would be in the form of labor. His contribution would not serve to improve his long-term economic outlook.

Alternative #3 - 3-Pasture Santa Rita Rotation

The output in this alternative is very similar to that of Alternative #2. Historic livestock grazing patterns could not be significantly changed. Overuse of the lowlands would be somewhat improved through the development of new waters but this would not successfully serve to change historic grazing patterns.

This system is considered to be an excellent means of improving desert ranges when average utilization is maintained at 40%. It provides for spring-summer rest, back to back, two years out of three. It is however questionable whether average utilization on lowlands can be maintained at 40%.

It is anticipated ecological components in lowlands would continue to be adversely affected.

As with Alternative #2, the opportunity for increasing the numbers of livestock and red meat production appears somewhat questionable and would be confined to AUM's obtained from grazing the highlands and limited improvement on the lowlands. Long term productivity of the land may not be fully realized under this alternative.

The capital investment associated with this alternative is estimated at $44,000. A negative cost benefit ratio indicates investment in new improvements would not serve to increase the production of AUM's.

Installation of the improvements identified would require some financial outlay by the permittee. His contribution would be primarily in the form of labor but would not enhance his long-term economic return from the land.

Alternative #4 - 6-Pasture Rest-Rotation.

This alternative would serve to modify historic livestock grazing patterns by fencing the allotment into pastures where livestock could be confined.

The system proposed is a combination of those present in Alternatives #2 and #3. It will assure that lowlands, which have historically received heavy use, will allow extended periods of rest. The highlands, which are in fair or better condition, will carry the bulk of livestock use but these areas too will receive sufficient rest.

Ecological components are expected to show a favorable response with the proposed treatment.

The opportunities for increasing the numbers of permitted livestock and red meat production would be improved by realizing the potential productivity of the allotment.

Implementation of this alternative will cost $50,000 and is considered to be cost effective because the allotment is expected to support greater numbers of AUM's while improving the resource.

Installation of the improvements associated with this alternative will require the greatest investment by both the Forest Service and the permittee. The permittee feels this alternative will allow him better control of livestock and in the long term serve to increase his economic return from the land.

VI EVALUATION OF ALTERNATIVES

The following chart will serve to compare each of the alternatives against the evaluation criteria:

Evaluation Criteria:

Key: 3 = Totally satisfies evaluation criteria
2 = Partially satisfies evaluation criteria
1 = Effect uncertain or no effect
0 = Negative effect or continual degradation

Goals:	Alternative #			
	1	2	3	4
Insure opportunity for potential productivity	0	0	2	3
Improve ecological conditions	2	2	2	3
Improve visual resources	0	0	2	3
Objectives:				
Increase the production of desirable forage in key areas in the lowlands	0	0	2	3
Reverse the downward trend in range conditions	0	0	2	3
Increase effective ground cover	2	2	2	3
Improve livestock grazing patterns	0	2	2	3
Regenerate riparian vegetation	2	2	2	3
Provide spring-summer rest, back to back, 2 years out of 3	0	0	3	2
Allow plants to meet their physiological growth requirements	2	2	3	3
Acceptance by the permittee	0	2	2	3
	8	12	24	32

Alternative #1 will only serve to maintain or enhance areas which currently receive very little use. This, however, is at the expense of easily accessible areas. The permittee recognizes there are opportunities for better management and does not consider this alternative

feasible. The system will not provide for adequate amounts of rest.

Alternative #2 is much like Alternative #1 in that it will only serve to maintain or enhance areas which receive limited use. The lowlands will continue to receive the brunt of grazing use. The system does not provide for sufficient rest on the low desert country (determined by research on the Santa Rita Experimental Station). Ecological components would continue to be maintained at the higher elevations. For this reason, it partially satisfies the evaluation criteria.

The permittee would be agreeable to this alternative because his investment would be less than with Alternative #4. Nonetheless, the permittee recognizes the alternative will not serve to correct the distribution problem.

