R A N G E M A N A G E M E N T P L A N

C. C. MOUNTAIN ALLOTMENT

KETTLE FALLS RANGER DISTRICT

COLVILLE NATIONAL FOREST

MARCH 1979

I. IDENTIFICATION

A. C.C. Mountain Allotment.

B. Kettle Falls Ranger District

C. Colville National Forest

D. Prepared by

W. Bradley Reed Date 7/11/79

Range Conservationist

Clive A. McIrvin (part) Date 8-12-79

Diamond M. Ranch - Permittee

E. Plan Recommended by

Larry L. Smith Date 8/13/79

District Ranger - Kettle Falls Ranger Dist.

F. Plan Recommended by

Gary Oliverson Date 8/14/79

Range, Wildlife, Watershed, Soils Staff Officer

G. Plan Approved by

Robert B. Tennell Date 8/16/79

Forest Supervisor

II. OBJECTIVES

Objectives of range management of the C.C. Mountain Allotment have been defined in the Environmental Assessment Report. These include the following:

1. Obtain management strategy "C", extensive management, within the Limited Access Strategy area, and management strategy "D", intensive management, within the General Forest Strategy on the C.C. Mountain Allotment.

2. Provide a system of practical livestock management for the C.C. Mountain Allotment which will insure efficient, optimum sustained use of the forage consistent with other resource values.

3. Stop any basic or other resource damage by 1984.

4. Develop and utilize the Limited Access Strategy area only to a degree which will not impare the visual quality or primitive forest environment character of the area.

5. Meet Streamside Management Unit objectives along streams within the C.C. Mountain Allotment.

6. Provide needed coordination between grazing and timber management, particularly in relation to establishment of tree regeneration and critical site management.

7. Allocate adequate amounts of forage for use by wildlife.

8. Reverse any downward trends in range condition and improve fair, poor, and very poor areas, where possible, by one condition class by 1984.

9. Place unused or underused suitable range into livestock production under proper management.

10. Maintain the stability of family farms and ranches affected.

11. Employ the most cost-effective methods practical to achieve quality range management.

III. ACTION

A. Permitted Use and Grazing Capacity

1.183 cattle (cows and calves) on National Forest.

2. Season of use will be approximately 6/1 to 10/15 yearly. Grazing will not be allowed to begin until after range readiness has been achieved. Indicators of range readiness to be used on the C.C. Mountain Allotment will be:

Indicators of Range Readiness

Grasses

Bluebunch Wheatgrass	Agropyron spicatum	Leaves about 8" in height, seed stalks showing.
Idaho fescue	Festuca Idahoensis	Leaves 5" in height, seed heads present.
Pinegrass	Calamagrostis rubescens	Foliage 4-6" in height.

Leaf height is the average of all leaves, except the few longest, when held upright and measured from the center of the bunch. Disregard the relatively few longest leaves.

Forbs

Western Yarrow	Achillea millefolium var. lanulosa	Flower stalks beginning to show.
Arrowleaf Balsamroot	Balsamorhiza sagittata	Leafage about 3/4 developed, beginning to bloom.
Dandelion	Tararacum officinale	Leafage developed, full bloom.

Shrubs

Serviceberry	Amalanchier alnifolia	Part of blooms out.
Snowberry	Symphoricarpos albus	7 to 8 pairs of leaves unfolded from each bud.

Soils

Normally dry sites should be fairly dry and firm. Moist areas should have most of the area dry enough to carry stock without breaking the sod and destroying the cover. Both soil and forage indicators must be considered in determining range readiness.

3. Implementation of Stocking Rates

Since the basic improvements necessary to implement the chosen system are in place at this time, stocking to the indicated grazing capacity may take place upon approval of a grazing application for the increased numbers. Stocking at the recommended rates will result in an increase in stocking of approximately 6 percent or eleven cattle.

11) Bull Heads Spring	Construction
12) King Camp Spring	Construction
13) King Spring	Reconstruction
14) Swamp Spring	Reconstruction
15) Trapper Spring	Construction
16) Lower King Spring	Reconstruction
17) Mack Spring	Construction

2. Maintenance Program

Except for maintenance of cattle guards which is the responsibility of the Forest Service, all routine maintenance of structural range improvement is the responsibility of the permittee. Routine maintenance within any pasture unit should be completed before cattle enter that unit.

E. Special Provisions and Requirements

Livestock management within the Limited Access area, as specified in the Kettle Range Land Management Plan, will be designed to maintain the visual quality and primitive forest environment character of the area. To do this it will be necessary to construct any structural range improvements out of native or natural materials within this area, and construct them so that they blend into the natural environment as much as possible.

IV. MONITORING

Range readiness checks will be made on the allotment as deemed necessary to determine yearly turn-on-dates and to establish long-term average range readiness dates. Range readiness criteria is as discussed under the ACTION section of this plan.

A cooperative agreement will be prepared for all new range improvement work and all redevelopment done on the C.C. Mountain Allotment cooperatively by the permittee and the Forest Service. These agreements will be approved by the Forest Supervisor prior to initiation of the proposed activity.

1. Development Program

Several range improvements have been identified for development or redevelopment consisting of major reconstruction. These projects will be undertaken cooperatively by the Forest Service and the permittee. Contributions by the Forest Service and permittee, specifications, location, time of completion, and maintence responsibility for the improvement will be defined in the cooperative agreement. The following is a tentative priority list for completion of range improvement construction and reconstruction. Scheduling of these improvements is found in the Range Improvement Summary.

1) Tamarack Spring	Reconstruction
2) Twin Sisters Trail Boundary Fence	Construction
3) Deadman Spring	Construction
4) Deadman-Noxious Weed Control & Revegetaiton	Nonstructural
5) Dipper Spring	Reconstruction
6) Alligator Spring	Reconstruction
7) Red Spring	Reconstruction
8) Squirrel Spring	Construction
9) Cougar Camp Spring	Construction
10) Betty Spring	Construction

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Range Improvement Summary
Existing - Proposed
(Strike out one)

Imp. No.	Improvement Name	Location	Units	Kind of Construction	year Comp.	Construction Maintenance Responsibility	Remarks
2335	Squirrel Spring	NE 30, T37N., R35E	1	Trough & Spring Exclosure	1983	Const.-50% FS 50%-Permittee Maint.-Permittee	
2337	Deadman - Noxious Weed Control & Revegetation	S½ Sec.21, T37N., R36E.	12 Ac.	Recommend seed mixture of 6 lbs. orchard grass, 3lbs. smooth brome, & 1 lb. white Dutch clover per acre.	1980	Permittee-50% F.S. - 50%	Control weeds spring '80, seed with rangland drill fall '80.

