

A-1 Mountain
Allotment Mangement Plan

1995
(An Update of the 1984 Allotment Management Plan)

U.S. Department of Agriculture
Forest Service
Southwest Region
Coconino National Forest
Peaks Ranger District

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Donald R. Brackin, Grazing Permittee Date

Approved by: Clyde W. Thompson 12/19/95
Clyde Thompson, District Ranger Date

I. INTRODUCTION

This A-1 Mountain Allotment Management Plan (AMP) is designed only to update the existing 1984 AMP. Only minor changes in the current plan were necessary after the 1995 environmental assessment was completed for the area. A copy of the 1984 AMP follows this document.

II. DESCRIPTION

The A-1 Mountain allotment is located just north of Interstate 40, adjoining the western edge of the city of Flagstaff, Arizona, within the Peaks Ranger District (see attached map). There are 4,800 acres of National Forest land and 2,750 acres of State and private land within the Allotment which are suitable for livestock grazing.

The current Forest permitted livestock numbers are for 250 head (174 Forest, 76 State) of (cow/calf) cattle ten-year permit, with a season of June 1 to October 31 (five months).

The current permittee is Donald R. Brackin of P.O. Box 72, Williams, AZ 86046. Mr. Brackin acquired this permit November 29, 1979.

Present management of the Allotment has the grazing schedule following a six pasture deferred rotation grazing system.

III. PROBLEMS AND CONFLICTS

The 1995 A-1 Mountain Environmental Analysis reports four areas of concern on the A-1 Mountain allotment.

1. The A-1 Allotment is overstocked in dry years. This overstocking is contributing to declining vegetative conditions in the area. This overstocking may also be contributing to the increase in dalmation toadflax in the area.
2. Gates across roads are another problem in this area. This area receives a great volume of recreational use and the gates frequently get left open. This is contributing to reduced vegetative conditions through increased livestock overgrazing.
3. A-1 Lake waterlot area is heavily used by livestock. The waterlot is very large and because the area is essential for five pastures it is in poor condition.
4. The Fort Valley pasture in dry years does not have enough water to properly utilize this area.

IV. GOALS AND OBJECTIVES

Long-range goals the allotment in which this Plan will direct management are:

1. Improve the vegetative community such that the forage composition is enhanced, resulting in upward trends in range condition and plant vigor.
2. Increase vegetation cover and litter to the level necessary to stabilize the soil and watershed conditions.
3. Maximize meat production from this allotment consistent with resource, uses and activities on the allotment.
4. Increase the forage production within the eight pastures towards a better balance of the grazing units.

Short-range goals of the allotment in which this Plan will direct management are:

1. Maintain permitted numbers in balance with the grazing capacity of the allotment. Reduce numbers from the current 250 head (174 Forest Service, 76 State) to 175 head (99 Forest Service, 76 State).
2. Incorporate all eight pastures into an eight pasture deferred rotation system with a better balance and timing of use.
3. Reduce the size of the A-1 Lake waterlot and exclude 2/3's from livestock grazing.
4. Put in cattleguards and self-closing walk-through gates where there are problem gates to keep cattle in the correct pastures.
5. Improve the existing water sources in the Fort Valley pastures.

V. Management System

A. Grazing system

An eight pasture deferred rotation grazing system will be put in place to utilize the entire allotment throughout the grazing season. Each pasture will have seasonal rest each year. This rest will change from one year to the next. A detailed pasture rotation schedule is attached to this document.

B. Stocking rate

The total State of Arizona and Forest Service permitted numbers for the A-1 Allotment is now 175 cattle. The permitted season is June 1 to October 31 (five months). This grazing season may be varied by two weeks, either early or late, if special circumstances arise. Grazing coordination between the permittee's summer and winter range allotments, may involve shortening or lengthening the grazing season as necessary to provide better rangeland resource protection and management.

C. Distribution Practices

Salting and Supplemental Feeding

Supplemental feeding such as protein, vitamins or minerals as well as salt maybe used as long as they are placed 1/4 mile from water and are moved at least once a week. These supplements should be used to attract animals to areas that they normally do not frequent. This will promote better distribution throughout the allotment. Exact locations of these supplements will be agreed upon each year through the Annual Operating Plan.