Alternative #3 is somewhat better than Alternative #2 because it provides for the type of grazing treatment deemed essential on desert ranges. This alternative is similar to Alternative #2 in that areas which receive light use will be maintained; however, lowlands may continue to deteriorate because distribution will remain a problem. It is for this reason it partially satisfies the evaluation criteria.

The permittee feels this alternative is similar to Alternative #2 because it will yield a slightly higher output for equal expenditures.

Alternative #4 is considered much better than any of the alternatives presented because it provides a grazing treatment which will serve to improve ecological components.

Fencing of the allotment into smaller pastures will serve to correct the distribution problems associated with Alternatives #1,2 and 3.

It provides spring-summer rest, back to back, 2 years out of 3, to the lowland pastures. The pastures in fair or better condition will receive less rest but it is felt the highlands will be able to maintain themselves under the proposed treatment.

The permittee feels that although he will incur greater expenses, the system will serve to correct distribution problems and subsequently provide an opportunity for grazing greater numbers of livestock.

VII. IDENTIFICATION OF THE FOREST SERVICE PREFERRED ALTERNATIVE

Alternative #4, a six-pasture rest-rotation system, is the Forest Service preferred alternative. This alternative more adequately reduces adverse impacts associated with domestic livestock grazing. It also serves to fulfill the goals and objectives set forth for range, wildlife, watershed and soils presented in the Tonto National Forest Mission Statement of 1977, which reflects the recommended RPA goals. It also provides the permittee with an opportunity to increase the supply of red meat to the American public while increasing his return on investment.

VIII. MANAGEMENT REQUIREMENTS AND CONSTRAINTS

A. A management plan will be developed and implemented utilizing the following management direction and guidelines. The six-pasture rest-rotation system is a slight variation of the Santa Rita 3-pasture system but provides for the basic objectives.

B. All proposed improvements associated with the alternative will be evaluated for specific impacts through the preparation of a detailed coordinating project EAR.

C. Each improvement will receive on-the-ground archeological examination, visual resource analysis, rare and endangered plant examination, soils feasibility study, hydrologic survey, and engineering preview prior to construction.

D. Proposed improvements will be constructed to standards identified as acceptable by the Forest Service to assure the needs of wildlife, soils, watershed, range, human values, and archeology are properly considered.

E. Proposed fences and certain water developments will be constructed under cooperative agreement after approval by the Forest Supervisor.

F. Each improvement will be constructed to design specifications provided by engineering in consultation with wildlife, biologist, visual specialist, recreation staff, soil scientist, hydrologist and archeologist.

G. An inspector will be assigned on all improvements constructed through contract or cooperative agreement.

H. New stock tanks and spring developments will not be constructed until a water right permit has been granted by the State of Arizona.

I. The needs of wildlife will be considered in planning the site, location and techniques of range improvement construction.

IX. CONSULTATION WITH OTHERS

(b) (6)
Superior, Arizona 85273

(b) (6)
Superior, Arizona 85273

Mike Yeager
Arizona Game and Fish
Region I
Pinetop, Arizona

Tonto National Forest Interdisciplinary Team
102 S. 28th St.
Phoenix, Arizona

Team members included:

Jerry Davis - Wildlife Biologist
Gary Holder - Range Sub-Staff
John Kelsey - Soil Scientist
J. Scott Wood - Assistant Forest Archeologist
Bo Nielson - Landscape Architect

Informal meetings were held with the permittees to obtain their ideas in developing alternatives and determine what they would prefer in the way of management.

Mr. Mike Yeager was contacted by telephone and advised of our objectives to develop an EAR for the Superior Allotment Management Plan. Mr. Yeager did not have any specific comments on the proposed action.

The Tonto National Forest ID Team spent several days on the allotment and provided input during the early stages of EAR preparation. Their comments are attached to the appendix of this assessment.