U.S. DEPARTMENT OF AGRICULTURE

Forest Service

Range Improvement Summary
~~Existing~~ - Proposed
(Strike out one)

Imp. No.	Improvement Name	Location	Units	Kind of Construction	year Comp.	Construction Maintenance Responsibility	Remarks
2328	Bull Heads Spring	SW 14, T37N., R35E	1	Trough & Spring Exclosure	1984	Const.-50% F.S. 50%-Permittee Maint.-Permittee	
2329	Trapper Spring	SE 15, T37N., R35E	1	Trough & Spring Exclosure	1986	Const.-50% F.S. 50%-Permitted Maint.-Permittee	
2330	Betty Spring	SE 10, T37N., R35E	1	Trough & Spring Exclosure	1984	Const.-50% F.S. 50%-Permittee Maint.-Permittee	
2331	Deadman Spring	NE 20, T37N., R36E	1	Trough & Spring Exclosure	1980	Const.-50% F.S. 50%-Permittee Maint.-Permittee	
2332	Mack Spring	NW 27, T37N., R35E	1	Trough & Spring Exclosure	1986	Const.-50% F.S. 50%-Permittee Maint.-Permittee	
2333	Cougar Camp Spring	NW 27, T37N., R35E	1	Trough & Spring Exclosure	1983	Const.-50% FS 50%-Permittee Maint.-Permittee	
2334	King Camp Spring	SW 28, T37N., R35E	1	Trough & Spring Exclosure	1985	Const.-50% FS 50%-Permittee Maint.-Permittee	

U.S. DEPARTMENT OF AGRICULTURE

Forest Service

Range Improvement Summary
Existing - ~~Proposed~~
(Strike out one)

Imp. No.	Improvement Name	Location	Units	Kind of Construction	year Comp.	Construction Maintenance Responsibility	Remarks
2322	Twin Sisters Trail Cattleguard	NE 25, T37N., R34E.	1	14',H20 steel deck. Treated timbers base.	1978	F.S.	On Allot. boundary tween C.C. & Lambert Allotments.
2323	High Bridge Creek Cattleguard	SW 36, T37N, R35E.	1	14',H20 steel deck. Treated timbers base.	1960	F.S.	
2324	Mack Mountain Trail	W 26, E 27, T37N., R35E.	1.0 mi.	Dozer Trail	1960	Diamond M	Constructed for stock driveway.
2325	King Mountain Trail	E 28, E 33, T37N., R35E.	2.0 mi.	Dozer Trail	1950	Diamond M	Constructed for stock driveway.
2326	Twin Sisters Trail	SW 10, SW 11, NW 13, NE 14, NE 15, T37N., R35E.	3.0 mi.	Dozer Trail	1950	Diamond M	Constructed for stock driveway.
		P R O P O S E D					
2327	Twin Sisters Trail Allotment Boundary Fence.	NE 25, T37N., R34E	.5	Post and Pole	1979	Construction-F.S. Maintenance-Diamond M.	Use post & pole const. near road. May use wire out of sight of road.

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Range Improvement Summary
Existing - ~~Proposed~~
(Strike out one)

Imp. No.	Improvement Name	Location	Units	Kind of Construction	year Comp.	Construction Maintenance Responsibility	Remarks
2310	C. C. Mountain Spring	NE 25, T37N., R35E.	1	Metal Trough	1950	Diamond M.	New Trough installed in 1977.
2311	King Spring	SW 28, T37N., R35E	1	Wooden Plank Trough	1950	Diamond M	Reconstruct in 1985.
2312	(No name - Lower Nancy) lower King Sp?	NW 33, T37N., R35E.	1	Wooden Plank Trough	1950	Diamond M	Reconstruct in 1987.
2313	Diamond M Spring	SW 16, T37N., R35E.	1	Metal Trough	1975	Diamond M	
2314	Hoodoo Ck. Drift Fence	SW 28, T37N., R36E.	.25 mi.	3-wire barbed wire	1970	Diamond M	
2315	C.C. Mtn. Drift Fence	SW 36, T37N., R36E.	.25 mi.	3-wire barbed wire	1950	Diamond M	
2316	Merkel Canyon Drift Fence	SW 17, T37N., R36E.	.25 mi.	3-wire barbed wire	1960	Diamond M	
2317	King Mtn. Drift Fence	SE 33, T37N., R35E.	.25 mi.	3-wire barbed wire	1950	Diamond M	
2318	Albian Hill Cattleguard	SW 31, T37N., R35E.	1	H20 metal deck. Treated timbers base	1960	F.S.	
2319	Hoodoo Creek Cattle-guard	SW 28, T37N., R36E.	1	14', H20 metal deck. Treated timbers base	1970	F.S.	
2320	McIrvin Camp Cattle-guard not in allotment 4/26	NE 26, 28? T37N., R36E.	1	14', H20 metal deck. Treated timbers base	1960	F.S.	On allotment boundary.
2321	King Creek Cattleguard	SE 33, T37N., R35E	1	14', H20 steel deck. Treated timbers base	1960	F.S.	

U.S. DEPARTMENT OF AGRICULTURE

Forest Service

Range Improvement Summary
Existing -XProposed
(Strike out one)

Imp. No.	Improvement Name	Location	Units	Kind of Construction	year Comp.	Construction Maintenance Responsibility	Remarks
231*	✓Ridge Spring	NW 16, T37N.,R35E.	1	Wooden Plank Trough	1950	Diamond M	Good Cond.
232	✓Tamarack Spring	NE 33, T37N., R35E.	1	Wooden Plank Trough	1950	Diamond M	Reconstruct in 1979.
233	✓Swamp Spring	NE 10, T37N., R35E.	1	Wooden Plank Trough	1950	Diamond M	Reconstruct in 1986.
234	✓Bear Wallow Spring	SE 25, T37N., R35E.	1	Metal Trough	1970	Diamond M.	Good Cond.
235	Squirrel Spring	NE SW 30, T37N., R36E.	1	½ of metal culvert for trough.	1940	Diamond M	Relocate to NE 30,T37N, R36E, in 1983.
235	✓Dipper Spring	NW 31, T37N., R36E.	1	Bathtub for trough. Bathtub moved from C.C. Spring to Dipper Spring in 1977.	1970	Diamond M	Reconstruct in 1981.
236	✓Saddle Spring	SE 9, T37N., R35E	1	Wooden plank Trough.	1970	Diamond M.	
237	✓Alligator Spring	SE 12, T37N., R35E	1	Wooden Plank Trough	1950	Diamond M.	Reconstruct in 1982. Goes dry in dry years.
238	✓South Twin Spring	SE 17, T37N., R35E	1	Metal Trough	1960	Diamond M	
239	✓Red Spring	SW 10, T37N., R35E.	1	Metal Trough		Diamond M	Spring very weak. Relocate trough at better spring-1982

* First two digits of the improvement number are the allotment TRI numbers.

An effort should be made to achieve as uniform distribution within units as possible.

Livestock salting will be done by the "drop salting" method. That is, no permanent salt grounds will be used. Salt will be placed away from areas of concentrated use and moved to "fresh feed" areas as proper use is approached adjacent to salt locations. Salt will be used to the extent practicable to affect good livestock distribution. Salt should be distributed within a pasture unit prior to moving stock in, and picked up before moving them out to enhance movement. As a general rule, salt should not be placed within 1,000 feet of any water source, or on or immediately adjacent to a road, unless for a specific management purpose such as to increase utilization in the area or to aid in gathering stock at the end of the grazing season. Salt should not be placed directly on the ground. Stumps, rocks, downed trees, or portable salt boxes should be used where practical.