D. Water

During dry years, it may be necessary for the permittee to haul water in order to utilize the range properly. Hauling to existing dirt tanks will be permitted, although a considerable amount of water may be lost through percolation and evaporation of the surface area. The permittee is strongly urged to provide portable watering troughs for periods of low moisture. These troughs will be located to emphasize grazing of under utilized foraging areas and defer high impact areas near permanent tanks. These troughs must be moved periodically to more evenly utilize the available forage.

E. Herding

Cattle movement and distribution will be checked and controlled by moving cattle to and locating cattle on waters in the pasture units called for in the rotation schedule. Horseback distribution of cattle will be very important on this allotment if this plan is to work.

VI. RANGE IMPROVEMENTS

The only non-structural range improvement on the allotment will be the dalmation toadflax biological control program. The permittee will be informed and encouraged to participate in this program.

Maintenance of structural improvements, as well as construction and reconstruction projects are listed by priority below. All improvements on Forest Service lands are Federally owned, with the permittee performing maintenance. These structural improvements will be constructed and maintained to Forest Service standards.

<u>Structural Improvements</u>	<u>Total Costs</u>	<u>F.S. Costs</u>	<u>Permittee Costs</u>
CG - FORT VALLEY (Sec 27)	\$1500	\$200 (L)	\$1300 (CG)
CG - FULLER/BELLE (Sec 12)	\$1500	\$200 (L)	\$1300 (CG)
CG - BELLE/S. FLAG (Sec 7)	\$1500	\$1300 (CG)	\$200 (L)
CG - A-1/N. FLAG (Sec 6)	\$1500	\$1300 (CG)	\$200 (L)
CG - A-1/MAXWELL SPRINGS	\$1500	\$1300 (CG)	\$200 (L)
A-1 WATERLOT	\$2500	\$2000 (L)	\$500 (L)
FORT VALLEY TANKS RECONSTR.	\$3000	\$2000 (L)	\$1000 (L)

CG = Cattleguard, L = Labor

The permittee's Forest Service maintenance responsibilities are outlined in red on the attached map. Also included is a computer printout which lists all improvements currently within the Allotment. From an overall management standpoint, it is advantageous for the permittee to review and do minor maintenance of all improvements, prior to placing permitted livestock into the allotment's pastures. Also, it is the permittee's responsibility to remove old wire and downed fence that is no longer in use, as it frequently impairs livestock and wildlife movement and distribution.

The permittee will be responsible for total funding and development of improvements on State lands.

VII. MONITORING

Field inspections of the allotment by the Forest Service will be conducted throughout the grazing season. The permittee will be informed of these inspections and encouraged to participate.

Four Range Clusters exist on the allotment. These clusters have not been read since 1963. As soon as time and budget allows the Forest Service will re-read these clusters to help determine long term trends.

Elk/cattle utilization cages may be placed on the allotment to determine total utilization by grazing ungulates. These cages will be read in late May, mid-July, late August and late October as well as before and after livestock grazes. The number of cages will be determined by utilization concerns on the allotment and time/money available to read these cages. The permittee will be encouraged to actively participate in these surveys.

The dalmation toadflax biological control project will be monitored for effectiveness throughout the length of the program.

A-1 MOUNTAIN ALLOTMENT
INTERIM MANAGEMENT PLAN

1984 - 1988

U.S. Department of Agriculture
Forest Service
Southwestern Region
Coconino National Forest
Flagstaff Ranger District

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GERALD L. MUNDELL, Forest Range Staff

Reviewed by: Donald R. Brackin 11-12-83
DONALD R. BRACKIN, Grazing Permittee Date

Approved by: Robert Lane 8/22/84
ROBERT LANE, Arizona State Land Department Commissioner Date

Approved by: Neil R. Paulson 11-2-83
NEIL R. PAULSON, Forest Supervisor Date

This Management Plan is a tool to be used to achieve better Range Resource Management. Like any tool, if it is not the right tool for the job, it should be revised or changed so that the job can be properly accomplished in the most efficient and timely manner.

I. INTRODUCTION AND DESCRIPTION

The A-1 Allotment is located just north of Interstate Highway 40, adjoining the western edge of the city of Flagstaff, Arizona, within the Flagstaff Ranger District (see attached Grazing Unit Map). There are 4,800 acres of National Forest land and 2,750 acres of State and private land within the Allotment which are suitable for livestock grazing.