X. APPENDIX

Comments received from the ID team.
Photographs
Cost effective analysis for each alternative.

Superior Allotment

Landscape Management Recommendations

As discussed at site meeting, 14 November: the fence will not run right along Happy Camp Road. The road or corral will be relocated at Cottonwood.

REGARDING: tank sites along Reevis Trail Canyon Rim: Site 3, has greater potential for visual absorption because of steep valley walls and the amount of larger woody plants.

Site 2 has less potential for vegetative screening.

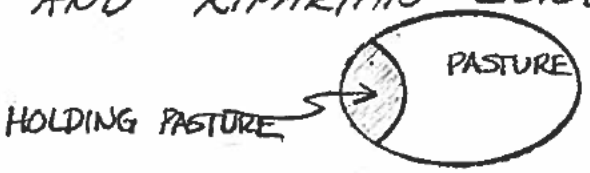
Both sites could be developed a similar costs and still achieve V Q O.

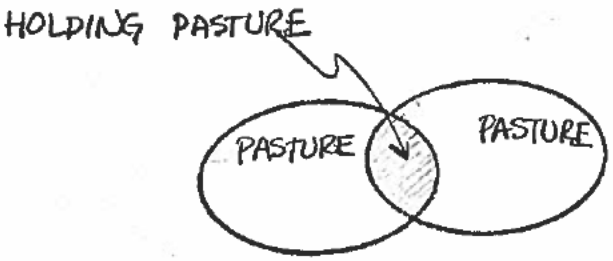
Further, it seems that there is a functional use and relationship between corrals, holding pastures, and pastures. (see sketch) At the Superior Allotment, an opportunity exists to manage a holding pasture and riparian zone at once. One already exists along Happy Camp Road. With the additional fence East of the Road, the holding pasture could be moved northerly and become associated with the corral. This location would then serve as a holding pasture for 3 pastures. (see sketch.) If the holding pasture is used only in pasture transition, it seems it could be in riparian zone.

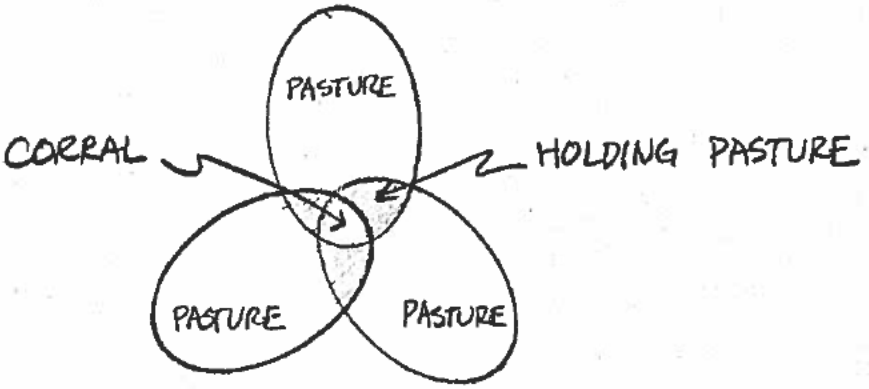
Superior Allotment, Globe R. D.

Landscape Management Recommendations

FUNCTIONAL ASSOCIATION OF PASTURES, HOLDING PASTURES, AND RIPARIAN ZONES.







2210
2630

Superior Allotment - Wildlife Coordination.

1. Develops a minimum of one dependable water per section.

2. Springs and seeps should be fenced to protect and enhance wildlife cover and riparian habitat surrounding the waters. Water should be piped and made available outside of the fenced areas.

3. The plan should be flexible enough that the grazing system and schedule can be changed if evaluations indicate a need to do so.

4. Establish bench mark transects to monitor changes and trends.

5. Corrals at Cottonwood Well should be moved further to the East away from the riparian zone in an effort to reduce activity in this area, and reduce vandalism to structural improvements.