Roundup in the fall is to be completed in a timely manner. All cattle are to be off of the allotment by October 15 unless otherwise authorized in writing by the District Ranger or the Forest Supervisor.

D. Range Improvement

A description of existing and proposed range improvements is found in the Range Improvement Summary on the following pages. All range improvements on the allotment are owned by the Forest Service. Proposed range improvements will be constructed according to standards detailed in the Structural Improvement Handbook, FSH 2209.22, R6.

C. Livestock Management

Cattle entering the Allotment from private or leased lands will be trucked to the corral on Deadman Creek or portable corrals at various locations. Portable corrals may be used at the discretion of the permittee, subject to prior approval of location by the Forest Service.

Livestock move dates between pasture units may vary somewhat from year to year depending on actual utilization within the pastures. Moves between pastures will be made when, or before, forage utilization reaches the prescribed proper use level, but not significantly after the indicated move dates.

Moves between pasture units should be accomplished within about four days after the date agreed upon between the permittee and the Forest Officer in charge. Moves should begin about three days prior to the move date, depending on the amount of difficulty the permittee has experienced in moving cattle between the various units.

Permittees should watch for overgrazing and soil damage throughout the grazing season and take appropriate action if problems should develop.

Riding will be necessary to assure proper livestock distribution and movement, and to assure that livestock have a continual supply of salt and water.

4. Grazing Capacity by Units (See Environmental Assessment Report for calculations of grazing capacity.)

   a. Betty Creek Unit - 879 AUMs

   b. Deadman Unit - 185 AUMs

   c. C.C. Unit - 320 AUMs

   d. Mack Unit - 312 AUMS

   e. King Unit - 191 AUMs

B. Management System

A two year cycle rest and rotation grazing system utilizing five pasture units will be used on the C.C. Mountain Allotment. The following use schedule will be used:

PASTURE UNIT

YEAR	BETTY	DEADMAN	C.C.	MACK	KING
1	6/22-10/15	6/1-6/21	Rest	Rest	Rest
2	Rest	Rest	6/1-7/14	7/14-10/15	7/14-10/15
R E P E A T C Y C L E					

A map showing the pasture unit boundaries is found in the graphics section of this plan.

A high degree of flexibility in utilizing pasture units will be necessary depending on coordination requirements with other resources such as timber. This may result in disruption of the above schedule at times. Rescheduling of rest periods may be necessary depending on the coordination requirements with other resources.

Production and utilization studies on the C.C. Mountain Allotment were conducted in 1977 and 1978. This has resulted in two years of data on the Betty and Deadman units, one year's data on the C.C. and Mack units, and no data on the King unit. A minimum of three year's data on each pasture unit is necessary to monitor the impacts of livestock grazing and to verify the estimated grazing capacity or determine the actual grazing capacity. Therefore, at least one more year of production and utilization studies is needed on the Betty and Deadman units, two more years is needed on the C.C. and Mack units, and a full three years of production and utilization studies is needed on the King unit. Under the present scheduled use, production and utilization studies could be completed in 1983.

A production and utilization preliminary statement will be prepared prior to the 1979 grazing season to identify and define the production and utilization study. The "Ocular Estimate by Plot" method will be used on the C.C. Mountain Allotment (see Chapter 500, Monitoring, of the Region 6 Range Analysis and Management Handbook). Adjustments in the grazing system or livestock numbers may be recommended at any time during the study based on data gathered during the study.

Following the initial production and utilization study, allotment monitoring will be done at intervals not to exceed two years.

Allotment inspections should deal with, but are not limited to the following:

1. Range readiness.
2. Soil and vegetation conditions.
3. Utilization.
4. Physiological development of major forage species.
5. Structural and non-structural range improvements.
6. Livestock distribution.
7. Use of salt.
8. Compliance with annual plan.
9. Other pertinent areas.

There are two permanent range condition and trend transects on the C.C. Mountain Allotment established in 1959. These transects have never been reread or relocated. An attempt should be made to relocate these transects and evaluate them for their usefullness. At least one additional transect per pasture unit should be established by 1980 to effectively monitor the effectiveness of the grazing system. The photo trend method of sampling as described in Region 6, Guide 2-1, July 1976, should be used in establishing these transects. Transects should be reread every five years. Proposed locations for the transects are as follows:

EXISTING TRANSECTS

Number	Location	Type	Date Established	Date Last Read	Condition & Trend
C 1	SE¼,S.29,T37N,R35E	Grassland	8/10/59	8/10/59	Excellent, Static
C 2	SE¼,S.30,T37N,R35E	Grassland	8/10/59	8/10/59	Excellent, Static

PROPOSED TRANSECTS

Number	Location	Type	Present Condition And Trend
C 3	SE¼,S.28,T37N,R35E	Grassland	Poor, Static
C 4	NW¼,S.36,T37N,R35E	Timbered Range	Good, Static
C 5	NE¼,S.25,T37N,R35E	Timbered Range	Fair, Upward
C 6	NE¼,S.20,T37N,R35E	Timbered Range	Fair, Downward
C 7	NW¼,S.15,T37N,R35E	Timbered Range	Good, Static

(Also see Range Type Map for locations)

An Annual plan of use will be prepared yearly by the Forest Service and the permittee to define how the range will be used for the coming year and what improvement work will be accomplished.

V. GRAPHICS AND APPENDIX

A. Range Type Map

B. Range Allotment Map

C. Production and Utilization Study

GRAPHICS AND APPENDIX

PRODUCTION AND UTILIZATION STUDY
C.C. MOUNTAIN ALLOTMENT
KETTLE FALLS RANGER DISTRICT
COLVILLE NATIONAL FOREST

Adjusted stocking rates on the C.C. Mountain Allotment are to be implemented in 1979. A production and utilization study will be necessary to verify the estimated grazing capacity and to determine if changes in management are necessary to adequately maintain the grazing and other related resources. This study will expand on production and utilization information gathered in 1977 and 1978.

The C.C. Mountain Allotment is operated under a five pasture rest and rotation grazing system. Two or three pastures are used each year. Production and utilization data can only be obtained from pastures used in any one year.

Production and utilization data has been collected in 1977 and 1978 on the Deadman and Betty units, and in 1977 only on the C.C. and Mack units. Production data only was collected in 1977 on the King unit. Three years of production and utilization data is needed on each pasture unit in order to accurately assess the average carrying capacity. Therefore, one more year of data is needed on the

Deadman and Betty units; two more years data is needed on the C.C. and Mack units; and a full three years data is needed on the King unit.

The proposed schedule for completing production and utilization data must conform with the planned use schedule and is as follows:

1979 - Production and utilization taken on C.C., Mack, and King units.

1980 - Production and utilization taken on the Deadman and Betty units. This will complete three years data on these units.

1981 - Production and utilization taken on C.C., Mack, and King units. This will complete three years of data on the C.C. and Mack units.

1983 - Production and utilization taken on the King unit. This will complete three years data on this unit.

Although three years data is necessary to complete accurate verification of allotment capacity, adjustments in the grazing system or livestock numbers may be recommended at any time during the study if there is strong evidence that a change is necessary or highly desirable.