The current Forest -permitted livestock numbers are for 123 head of (cow/calf) cattle ten-year term permit, with a season of June 1 to October 31. A two-year term permit for 35 head of (cow/calf) cattle was issued for a season of June 1 to October 31 for the years 1983 and 1984. This two-year term permit is to facilitate trial number increases whereby production-utilization surveys will be completed to determine the Allotment's proper carrying capacities. Seventy (cow/calf) cattle and six head of horses are also permitted on leased State lands and private lands.

The current permittee is Donald R. Brackin of P.O. Box 72, Williams, AZ 86046. Mr. Brackin acquired this permit November 29, 1979.

Present management of the Allotment has the grazing schedule following a three pasture rest rotation system. The three pasture units consist of the Flagg Unit, the A-1 Unit, and the Belle Unit. Recent P/U surveys have shown an unbalanced capacity within these units, consequently a six pasture deferred rotation grazing system is proposed. Significant portions of the A-1 and Belle Units are made up of former wildfire scars. These burns were seeded with desirable introduced grass forage species. There have been several efforts to reforest these burns with varying success.

The 1965 (most recent) Range Allotment Analysis indicated that the majority of the Allotment was in poor and fair condition. However, since 1965, professional ocular estimates indicate the Allotment has improved in range condition.

The permittee became commensurate for a cow/calf operation in May 1983, converting his permitted yearling numbers to a cow/calf herd. In doing so the A-1 Allotment will be utilized as a summer allotment and the Double A Allotment on the Kaibab National Forest will serve as the operations winter range.

II. PROBLEMS AND CONFLICTS

The majority of the Allotment's structural range improvements are in need of heavy maintenance and reconstruction. The previous permittee's structural improvements maintenance efforts were less than adequate. The current permittee virtually had non-use the first three years of his permit. In 1982, Brackin did heavy maintenance in the A-1 and Belle Units, and in 1983 the Flagg Unit is proposed to have heavy maintenance of fences and waters. Much of the existing fence needs to be replaced as wire and posts are old and in poor condition. Also, the allotment needs several permanent cattleguards. A serious problem exists with gates being left open when cattle are in the pastures, creating management and unauthorized use problems. Public vehicular access through the allotment via fourteen roads, due to the allotment's immediate proximity to the city, presents an acute problem. Additional livestock water sources are needed on the allotment to improve livestock distribution (see the attached Improvement Map for reference of existing and needed improvements). Currently, in dry years the permittee needs to haul water for livestock to achieve proper distribution.

Previous field work data has indicated that the Flagg Unit has an estimated capacity of only twenty percent of the Allotment's total carrying capacity. Thus, when compared with the Allotment's other two units, each having approximately forty percent of the total capacity, the Flagg Unit is the weak unit. However the 1982 and 1983 P/U survey data supports that the three units are near equal in capacity and may support a three pasture rest rotation grazing system at a stocking level of 90 percent of current permitted obligation. With this plan's proposed improvements current permitted capacities will be maintained. More precise field data, resulting from the three consecutive years of production utilization surveys on the allotment, will better determine a proper grazing capacity and management system. Following 1984 grazing season, (the last year of P/U surveys), the grazing schedule and system dictated within this plan must be reevaluated and appropriate changes made, if necessary.

III. OTHER RESOURCE USES AND ACTIVITIES

The following describes other foreseeable resource uses, values and activities which may affect the rangeland resources of the A-1 Allotment.

A. Timber Management

No timber harvest activities are scheduled on Forest Service lands until 1990 or later. The Belle Timber Sale of 1980 was the last harvest activity occurring on the A-1 Allotment. The only activity scheduled on the State owned lands is the prescribed burning of slash piles left from previous timber harvest activities.

B. Timber Reforestation

The Forest Service currently has 366 acres of fenced reforestation projects (closed to grazing). This 366 acres is Phase I of the A-1 Burn Reforestation Project. Due to the poor success of the 1981 Phase I effort the same areas will receive site preparation in 1984 and be replanted in 1985. The method of site preparation has yet to be determined. Phase II of the project will begin in 1989. During phase II, approximately 384 acres will be fenced (closed to grazing) with site preparation in 1989 and planting in 1990. The 384-acre area is immediately north and northwest of A-1 Lake, within the A-1 Unit. It is anticipated that the fenced acres of the Phase I project will be returned to grazing in 1990.

The State Land Department intends to do reforestation in the north half of Section 12, T21N, R6E. This proposal is contingent upon plan preparation and available State funds. If this project ever comes about, the reforestation areas will probably be fenced and closed to grazing.