6. Spring and seep development should not be over allocated for livestock waters in such a manner as to prevent the maintenance of their associated vegetation or prohibit access to water by those species inept at drinking from structured developments.

Although some of these comments apply to structural improvements after the plan is adopted, thougnt must be given to the ability to protect and enhance these habitat values for Wildlife prior to plan adoption. The ability to coordinate these objectives are indicators of the plans flexibility and depth.

Jerry W. Davis

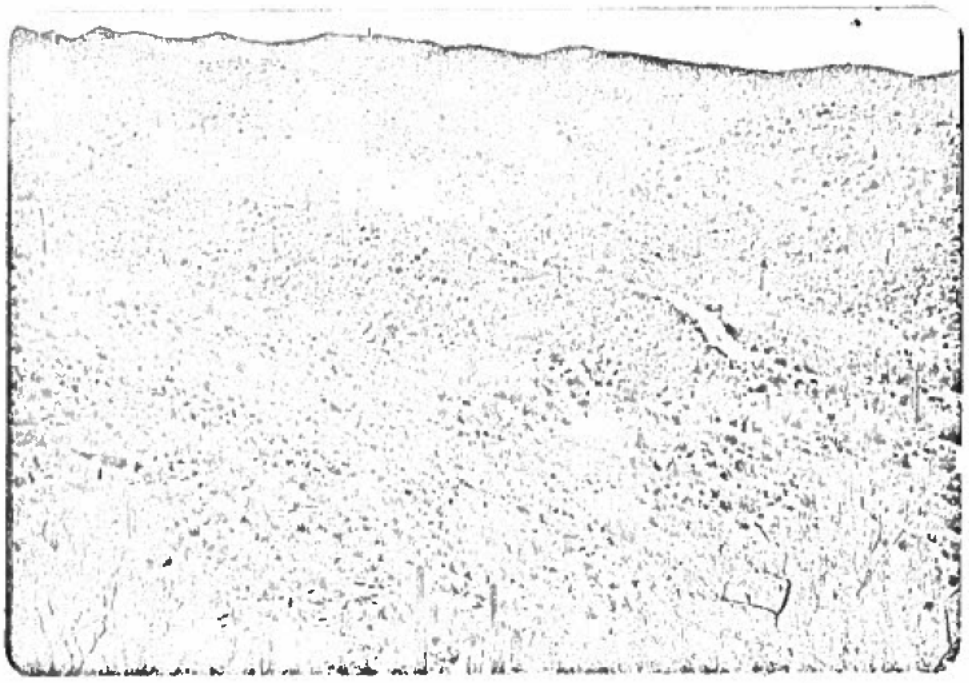
JERRY W. DAVIS
Wildlife Biologist

Muhlenbergia porteri is a very desirable decreaser perennial grass species. This picture is an example of a highly vigorous stand of this species. Notice the grass species in open areas indicating upward trend of range condition (fair condition). Location is in the high country of the Superior Allotment. Grazeable if water is developed.