The "Ocular Estimate by Plot" method will be used for production and utilization data collection during this study. This method is discussed in Chapter 500 of the Region 6 Range Analysis and Management Handbook. Field methods used will be according to this direction.

A summary of allowable use criteria by pasture unit to be followed in assessing allotment carrying capacity is as follows:

A. Deadman Unit. Allowable use not to exceed 35% on service berry, the key winter browse species for deer. Use not to exceed 66% on bluebunch wheatgrass and pinegrass, and 70% on Kentucky bluegrass. Average utilization of forage species to be approximately 45% on suitable grazing areas.

This pasture unit has received continuous early season use since the allotment was established. Also, because the corral is located in this unit, it often receives fall use as a holding pasture during fall roundup. Because of this pattern of use, much of this unit is in poor range condition.

In 1978, the boundaries of this unit were expanded to include part of the area which was formally within the C.C. Unit. The capacity of the Deadman Unit was increased substantially because of this. With the increased area included in the Deadman Unit in 1978 it was possible to give some relief to former concentration areas by distributing the cattle over a larger area. A range water development planned for this unit is expected to further enhance livestock distribution in this unit to some extent.

It is anticipated that the system of alternate years rest will greatly improve range conditions within this unit.

B. Betty Unit. Average utilization of forage species to be approximately 45% on suitable grazing areas with use not to exceed 65% on concentration areas.

During the period when Diamind M was grazing yearlings on the allotment, this unit was grazed season long from about 6/21 to 10/15 every year. However, because of the large size of this unit and the relatively light stocking rates, and because the cattle were usually well distributed, range conditions on this unit have remained relatively good. The rest and rotation grazing system is expected to help maintain these conditions, even under more intensive stocking rates.

C. C.C. Unit. Average utilization of forage species (primarily pinegrass) to be approximately 45% on suitable grazing areas with use not to exceed 65% on concentration areas.

Most of the forage in this unit occurs within timbered area. One of the primary influences on range condition, therefore, is the tree canopy. Much of the area is included in the C.C.-Bailey Timber Sale which is to be completed by March 1980. This sale will remove a large portion of the timber overstory, creating more favorable conditions for forage production. This coupled with the rest and rotation grazing system should favor improved range conditions until the timber overstory once again closes.

D. Mack Unit. Average utilization of forage species to be approximately 45% on suitable grazing areas with use not to exceed 65% on concentration areas.

Forage in this unit is produced on a variety of sites, ranging from timbered to grassland. Much of the forage being used on this unit at this time is coming from old timber cutting units. As these units continue to regenerate with trees, forage production is expected to drop slowly, and livestock use is expected to shift to more open timbered and grassland types.

Past grazing practices have appeared to have been adequate to maintain the forage resource in this area.

E. King Unit. Average utilization of forage species to be approximately 45% on suitable grazing areas with use not to exceed 65% on concentration areas.

Much of the primary grazing areas within this unit are grassland types in poor condition. There are also many acres of secondary grassland types which are in good condition. A more even distribution of livestock use is desirable in this unit. The proposed range improvements coupled with the rest and rotation grazing system may serve to achieve this.

Poor conditions within the primary grassland and open timbered types is thought to have resulted from past heavy sheep use and more recent cattle grazing prior to the time the area reached range readiness. Proposed use of this area will be delayed until about mid-summer.

This unit was rested in 1977 and 1978 and should be well on its way to improvement.

Allowable use standards as discussed here are tentative, contingent on those levels of use providing sufficient plant needs for plant cover to maintain or improve, and for desirable species to maintain or improve themselves at the expense of undesirable species. Allowable use standards will be adjusted if these conditions are not being met or it is felt that more use may be made of the forage and still achieve the desired results.

At the end of each grazing season during the production and utilization study, data will be summarized and an evaluation prepared of livestock distribution, needs for water, fences, salt, or herding. Production and utilization data will be made a part of the Environmental Assessment Report.

At the end of the study period, a final report will be prepared of findings and management recommendations. This data will then be used for further allotment planning if needed.

Walter Bradley Reed
Range Conservationist

7/11/79
Date

EVALUATION NARRATIVE AND ENVIRONMENTAL ASSESSMENT REPORT

C.C. MOUNTAIN ALLOTMENT

RANGE MANAGEMENT PLAN

KETTLE FALLS RANGER DISTRICT

COLVILLE NATIONAL FOREST

MARCH 1979

EVALUATION NARRATIVE AND ENVIRONMENTAL ASSESSMENT REPORT

REVIEW AND APPROVAL RECORD

C.C. MOUNTAIN ALLOTMENT
RANGE MANAGEMENT PLAN ASSESSMENT
KETTLE FALLS RANGER DISTRICT
COLVILLE NATIONAL FOREST

Prepared by W. Bradley Reed Date 4/5/79
Range Conservationist

RANGER DISTRICT DEVELOPMENT AND REVIEW

Fred Patten Date 4/30/79
Other Resources Assistant

Larry O Fahrtmann Date 4/16/79
Fire Management Assistant

Richard Young Date 4/19/79
Engineering Assistant

John E. Wilson Date 4/16/79
Timber Management Assistant

APPROVAL RECOMMENDED BY:

Larry L Smith Date 5/2/79
District Ranger - Kettle Falls R.D.

SUPERVISOR'S STAFF REVIEW

Gary Oliverson Date 23 May 79
Range, Wildlife, Watershed, Soils Staff Officer

Patrick J Gallo Date 6/5/79
Engineering, Lands, Minerals Staff Officer

Burt Tuler Date 6/4/79
Fire and Recreation Staff Officer

Angelo W Apron Date 6/7/79
Timber Staff Officer

Stephen Kelley Date 6/7/79
Planning and Programming Staff Officer

APPROVED BY:

Robert B Tennent Date 6/26/79
Forest Supervisor

RECORD OF DECISION

RANGE MANAGEMENT - C.C. MOUNTAIN ALLOTMENT
FERRY COUNTY, WASHINGTON
U.S.D.A. FOREST SERVICE
COLVILLE NATIONAL FOREST

Based on the analysis described in the Environmental Assessment Report for this project, it is my decision to adopt Alternative C as the plan for range management of the C.C. Mountain Allotment. Alternative C employs the use of a rest and rotation grazing system, and calls for the construction of range improvements to help facilitate implementation of the system.

This alternative, in conjunction with the prescribed management requirements and constraints, provides the best economic benefits, and is considered to be the environmentally preferable alternative.

Implementation of this plan may take place immediately following distribution of this Record of Decision. Questions regarding this Decision should be sent to the Colville National Forest, 695 South Main Street, Colville, Washington 99114.

Robert B. Terrill
Forest Supervisor

6/29/79
Date

TABLE OF CONTENTS

I. INTRODUCTION

The purpose of this document is to assess the social, environmental, and economic effects associated with implementation of various proposed range management systems and cultural practices on the C.C. Mountain Allotment, Kettle Falls Ranger District, Colville National Forest. Assessment of these effects will serve to guide in the selection of the preferred alternative for management of the range and related resources.