C. Land Exchange

Currently the Forest is undertaking a study which evaluates Forest Service lands for potential land exchanges. Some of the lands being analyzed are within the A-1 Allotment. The results and time frames of any potential land exchange are not known at this time. However, the possibility exists that at some future point and time portions of the allotment may be exchanged. Any land given up through an exchange would result in management impacts for the allotment.

IV. GOALS AND OBJECTIVES

A. Long-Range Goals

Long-range goals of the allotment in which this Plan will direct management are:

1. Improve the vegetative community such that the forage composition is enhanced, resulting in upward trends in range condition and plant vigor.
2. Increase vegetative cover and litter to the level necessary to stabilize the soil and watershed conditions.
3. Maximize meat production from this allotment consistent with the resources, uses, and activities on the allotment.
4. Increase the forage production within the six pastures towards a better balance of the grazing units, thus facilitating a three pasture rest rotation grazing system for the allotment.

B. Short-range Goals

The short-range objectives of this Plan which will be achieved during the life of this Plan are:

1. Maintain permitted numbers in balance with the grazing capacity of the allotment.
2. Implement a six pasture deferred rotation grazing system. This grazing system will allow livestock and wildlife forage utilization to occur in proper balance with available forage. This objective will be measured by comparing actual grazing use with prescribed allowable use on key perennial forage species.
3. Intensify the range improvement maintenance program.

4. Minimize the timber reforestation impacts on the allotment's range resource and management.

5. Minimize any adverse impacts on the allotment's range resource and management - should a land exchange occur.

In order to achieve these goals and objectives on this Allotment, every opportunity to do structural and non-structural improvement work will have to be used to the maximum feasible. Work will have to be done cooperatively as Forest Service, other Federal funds (i.e., A.S.C.S.), and permittee dollars become available.

The production utilization data collected during the life of this Plan will be compiled and analyzed to establish the proper grazing capacity for the entire allotment, each unit and pasture. The information gained from the surveys will be used to adjust the term permit numbers and to assess the management and development of this Allotment as stated in this Plan. The field data survey periods will be from the 1982 through 1984 grazing seasons. If, at the end of this period, it is felt that sufficient data has been collected to establish the proper stocking level, the term permit numbers will be adjusted at that time. Whereby adjusting number in 1985 instead of waiting until 1991, following a complete allotment Range Re-analysis.

V. MANAGEMENT SYSTEM

A. Grazing System

A six (6) pasture deferred rotation grazing system will be set up on the Allotment to allow for deferment during the growing season of the key forage species. Since this Allotment is grazed mainly during the growing seasons, it is important to allow for the maximum amount of rest periods for both cool and warm season growers. By using a deferred rotation grazing system, each pasture will receive: early season (June, July) deferment one year, midseason (August, September) deferment the second year, and late deferment (October) the third year. (See attached Form 2200-18 for detailed pasture rotation schedule.) The capacity of the six pastures are not equal.

B. Stocking Rate

The total State of Arizona and Forest Service permitted livestock numbers for the A-1 Allotment is 228 cattle. The permitted season is June 1 to October 31, (5.1 months). This grazing season may be varied by two weeks, either early or late, and generally will not exceed the 5.1 months. Grazing season coordination between the permittee's summer and winter range allotments, may involve shortening or lengthening the grazing season as necessary to provide better rangeland resource protection and management.

The proper allowable use of forage grass species is set at 35 percent. The three key forage species for the Allotment include crested wheatgrass (Agropyron cristatum), mutton grass (Poa fendleriana) and mountain muhly (Muhlenbergia montana).

All production/utilization surveys and range inspections will evaluate and analyze these key species and their proper allowable use in determining proper carrying capacity.

C. Distribution Practices

1. Salting and Supplemental Feeding

The following salting and supplemental feeding practices will be adhered to on this allotment:

a. Supplemental feeding of energy supplements will not be permitted on the allotment unless a proven need to use the supplements is shown, and a detailed plan is developed and approved.

b. Supplemental feeding of vitamin or mineral supplements will be permitted and carried out in conjunction with salting.

c. Salting practices will be in agreement with the 10-year Term Grazing Permit, and the annual permittee plan. Salt will be placed in areas of available feed to help draw cattle to them. Salt will not be placed in natural concentration areas which receive heavy grazing use.

2. Control of Waters

The control of water will be used to regulate the location and amount of grazing use. Permanent key waters will be fenced (water-lotted) so that they may be closed off when proper allowable use is reached in the area.