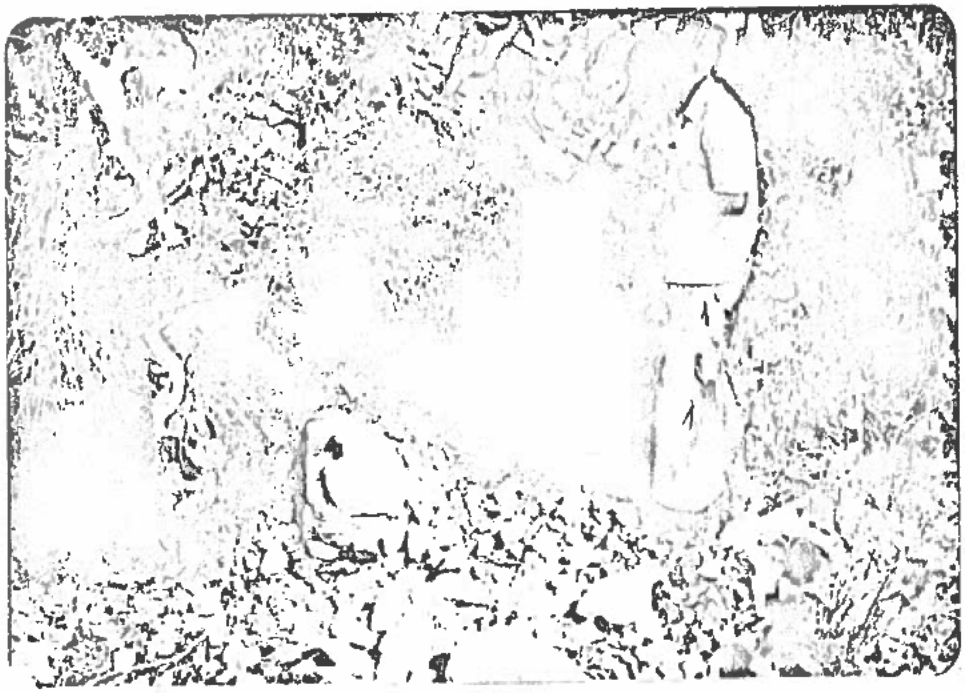
Good stand of Bouteloua curtipendula in high country. Grazeable if water is developed. Notice the stand is competing well against potential invasion of scrub oak and mesquite. Erosion is being held to a minimum by this vigorous stand of perennial grass. (Slope 15-30%)

Drainage bottom in high country of the Superior Allotment. Notice a good variety of vegetation is well established and vigorous. This is an example of a drainage in good condition with some intermittent water. The preferred alternative provides for 40% allowable use in areas such as this to avoid abuse and maintain and upward trend.

Close-up picture #5. Notice small wet weather seep.



A large percentage of the Superior Allotment is like this picture. This is an example of the low country spoken of in the EAR narrative. Very little or no perennial grass exists here. Condition of the range is poor. The preferred alternative provides for extended periods of rest to relieve grazing pressure from this country. Nearly all of the grazing will be performed during the winter time, to give perennial grass greater opportunity to increase.



Perennial spring in the high country that will be developed to relieve grazing pressure from the low country. (This one is called Black Spring)

Alternative

PROJECT INVESTMENT WORK COST-EFFECTIVENESS SCREENING ANALYSIS, NEW STARTS

FOREST Tonto DISTRICT Globe ALLOTMENT [illegible] Name 76 Number PRIORITY

ACRES BENEFITED OR AFFECTED 50932

BACKLOG 27331

REGULAR 23601

				Yr. 1-2	Yr. 3-5	Yr. 6-20	
	BENEFITS - OUTPUTS		Number	200	200	200	
1	AUM Increase ✓ Sustain						
	Pertains to current obligation on allotment						
2	AUM value $5.00 @ 10% discount interest rate		Factor	8,678	10,276	23,614	
3			M $ P.V.	1.7	2.0	4.7	
4	Other - Cordwood, $3.75/cord		$ value	0			
5			Discount Factor	1.736			
6			M $ P.V.				
7	Environmental Quality	Index .33					
8			$ Value of highest	[illegible]	4.00	#4.00	
9	Social Well-being	Index 1.0	index only				
			Discount Factor	1.736	2.055	4.723	
			M $ P.V.	1.3	1.6	3.7	Total
10			Total P. V. Benefits M $	3.0	3.6	8.4	15.0
11	Estimated Livestock Carrying Capacity AUM's	1980 4700 (1980)		4900	4900	4900	