This document is a combination allotment evaluation narrative and Environmental Assessment Report. The evaluation is based on inventory data collected in 1977 and other related resource information, and serves as the basis for developing management alternatives.

The environmental assessment sections of this report have been conducted in accordance with the requirements of the Multiple Use Sustained Yield Act, National Environmental Policy Act, and other enabling legislation.

Alternatives analyzed and proposals made in this report are consistent with direction provided by the Kettle Range Land Management Plan. More specific policies, objectives, and programs related to the Range Management program are stated in sections 2200, 2210, 2220, and 2240 of the Forest Service manual. Management alternatives evaluated in this assessment are designed consistent with the Forest Service, Region 6, and Colville National Forest goal of achieving quality range management by 1984.

The preferred alternative identified through the environmental assessment process will serve to guide range management activities on the C.C. Mountain Allotment until such time as the need for new or different management is identified. A major review of this alternative should be made in ten years, if not sooner. A separate range management plan will be prepared which will serve as the implementation document for the preferred alternative.

Major issues and concerns identified during the evaluation and assessment process and considered in this report are:

1. The influence grazing is having on the Limited Access Strategy area.
2. Effect of livestock grazing on vegetative and soils conditions.
3. Effects of livestock grazing on timber productivity, especially regeneration establishment within the ~~regulated~~ commercial forest areas of the allotment.
4. Degree of dependency of the permittee on the allotment for grazing needs.
5. Relationship of livestock grazing to wildlife habitat.
6. Effect of livestock grazing on rare, threatened, or endangered plant and animal species.
7. Intensity of livestock management or allotment development needed or desired.

II. AFFECTED ENVIRONMENT

Description

The C.C. Mountain Allotment is located within Townships 36 and 37 North, Range 34, 35 and 36 East, Willamette Meridian, with the State of Washington, Ferry County. The area is within the Colville National Forest, Kettle Falls Ranger District. (See Area Map on the following page for location.)

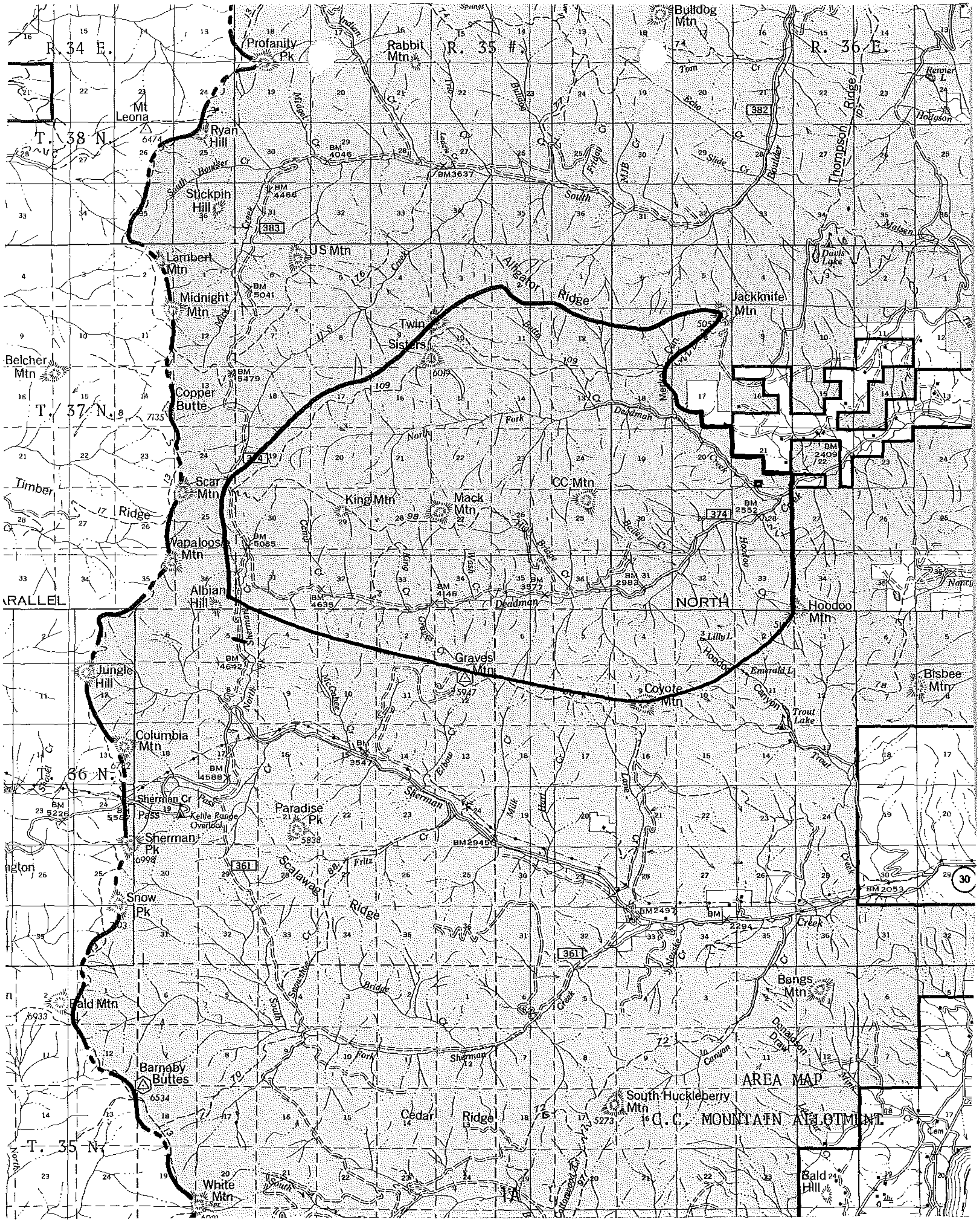
The allotment encompasses 31,143 acres, all but ten acres of which is National Forest land. This ten acres is in private ownership.

Elevation on the Allotment ranges from approximately 2,500 feet along the creek bottoms to over 6,000 feet at the top of Twin Sisters and King Mountains. Average elevation is about 3,500 feet.

The topography of the allotment is moderately steep to steep and broken, with the exception of the Betty Creek area which is rolling with gentle slopes. The general landform of the area is high east-west ridges, dissected by streams.

Aspect within the allotment is varied. However, the general aspect is north and south. The south slopes of the ridges furnish the major portion of the grazable range.