During dry years, it may be necessary for the permittee to haul water in order to utilize the range properly. Hauling to existing dirt tanks will be permitted, although a considerable amount of water may be lost through percolation and evaporation of the surface area. The permittee is strongly urged to provide portable watering troughs for periods of low moisture. These troughs will be located to emphasize grazing of under utilized foraging areas and defer high impact areas near permanent tanks. These troughs must be moved periodically to more evenly utilize the available forage.

3. Herding

Cattle movement and distribution will be checked and controlled by moving cattle to and locating cattle on waters in the pasture units called for in the rotation schedule. Horseback distribution of cattle will be very important on this allotment if this plan is to work. The amount of riding may decrease as improvements are developed and the cattle can be better controlled with adequate waters, cattleguards, and fences. However, frequent checks will be necessary even after all the fences and waters are developed.

VI. RANGE IMPROVEMENTS

No non-structural improvements are scheduled for the A-1 Allotment for the life of this interim plan. Maintenance of improvements, as well as construction and reconstruction projects are listed by priority for both Federal (Forest Service) and State owned lands within this plan.

Improvements on State sections are owned by the State of Arizona, and it is the permittee's sole responsibility to perform maintenance, construction and reconstruction. All improvements on Forest Service lands are Federally owned, with the permittee performing maintenance. Structural improvements located on the Forest will be constructed and maintained to U.S. Forest Service Southwestern Region's standards.

The permittee's Forest Service maintenance responsibilities are outlined in red on the attached Allotment Maintenance Responsibility Map. This map corresponds with the maintenance responsibilities assigned within the A-1 Allotment's Ten-year Permit. Also included is a computer printout which lists all improvements currently within the Allotment. From an overall management standpoint, it is advantageous for the permittee to review and do minor maintenance of all improvements, prior to placing permitted livestock into the allotment's pastures. Also, it is the permittee's responsibility to remove old wire and downed fence that is no longer in use, as it frequently impairs livestock movement and distribution.

The following items detail the improvement maintenance work required to put the entire allotment back into a manageable condition, and new improvements which will enhance the management of the allotment.

The permittee will be responsible for total funding and development of improvements on State lands.

A major factor in allocating Forest Service improvement funds is Item IX, "Forest Service Range Improvement Cost Effectiveness Analysis", of this plan. (See this item for analysis results.)

A. Structural Improvements - Heavy Maintenance

The following is a list of improvements that currently require heavy maintenance. This list indicates the order of maintenance priority as each improvement relates to the overall management needs of the Allotment. The list also shows the year of heavy maintenance needs and the land ownership on which the improvement project occurs. Maintenance of range improvements is the permittee's responsibility exclusively and includes all materials and labor costs.

<u>Year</u>	<u>Priority of Maintenance</u>	<u>Structural Improvements Name and Number</u>	<u>Units</u>	<u>Land Ownership</u>
1983	A.	Allot. E. Boundary Fence #2178	1.75 miles	State
	B.	Allot. E. Boundary Fence #941	2.00 miles	State
	C.	Allot. E. Boundary Fence #841	1.35 miles	State
	D.	Hidden Hollow Cattleguard #2166	1 each	FS
	E.	Allot. NE Boundary Fence #1718 (Highway 180 Right-of-Way Fence)	1.50 miles	FS
	F.	Division Fence #2272	.75 miles	FS
	G.	Harper Well #1711	1 each	FS
	H.	A-1 Well #1722	1 each	FS
1984	I.	Allot. N. Boundary Fence #2168	1.50 miles	FS
	J.	Allot. N. Boundary Fence #2170	.40 mile	FS
	K.	Allot. N. Boundary Fence #2171	.35 mile	FS
	L.	Allot. N. Boundary Fence #2172	.25 mile	FS
	M.	Allot. N. Boundary Fence #2173	.50 mile	FS
	N.	Allot. N. Boundary Fence #2174	.10 mile	FS
	O.	Allot. N. Boundary Fence #2175	.15 mile	FS
	P.	Allot. N. Boundary Fence #2176	.50 mile	FS
	Q.	Flagg Pasture Division Fence #2555	1.00 mile	FS
	R.	Lang #1 Tank #2163	1 each	State
	S.	Lowell Tank #2164	1 each	State
	T.	Lang #2 Tank #1708	1 each	FS
U.	Line Tank #1719	1 each	FS	
V.	Flat Tank #2448	1 each	FS	
W.	Dry Tank #1721	1 each	FS	
X.	Howard Tank #1720	1 each	FS	

Estimated permittee maintenance costs for heavy maintenance of the above prioritized improvements totals is \$29,546.00. This estimated cost total was derived from the following:

- a. Fence maintenance: 12 miles materials cost \$900.00 per mile and labor costs \$750.00 per mile; \$1,650.00 total estimated cost per mile at 12 miles equals \$19,800.00.