	COSTS	Year 0	1	2	3	4	5	
12	Structural Improvements - Acres Affected	50932						
	Non-capital investment work							
13	Planning, EAR etc.	500	2000	1000				
	Capital Investment work							
14	Survey, Design, Construction	10,000	11500	8200	6,000	5000		$6,700
15	Sub-total							
16	Nonstructural improvement Acres							
	Noncapital investment work							
17	Planning, EAR, etc.							
	Capital Investment Work							
18	Survey, design, construction							
19	Sub-total							
20	Support	600	1000	2000	2000			
21	GA	1000	1000	500	500			
22	Coop-installation $	3000	2000	1500	500			
23	Total Installation Cost	15100	17500	13200	8000			Total
24	Discount Factor	1.000	.909	.826	.751	.683	.621	
25	M $ P.V.	Reconstruction	15.9	Reconstruction	6.7	Reconstruction		22.6

	OMP COSTS	Yr. 1-20	Yr. 10 only	Yr. 1-2	Yr. 3-5	Yr. 6-20	Year	
26								
27	F.S. Maintenance		2000					
28	Coop Maintenance	1000	2000					
29	Increased Management	1000						
30	Total OMP Costs	2000	4000					
31	Discount Factor	8.514	.386	1.736	2.055	4.723		
32	M $ P.V.	17.0	1.5					Total
33	**ANALYSIS** P.V. Benefits M $	15.0	P.V. Costs M $	41.1	(B-C) NPV M$	−26.1	B/C .36	Cost-effectiveness Yes / No 18.5

The increase in AUM's will result primarily from the development of new waters in areas which now receive limited use. The low lands will still continue to recieve the bulk of grazing use therefore little if any increase in AUM's will be obtained from these areas.

Ray Dalen 9-8-77

Alternative II

Alternative 3

PROJECT INVESTMENT WORK COST-EFFECTIVENESS SCREENING ANALYSIS, NEW STARTS

FOREST Tonto DISTRICT Globe ALLOT Name Superior Number 36 PRIORITY

ACRES BENEFITED OR AFFECTED 50932

BACKLOG 27331

REGULAR 23601

				Yr. 1-2	Yr. 3-5	Yr. 6-20	
BENEFITS - OUTPUTS							
1	AUM Increase ✓ Sustain		Number	200	300	500	
	Pertains to current obligation on allotment						
2	AUM value $5.00 @ 10% discount interest rate		Factor	8.678	10.276	23.614	
3			M $ P.V.	1.7	3.0	11.8	
4	Other - Cordwood, $3.75/cord		$ value	0			
5			Discount Factor	1.736			
6			M $ P.V.				
7	Environmental Quality	Index .33	$	$4.00	$4.00	$4.00	
8							
9	Social Well-being	Index 1.0	$ Value of highest index only				
			Discount Factor	1.736	2.055	4.723	
			M $ P.V.	1.3	2.4	9.4	Total
			Total P. V. Benefits M $	3.0	5.4	21.2	29.6
10							
11	Estimated Livestock Carrying Capacity AUM's	1980 4700 (1980)		4900	5000	5200	

	COSTS	Year 0	1	2	3	4	5	
12	Structural Improvements - Acres Affected	50932						
	Non-capital investment work							
13	Planning, EAR etc.	500	2000	1000				
	Capital Investment work							
14	Survey, Design, Construction	10000	11,500	8200	6300	5000		
15	Sub-total							
16	Nonstructural improvement Acres							
	Noncapital investment work							
17	Planning, EAR, etc.							
	Capital Investment Work							
18	Survey, design, construction							
19	Sub-total							
20	Support	600	1000	2000	2000			
21	GA	1000	1000	500	500			
22	Coop-installation $	3000	2000	1500	500			
23	Total Installation Cost	15100	17500	13200	9000			Total
24	Discount Factor	1.000	.909	.826	.751	.683	.621	
25	M $ P.V.	Reconstruction	15.9	Reconstruction	6.7	Reconstruction		226

	OMP COSTS	Yr. 1-20	Yr. 10 only	Yr. 1-2	Yr. 3-5	Yr. 6-20	Year	
26								
27	F.S. Maintenance		2000					
28	Coop Maintenance	1000	2000					
29	Increased Management	1000						
30	Total OMP Costs	2000	4000					
31	Discount Factor	8.514	.386	1.736	2.055	4.723		
32	M $ P.V.	17.0	1.5					Total 18.5