There are two major drainages originating on the C.C. Mountain Allotment, North Deadman Creek, and South Deadman Creek. These streams join near the eastern allotment boundary to form Deadman Creek. This creek flows into the Kettle River. Minor streams found on the allotment include



R. 34 E.
R. 35 E.
R. 36 E.
T. 38 N.
T. 37 N.
T. 36 N.
T. 35 N.
Profanity Pk
Rabbit Mtn
Bulldog Mtn
Mt Leona
Ryan Hill
Stickpin Hill
Lambert Mtn
US Mtn
Alligator Ridge
Jackknife Mtn
Thompson Ridge
Midnight Mtn
Twin Sisters
Belcher Mtn
Copper Butte
Scar Mtn
King Mtn
Mack Mtn
CC Mtn
Timber Ridge
Wapaloosie Mtn
Albian Hill
PARALLEL
NORTH
Hoodoo Mtn
Graves Mtn
Coyote Mtn
Bisbee Mtn
Jungle Hill
Columbia Mtn
Trout Lake
Sherman Cr Pass
Kettle Range Overlook
Paradise Pk
Sherman Pk
Scalawag Ridge
Snow Pk
Bangs Mtn
Bald Mtn
Barnaby Buttes
South Huckleberry Mtn
Cedar Ridge
White Mtn
Bald Hill
Davis Lake
Renner L
Emerald L
Lilly L
AREA MAP
C.C. MOUNTAIN ALLOTMENT

Betty Creek, Camp Creek, King Creek, Wash Creek, High Bridge Creek, and Bailey Creek. These creeks all flow into either North or South Deadman Creeks.

Climate on the C.C. Mountain Allotment is dominated by western air flows originating in the Pacific Ocean. Warm summers and cold winters are characteristic. Annual precipitation is from about 25" at lower elevations to approximately 35" at higher areas. Most of this precipitation (60 - 70%) comes in the form of snow during the winter.

Most of the allotment is forested by light to dense forest. Most of the livestock grazing that occurs on the allotment takes place within the light to moderately dense forest types and within the scattered grassland openings.

Vegetative habitat types as classified by R. and J. Daubenmire, include Douglas fir/snowberry, Douglas fir/pinegrass, Douglas fir/ninebark, grand fir/pachistima, western redcedar/pachistima, subalpine fir/pachistima, and subalpine fir/grouse whortleberry. (Refer to Daubenmire, R. and J. Daubenmire, 1968, Forest Vegetation of Eastern Washington and Northern Idaho, Washington Agricultural Experiment Station, Technical Bulletin #60.)

Principle forage species found on the allotment include pinegrass, Idaho fescue, bluebunch wheatgrass, mountain brome, and Kentucky bluegrass. Shrubs that furnish significant browse for livestock and wildlife are ninebark, serviceberry, willow, snowberry, and wild rose.

The present livestock permittee on the C.C. Mountain Allotment is the Diamond M Ranch of Laurier, Washington. The Diamond M Ranch has been the permittee on the Allotment since 1949 when use was converted from sheep to cattle. The Ranch is a partnership between Clive McIrvin, Bob McIrvin, and Len McIrvin. In addition to cattle on the C.C. Mountain Allotment, the Diamond M Ranch is permitted cattle use on the Lambert and Hope Allotments, also on the Colville National Forest. National Forest grazing allotments furnish a substantial amount of the Diamond M Ranch's summer range needs.

History of Range Use

Domestic livestock grazing on what is now the C.C. Mountain Allotment was originally by sheep. Two bands of sheep grazed the allotment as two allotments beginning in the early 1920's. The Twin Sisters and Alligator Ridge area was used by 1,000 sheep from May 15 to October 15. Sheep use in this area was discontinued in 1943.

The C.C. Mountain, Mack Mountain, and King Mountain area was used by 1,200 sheep from May 15 to October 15 from the early 1920's until 1944. From 1945 until 1948 the allotment area was not grazed.

In 1949, the Diamond M Ranch, known then as Harry McIrvin and Sons, was issued a grazing permit for 25 cattle on the C.C. Mountain Allotment. Diamind M Ranch has been permitted use of this allotment continuously since that time.

Livestock numbers ~~permitted use of the Allotment~~ were gradually increased as the range was developed and new areas were put into production. Numbers rose to 165 cattle in 1967. In 1963, Diamond M Ranch converted to a partial yearling operation and numbers were adjusted upward to accomodate the younger age class of livestock. Partial yearling use continued until 1975 when use on the allotment was converted back to use by mature cows with calves. At this time, cattle numbers were set at 172 where ~~it~~ they remains at this time. A summary of permitted and actual use from 1949 is found in Table 1.

From 1949 until 1954 the present C.C. Mountain Allotment was included as part of the adjacent Boyds Allotment.

Pasture units were developed on the C.C. Mountain Allotment beginning in about 1950. These included King Mountain, Mack Mountain, C.C. Mountain, Betty Creek, and Twin Sisters. The normal pattern of using these units was to rest one unit each year while grazing the remaining units season long. Inadequate barriers between units made it difficult to restrict use in the rested unit at times.

The allotment boundary has remained essentially the same since 1949.

Thorough range analysis was never completed on the C.C. Mountain Allotment until 1977. Prior to that time data on allotment condition and trend was confined to general observations by Forest Officers and permittees. These observations indicated that the allotment was generally in good condition with the exception of some overused areas adjacent to water developments and in areas of heavy livestock concentration.

Table 1

COLVILLE NATIONAL FOREST

KETTLE FALLS RANGER DISTRICT

C. C. MOUNTAIN ALLOTMENT

Summary of Permitted and Actual Use

	Permitted Use				Actual Use		
YEAR	NO.	SEASON	AUM'S		NO.	SEASON	AUM'S
1949	25	5/21 - 10/31	133	#	25	5/21 - 10/31	133*
1950	50	5/21 - 10/31	258	#	50	5/21 - 10/31	258*
1951	75	5/21 - 9/21	375	#	75	5/21 - 9/21	375*
1952	75	5/21 - 9/30	325	#	75	5/21 - 9/30	325*
1953	110	5/21 - 9/30	477	#	110	5/21 - 9/30	477*
1954	102	5/21 - 9/30	442	#	102	5/21 - 9/30	442*
1955	100	5/21 - 9/30	433	#	100	5/21 - 9/30	443
1956	120	5/21 - 9/30	540	#	120	5/21 - 9/30	540
1957	100	5/21 - 10/15	467	#	100	5/21 - 10/15	467
1958	105	5/21 - 10/15	490	#	105	5/21 - 10/15	490
1959	110	5/21 - 10/15	524	#	110	5/21 - 10/15	524
1960	110	5/21 - 10/15	490	#	110	5/21 - 10/15	490
1961	110	5/21 - 10/15	532	#	108	5/21 - 10/15	445
1962	130	5/21 - 10/15	585	#	130	6/01 - 10/15	585
1963	130	5/21 - 10/15	585	#	130	6/01 - 10/15	585
1964	130	5/21 - 10/15	585	#	130	5/21 - 10/15	641
1965	165	5/21 - 10/15	743	#	165	5/22 - 10/15	808
1966	165	5/21 - 10/15	743	#	165	5/23 - 10/15	753
1967	165	5/21 - 10/15	743	#	165	5/21 - 11/20	743
1968	230	6/01 - 10/15	1,035	#	202	5/27 - 10/15	908**
1969	230	6/01 - 10/15	1,035	#	230	6/01 - 10/15	1,035**
1970	220	6/01 - 10/15	990	#	211	5/29 - 10/15	953**

C. C. MOUNTAIN ALLOTMENT

Summary of Permitted and Actual Use

(cont.)