- b. Cattleguard maintenance: rental of backhoe with operator to clean out grid base, estimated backhoe cost \$200.00, additional supervision and labor cost \$100.00; total cost \$300.00.
- c. Well maintenance: materials (two submersible water pumps at \$1,000.00 each and minimum of two 500-gallon troughs at (\$250.00 each) and power hookups at \$10.50 each, plus estimated \$300.00 labor at site; total estimated cost equals \$3,121.00.
- d. Tank maintenance: cat time with operator \$75.00 per hour at an estimate of five hours cat operator time per tank, plus estimated 60 tons of bentonite (for estimated three of seven tanks) at \$50.00 per ton of bentonite, plus additional labor of \$100.00 per tank; equals \$6,325.00.

B. Structural Improvements - New Construction

New structural range improvements deemed necessary to improve resource management of the A-1 Allotment are: three (3) miles north boundary fence, construction of nine (9) road pit tanks, installation of a 15,000-gallon water storage tank at the A-1 Well and Harper Well, and installation of fourteen (14) fourteen-foot cattleguards. These improvements' locations, priority of construction and land ownership are listed below. The new construction improvement priority numbers shown in the following tables are location labeled in red for each improvement on the attached Allotment Improvement Map.

<u>Year</u>	<u>Priority of Construction</u>	<u>Structural Improvement Name and Location</u>	<u>Land Ownership</u>
One	1.a.	North Boundary Fence 3 miles T22N,R6E,Sec 34, 35, 36; T22N,R7E,Sec 31	FS
	1.b.	Hollow Rd Pit Tank, T22N,R7E,SE $\frac{1}{2}$ SW $\frac{1}{2}$ Sec 31	FS
	2.	Mesa Rd Pit Tank, T21N,R7E,SW $\frac{1}{2}$ SE $\frac{1}{2}$ Sec 7	FS
	3.	Observatory Rd Pit Tank, T21N,R7E,NW $\frac{1}{2}$ SW $\frac{1}{2}$ Sec 7	FS
	4.	Bell Ridge Rd Pit Tank, T21N,R6E,NW $\frac{1}{2}$ Sec 13	FS
	5.	Rail Rd Pit Tank, T21N,R6E,SW $\frac{1}{2}$ Sec 14	FS
	6.	Brackin Rd Pit Tank, T21N,R6E,NW $\frac{1}{2}$ NW $\frac{1}{2}$ Sec 11	FS
	7.	Hidden Rd Pit Tank, T21N,R6E, NW $\frac{1}{2}$ Sec 1	FS
	8.	Dollar Rd Pit Tank, T21N,R6E,SW $\frac{1}{2}$ Sec 6	State
	9.	Deleted	
	10.	A-1 Well Storage Tank, T22N,R6E,SE $\frac{1}{2}$ SW $\frac{1}{2}$ Sec 25	FS
	11.	Harper Well Storage Tank, T22N,R7E,SW $\frac{1}{2}$ SW $\frac{1}{2}$ Sec 31	FS

The total estimated costs of the new improvements scheduled in year one are \$22,950.00. This cost is estimated from the following: each of the nine road pit tanks will require six hours of cat operator time at an estimated cost of \$75.00 per hour, plus ten tons of bentonite at \$50.00 per ton will be put into each tank, with an additional cost of \$100.00 per tank for bentonite application labor. The installation of two water storage tanks (15,000 gallons each) will be an estimated \$5,500 each for the tank and fittings, and an additional cat operator cost of \$750.00 per tank for installation.

Improvement priority numbers 8 and 9 will be constructed solely with permittee funds, totaling an estimated \$2,100.00 for the two road pit tanks. State land ownership, mandates that no Forest Service funds be appropriated for these two improvements.

Improvement priority number 1.a. (three miles of fence), the estimated Forest Service cost of construction is \$1,800.00 per mile of fence materials and \$1,800.00 per mile for permittee's construction labor. Total estimated cost is \$10,800.00; \$5,400.00 per permittee and Forest Service.