33 **ANALYSIS** P.V. Benefits M $ 29.6 P.V. Costs M $ 41.1 (B-C) NPW M$ −11.5 B/C .72 Cost-effectiveness Yes (No)

The initial increase in AUM's will result from the development of new waters in areas which now receive Limited use. An increase in AUM's is expected as the lowlands begin to improve, however the increase is not expected to be great because these areas will still receive heavy grazing pressure. The system will not serve to ideally solve to distribution problem, but it will provide for adequate rest.

Ray Dalen 9-8-77

Alternative III

Alternative #4

PROJECT INVESTMENT WORK COST-EFFECTIVENESS SCREENING ANALYSIS, NEW STARTS

FOREST Tonto DISTRICT Globe ALLOTMENT Superior (Name) 36 (Number) PRIORITY

ACRES BENEFITED OR AFFECTED 50932

BACKLOG 57331

REGULAR 23601

				Yr. 1-2	Yr. 3-5	Yr. 6-20	
BENEFITS - OUTPUTS							
1	AUM Increase Sustain		Number	400	600	1000	
	Pertains to current obligation on allotment						
2	AUM value $5.00 @ 10% discount interest rate		. Factor	8.678	10.276	23.614	
3			M $ P.V.	5.4	6.1	23.6	
4	Other - Cordwood, $3.75/cord		$ value				
5			Discount Factor	1.736			
6			M $ P.V.				
7	Environmental Quality Index 1.25	$ Value of highest index only	$	4.00	4.00	4.00	
8			Discount Factor	1.736	2.055	4.723	Total
9	Social Well-being Index 1.0		M $ P.V.	2.7	4.9	18.1	
10		Total P. V. Benefits M $		6.1	11.0	42.4	59.5
11	Estimated Livestock Carrying Capacity AUM's 1980 4700 (1980)			5100	5200	5700	

		Year 0	1	2	3	4	5	
COSTS								
12	Structural Improvements - Acres Affected	50932						
	Non-capital investment work							
13	Planning, EAR etc.	500	2000	1000	500			
	Capital Investment work							
14	Survey, Design, Construction	10000	11500	5500	1000	16,000		
15	Sub-total							
16	Nonstructural improvement Acres							
	Noncapital investment work							
17	Planning, EAR, etc.							
	Capital Investment Work							
18	Survey, design, construction							
19	Sub-total							
20	Support	600	1600	800	500	500		
21	GA	1000	1040	500	200	500		
22	Coop-installation $	3000	2000	5500	1000	2000		
23	Total Installation Cost	15100	17500	18000	3200	19000		Total
24	Discount Factor	1.000	.909	.826	.751	.683	.621	
25	M $ P.V.	Reconstruction	15.9	10.7	Reconstruction	12.9		39.5

		Yr. 1-20	Yr. 10 only	Yr. 1-2	Yr. 3-5	Yr. 6-20	Year	
26	OMP COSTS							
27	F.S. Maintenance		2000					
28	Coop Maintenance	1000	2000					
29	Increased Management	1000						
30	Total OMP Costs	2000	4000					
31	Discount Factor	8.514	.386	1.736	2.055	4.723		
32	M $ P.V.	17.0	1.5					Total
33	ANALYSIS P.V. Benefits M $ 59.5	P.V. Costs M $ 58.0	(B-C) NPW M$ 1.5	B/C 1.02	Cost-effectiveness		Yes / NO	18.5

The initial increase in AUM's will result from the development of new waters in Lightly used areas and from the improvement in distribution made possible through the construction of pasture fences. The subsequent increase in AUM's will result as the lowlands begin to improve through the extended periods of rest provided with the system.

Alternative IV

Ray Dalen 9-8-77