	Permitted Use				Actual Use		
YEAR	NO.	SEASON	AUM'S		NO.	SEASON	AUM'S
1971	230	6/01 - 10/15	1,035	#	230	6/01 - 10/15	1,035**
1972	212	6/01 - 10/15	954	#	N O	R E C O R D	
1973	230	6/01 - 10/15	1,034	#	205	6/01 - 10/15	922**
1974	245	6/01 - 10/15	1,102	#	245	6/01 - 10/15	1,102**
1975	205	6/01 - 10/15	922	#	205	6/01 - 10/20	924**
1976	172	6/01 - 10/15	774	#	172	6/01 - 10/15	726
1977	172	6/01 - 10/15	774	#	172	6/01 - 10/15	774
1978	172	6/01 - 10/15	774	#	172	5/29 - 11/01	817

* C. C. Mountain part of Boyds Allotment

** Permit includes a portion of yearlings allowed at a conversion rate of .75 animal units per yearling month.

Management concerns were mainly for improving livestock distribution to eliminate or reduce these areas of concentration.

Present Range Use

Present use of the C.C. Mountain Allotment is made by 172 cow-calf pairs from about June 1 to October 15 each year. This use has been in effect since 1975 when the permittee converted from partial yearling use to use by cows and calves.

The general turn on date of June 1 is approximately the average date of vegetative readiness on the lower areas of the Allotment. These areas include the Deadman Unit and the C.C. Unit. The higher areas, Mack, King, and Betty Units, generally are not ready for use at this time.

In 1978 a system of rest and rotation grazing management was initiated on the C.C. Mountain Allotment. This system called for dividing the Allotment in half and utilizing only one-half of the Allotment per year on a rotational basis. Deadman and Betty Units made up one-half of the allotment, while C.C., Mack, and King Units made up the other half. Each half is to be used every other year, while they are to be completely rested on alternate years.

During the years the Deadman and Betty Units are to be utilized, grazing is to be initiated in the Deadman Unit. All cattle are to be allowed to graze in that unit for approximately three weeks, at which time they are to be rotated to the Betty Unit where they are to graze for the remainder of the grazing season.

During the years the C.C., Mack, and King Units are to be utilized, grazing will begin in the C.C. Unit. The C.C. Unit will be grazed for about six weeks, after which time all the cattle will be rotated to the Mack and King Units for the remainder of the grazing season. This grazing system is diagramed in Table 2.

Table 2

REST AND ROTATION GRAZING SYSTEM

UNITS

YEAR	DEADMAN	BETTY	C.C	MACK	KING
1	172 cattle 6/1 - 6/20 115 AUM's	172 cattle 6/25-10/15 659 AUM's	Rest	Rest	Rest
2	Rest	Rest	172 cattle 6/1 - 7/15 258 AUM's	86 cattle 7/16-10/15 258 AUM's	86 cattle 7/16-10/15 258 AUM's

R E P E A T C Y C L E

This grazing system was initiated to minimize livestock handling requirements while providing a means of meeting the physiological requirements of the forage species. The permittee and Forest Officers involved in designing the system felt that more uniform distribution resulting from higher numbers per unit area would result in significant acres of secondary range being put into production, thus increasing the capacity of the units.

The Diamond M Ranch trucks their cattle on and off of the allotment, utilizing a corral near the eastern allotment boundary within the Deadman Unit, for unloading and loading cattle.

Current Status of the Range Environment

Range type mapping and data collection on mapping units was done during the summer of 1977. A summary of mapping units and acreage by condition and trend is found in Appendix A, Range and Wildlife Habitat Analysis Acreage Computation; Appendix B, Grazing Allotment Summary Sheet; and Appendix C, Vegetation and Soil Condition Trend Summary. Condition and Trend was evaluated using standard guides developed for Region 6 of the Forest Service. (See 2210 Analysis and Plans file for Range Reconnaissance Data Sheets.)

Of the 5,619 acres of primary range inventoried on the allotment, 1,296 acres (23%) were found to be in good condition, 3,483 acres (62%) were found to be in fair condition, and 840 acres (15%) were found to be in poor condition. No very poor condition range was found. Of this total, 15 percent showed evidence of upward trend, 7 percent showed a downward trend, and 78 percent showed no apparent trend. Eleven percent of the fair condition range, and 8 percent of the poor condition range is showing an upward trend. Eight percent of the fair condition range, and 12 percent of the poor condition range is showing a downward trend. No good condition range is showing a downward trend. (See appendix C, Vegetation and Soil Condition Trend Summary.)

Utilization estimates made during 1977 and 1978 indicate that the majority of the range is utilized moderately. (See Production/ Utilization Study information in Appendix I.) In 1977, actual average utilization was 18 percent in the Betty Creek Unit, 35 percent in the Deadman Unit, 19 percent in the C. C. Unit, and 26 percent in the Mack Unit. The King Unit was rested in 1977.

In 1978, actual average utilization was 28 percent in the Deadman Unit and 33 percent in the Betty Unit. C.C., Mack, and King Units were rested in 1978.

Water developments and fences are shown on the allotment map. There are 13 developed springs and approximately one mile of drift fence, and three miles of allotment boundary fence on the allotment at this time.

Nearly all of the water developments consist of a fenced exclosure around a spring, a box or other catchment system for collecting the water, and a pipe which carries the water from the spring to a water trough. There are no extensive water distribution systems with multiple troughs or a large amount of distribution pipe in place at this time. Water developements are in various states of condition. Condition is related to age, quality of the initial installation, and degree of maintenance received. Where the improvements have deteriorated beyond the point of repair, attempt will be made to reconstruct them when possible.

The developed springs are generally well distributed and provide a good means of achieving good cattle distribution. Several springs exist which are undeveloped. In some cases, development could be used to encourage more livestock use or to protect the spring from damage from livestock trampling. Where these have been identified, it is proposed to develop them as the opportunity arises.

All fences on the allotment are barbed wire and steel or wooden post. Condition of these fences is varied, most however, are in fair or better condition.

Other range improvements on the allotment include five cattleguards, seven miles of livestock trails, and one corral. (See Range Improvement Summary Sheets in Appendix.)

Several old homestead fields are present on the Allotment on the ridge north of Deadman Creek which are infested with diffuse knapweed. These fields are producing little or no forage at this time and are contributing significantly to contamination of surrounding areas with noxious weed seed. Weed control of some kind and seeding with desirable grass species would be beneficial to the range potential of the area and be consistent with the noxious weed control program of the Colville National Forest and Ferry County Weed Board. A total of about 22 acres of these old fields are present on the Allotment in three fields of 12, 7 and 3 acres.

Estimated Grazing Capacity

The estimated grazing capacity for the C.C. Mountain Allotment has been based on mapping unit data collected in 1977, including range condition and trend, and production and utilization studies carried out in 1977 and 1978.

The indicated capacity for the rest and rotation system now in effect has been calculated using production and utilization data, supplemented by calculations based on mapping unit data for the King Unit where no production and utilization data has been collected.

Estimated grazing capacities for deferred rotation and season long grazing systems have been calculated based on acres of primary range mapped in 1977. Production and utilization data was not used in calculating the estimated grazing capacity for deferred rotation and season long grazing systems because distribution patterns achieved with the rest and rotation system will not be the same as with deferred rotation or season long grazing. Significantly less secondary range would be expected to be utilized under deferred rotation and season long grazing systems than under the rest and rotation system and thus grazing capacity would be considerably less.