Improvement priority numbers 1.b. through 7 construction costs are proposed to be shared. The Permittee will provide the cat operator equipment and labor, the Forest Service will provide the bentonite if necessary. Therefore, Forest Service estimated costs equal \$3,500.00 and estimated permittee costs equal \$3,850.00.

For the water storage tanks improvements construction priority numbers 10 and 11, the construction costs will be shared as follows: Forest Service cost for purchasing the two storage tanks and plumbing fittings will be approximately \$11,000.00, while the permittee's cost for cat operator labor, and installation is estimated at \$1,500.00.

Continued New Construction of Structural Improvements

<u>Year</u>	<u>Priority of Construction</u>	<u>Structural Improvement Name and Location</u>	<u>Land Ownership</u>
two	12.	Fort Valley Cattleguard T22N, R6E, NE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 35	FS
	13	Indian Dorm Cattleguard T21N, R7E, SE $\frac{1}{4}$ Section 8	State
	14.	Tunnel Spring Cattleguard T21N, R7E, SE $\frac{1}{4}$ SE $\frac{1}{4}$, Section 18	State
	15.	Observatory Mesa Cattleguard T21N, R7E, SW $\frac{1}{4}$ NW $\frac{1}{4}$ Section 7	FS
	16.	Matson Tank Cattleguard T21N, R7E, NW $\frac{1}{4}$ NE $\frac{1}{4}$ Section 7	FS
	17.	Dollar Mark Tank Cattleguard T21N, R7E, NW $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 6	State
	18.	Apple Lake Cattleguard T21N, R6E, NE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 1	FS

<u>Year</u>	<u>Priority of Construction</u>	<u>Structural Improvement Name and Location</u>	<u>Land Ownership</u>
two	19.	Experimental Cattleguard T22N, R6E, NE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 34	FS
	20.	A-1 Well Cattleguard T22N, R6E, SE $\frac{1}{4}$ SW $\frac{1}{4}$ Section 25	FS
	21.	Rudds Tank Cattleguard T21N, R6E, NE $\frac{1}{4}$ NW $\frac{1}{4}$ Section 3	FS
	22.	Plantation Cattleguard T22N, R6E, NE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 11	FS
	23.	Section 11 Cattleguard T21N, R6E, NE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 11	FS
	24.	Reforestation Cattleguard T21N, R6E, SE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 1	FS
	25.	Section 13 Cattleguard T21N, R6E, SE $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 13	FS

Total estimated cost for construction of fourteen (14) cattleguards is \$27,300. These cattleguards will be fourteen feet wide and seven feet long (HS-20) and set on wooden bases. Estimated costs for construction are: cattleguard grills at \$1,200.00 each; wood timber bases per cattleguard at \$300.00 each; backhoe and operator at \$250.00 per cattleguard; winch-boom truck at \$50.00 per grill installation; and four laborers for installation costing \$150.00 per cattleguard. Estimated cost for complete construction of each cattleguard is \$1,950.00.

Improvement priority numbers 13, 14, and 17 will be funded totally by permittee at an estimated total cost of \$5,850.00. Again, this is due to the State of Arizona land ownership which is leased annually by the permittee.

Improvement priority numbers 12, 15, 16, and 18 through 25 are proposed for construction cost sharing between the Forest Service and the grazing permittee. The Forest Service will buy the cattleguard grills at an estimated total cost of \$13,200.00 and the permittee would provide equipment, labor, and timber bases at an estimated total cost of \$8,250.00.

VII. ANALYSIS OF RANGE STRUCTURAL IMPROVEMENT INVESTMENT COST SHARING

Current Government spending cutbacks have limited the availability of Forest Service range structural improvement appropriated funds.

Estimated Permittee Maintenance Costs:

<u>Year</u>	<u>Projects</u>	<u>Estimated Costs Permittee</u>
1983	Fence - Heavy Maintenance (Priority 1-3,5,6; 7.35 miles)	\$12,127.50
	Cattleguard Maintenance (Priority 4; 1 cattleguard)	\$300.00
	Well Maintenance	\$3,121.00
1984	Fence - Heavy Maintenance (Priority 9-17; 4.75 miles)	\$7,837.50
	Tank Maintenance (Priority 18-24; 7 tanks)	\$6,325.00
	Permittee Structural Improvement Maintenance Costs Total	\$26,590.00

The likelihood of large sums of range improvement funds becoming available, is currently very poor. This poor outlook is because of sharply decreased fund appropriations and the competition for these funds between other allotments in this Region. However, if Forest Service range improvement funds become available in the near future, the previous Item VI subunit B, "Structural Improvements New Construction" may be initiated in part or in whole. The following is a breakdown of the estimated investment costs sharing:

<u>Year</u>	<u>Projects</u>	<u>Estimated Costs Forest Service</u>	<u>Permittee</u>
One	North Boundary Fence - FS Lands (Priority 1.a. - three miles)	\$5,400.00	\$5,400.00
	Road Pit Tank Construction - FS Lands (Priority 1.b.-7; seven pit tanks)	\$3,500.00	\$3,850.00
	Road Pit Tank Construction - State Lands (Priority 8-9; two pit tanks)	\$0	\$2,100.00
	Well Water Storage Tanks - FS Lands (Priority 10-11; two storage tanks)	\$11,000.00	\$1,500.00
Two	Cattleguard Construction - State Lands (Priority 13, 14 & 17; three cattleguards)	\$0	\$5,850.00
	Cattleguard Construction - FS Lands (Priority 12, 15, 16, 18-25; 11 cattleguards)	\$13,200.00	\$8,250.00

Estimated Summary of Total Investments Costs:

A. <u>State Lands Projects</u>	\$0	\$7,950.00
B. <u>Forest Service Lands Projects</u>	\$33,100.00 ^{62%}	\$20,000.00 ^{38%}
C. <u>Combined State and Forest Lands</u>	\$33,100.00 54%	\$27,950.00 46%

All improvements work will depend upon the availability of funds; both permittee and Forest Service. Improvement work will start as soon as funds become available and the projects will be completed following the previous listed priority numbers.

VIII. INSPECTIONS AND FOLLOW-UP ACTION

At least once during each grazing season, Forest Service range resource personnel will conduct a range field inspection on the A-1 Allotment. The grazing permittee will be strongly encouraged to participate in the allotment's range inspections. This inspection will consist of reviewing the livestock grazing distribution, grazing use, structural and non-structural range improvements, forage production, forage composition and review general management needs.

Production/utilization surveys are scheduled for the Allotment during and after the 1983 and 1984 grazing seasons. These scheduled survey's data will be evaluated along with the 1982 survey data to determine a proper grazing capacity for the Allotment. Again, the permittee will be encouraged to actively participate in the surveys.

IX. INTERIM PLAN REVISIONS

This plan can be modified and/or altered at any time to improve the efficiency of economics, timetables, and benefit to the resource management or livestock management. Revisions can be accomplished through mutual cooperation and approval of the Arizona State Land Department Commissioner, the Coconino National Forest Supervisor, and the permittee.

X. ECONOMIC ANALYSIS

The following is a benefit/cost effectiveness analysis of the proposed Forest Service range structural improvements. An economic analysis of the proposed range improvement projects on lands of the State of Arizona was not developed.

The analysis evaluates the proposed structural improvements of this plan, priority project numbers one through twenty five. The investments costs are taken from this Plan's previously written Part VI (Range Improvements) Section B. (New Construction). Page (Investment Summary).

Analysis Assumptions

1. Assume current 10-year Permitted AUM's (Forest Service and State) equal 984.
2. Assume that if no new improvement project starts occur on the Allotment over a time frame of twenty-five years, the allotment's carrying capacity will regress to an estimated 738 AUM's, 75 percent of current capacity. This AUM's regression is attributed to the lack of water and adequate improvements for progressive management.
3. Assume that if the proposed improvements are funded, the AUM capacity of the allotment is expected to increase 120 percent by the year following total investment and continue increasing to a capacity of 1,260 AUM's by the end of the time-stream.

4. Assume a discount factor of four (4%) percent is used throughout the economic analysis.

5. Assume value of AUM is \$10.57, based on Gee's Study on AUM values for the Coconino National Forest.

6. Assume value of Hunter Use Days (HUD) is \$23.70 based upon Coconino National Forest Land Management Plan Data.

7. Assume that the HUD days will double from current use over a twenty-five year time stream, increase attributed to projected population growths of the State and City of Flagstaff. (Coconino National Forest Land Management Plan Wildlife and Recreation Use Data.)

¹The increase and decrease in AUM's grazing capacity of the allotment is based upon professional judgement, 1982 Production/Utilization Survey Report and Historical Use.