Rest and Rotation Grazing

Desired average forage utilization under the rest rotation grazing system on grazed areas has been set at 45 percent of annual production with no areas receiving greater than 66 percent utilization. The

66 percent maximum utilization level was set considering that primary areas would receive greater utilization than secondary areas, and to achieve an average of 45 percent utilization, greater utilization would need to be allowed on primary areas. Sixty-six percent utilization is considered acceptable when adequate rest periods are provided to overcome the adverse effects of such use. Under rest rotation grazing, these rest periods would be provided.

Capacity for the King Unit was determined by multiplying primary acres by range type, times pounds of forage production per acre (measured in 1977), times the proper use factor and dividing that product by the amount of forage consumed by an animal unit in one month, to get animal unit months of forage available. The proper use factor used was 66 percent, and 1000 pounds of forage per month was used as the animal unit consumption figure.

The indicated capacity of the C.C. Mountain Allotment under a rest and rotation grazing system of grazing, by unit is as follows:

Betty Unit

Indicated Capacity from Production/Utilization Study

1977

Actual Use-357 AUM's

Weighted Average Utilization-18%

Proper Use - $\frac{357}{x} = \frac{18\%}{45\%}$

X = 892 AUM's

1978

Actual Use-635 AUM's

Weighted Average Utilization-35%

Proper Use - $\frac{635}{X} \quad \frac{33\%}{45\%}$

X = 866 AUM's

Average Indicated Capacity(1977 & 1978) = 879 AUM's

Deadman Unit

1977*

Actual Use-62 AUM's

Weighted Average Utilization-35%

Proper Use - $\frac{62}{X} = \frac{35\%}{45\%}$

X = 79 AUM's

1978

Actual Use-115 AUM's

Weighted Average Utilization-28%

Proper Use - $\frac{115}{X} = \frac{28\%}{45\%}$

X = 185 AUM's

*Data not applicable due to change in Unit boundary-See C.C. Unit.

C.C. Unit

1977

Actual Use-180 AUM's

Weighted Average Utilization-19%

*Proper Use - $\frac{180}{X} = \frac{19\%}{45\%}$

X = 426 AUM's

1978

Rested

*In 1978, pasture unit boundaries were changed and some lands formerly included as part of the C.C. Unit were included in the Deadman Unit. In 1977 the capacity of the Deadman Unit was calculated at 79 AUM's. In 1978, after the change in unit boundaries, the capacity of the Deadman Unit was calculated at 185 AUM's, or a difference of 106 AUM's. If this increase in capacity is assumed to have come from lands formerly included in the C.C. Unit, then the capacity of the C.C. Unit can be assumed to have been decreased by 106 AUM's by the boundary change, and the capacity of the C.C. Unit is now about 320 AUM's.

Mack Unit

1977 1978

Actual Use--180 AUM's Rested

Weighted Average Utilization-26%

Proper Use - $\frac{180}{X} = \frac{26\%}{45\%}$

X = 312 AUM's

(See summary of Production and Utilization studies in Appendix.)

King Unit

1977 1978

Rested Rested

Capacity calculated as follows:

Range Type & Condition Class	Acres	Pounds Forage/ Ac.('77 data)	Pounds Forage Prod.	Proper Use Factor	Pounds Forage Avail.	AUM's
P1B-G	60	1,335	80,100	66%	52,866	53
P1B-P	557	375	208,875	66%	137,858	138
P6AP-G	77	425	32,725	66%	21,598	21
Total	694		321,700	66%	212,322	212*

*191 AUM's available for use by livestock after allowing 10% of indicated capacity for use by wildlife.

Deadman Unit

Range Type & Condition)Class	Acres	Pounds Forage/ Ac.('77 data)	Pounds Forage Prod.	Proper Use Factor	Pounds Forage Avail.	AUM's
P6N-G	32	400	12,800	50%	6,400	6
PgN-F	315	240	75,600	40%	30,240	30
P6AP-P	63	50	3,150	25%	788	1
P6AC-F	30	199	5,970	40%	2,388	2
PT7CP-G	272	400	108,800	50%	54,400	55
Total	712		206,320		94,216	94*

* 85AUM's available for use by livestock after allowing 10% of indicated capacity for use by wildlife.

C.C. Unit

Range Type & Condition Class	Acres	Pounds Forage/ Ac.(77 data)	Pounds Forage Prod.	Proper Use Factor	Pounds Forage Avail.	AUM's
P6N-F	926	240	222,240	40%	88,896	89
P6N-P	101	200	20,200	25%	5,050	5
Total	1,027		242,440		93,946	94*

* 85 AUM's available for use by livestock after allowing 10% of indicated capacity for use by wildlife.

Mack Unit

Range Type & Condition Class	Acres	Pounds Forage/ Ac.('77 data)	Pounds Forage Prod.	Proper Use Factor	Pounds Forage Avail.	AUM's
P1B-P	119	375	44,625	25%	11,156	11
P6S-G	190	490	93,100	50%	46,550	46
P6AP-G	325	425	138,125	50%	69,062	69
Total	634		275,850		126,768	126*

* 113 AUM's available for use by livestock after allowing 10% of indicated capacity for use by wildlife.

King Unit

Range Type & Condition Class	Acres	Pounds Forage/ Ac.('77 data)	Pounds Forage Prod.	Proper Use Factor	Pounds Forage Avail.	AUM's
P1B-G	60	1,335	80,100	50%	40,050	40
P1B-P	557	375	208,875	25%	52,219	52
P6AP-G	77	425	32,725	50%	16,362	16
Total	694		321,700		108,631	108*

* 97 AUM's available for use by livestock after allowing 10% of indicated capacity for use by wildlife.

Deferred Rotation Grazing

The indicated grazing capacity for a deferred rotation grazing system was calculated in the same manner as the indicated capacity for the King Unit under a rest and rotation grazing system, except that the proper use factors were adjusted downward to reflect the needs of the vegetation under a system that employs shorter and less frequent rest periods. Proper use factors used for the deferred rotation system take the current vegetative condition into account and are as follows:

Vegetative Condition	Proper Use Factor
Good	50%
Fair	40%
Poor	25%
Very Poor	10%

The indicated capacity of the C.C. Mountain Allotment under a deferred rotation system of grazing by unit is as follows:

Betty Unit

Range Type & Condition Class	Acres	Pounds Forage/ Ac.('77 data)	Pounds Forage Prod.	Proper Use Factor	Pounds Forage Avail.	AUM's
P6S-G	393	490	192,570	50%	96,285	96
P6N-G	59	400	23,600	50%	11,800	12
P6N-F	546	240	131,040	40%	52,416	53
P6AP-G	160	425	68,000	50%	34,000	34
P6AP-F	1,666	170	283,220	40%	113,288	113
Total	2,824		698.430		307,789	308*

* 277 AUM's available for use by livestock after allowing 10% of indicated capacity for use by wildlife.

Range Type & Condition Class	Acres	Pounds Forage/ Ac.(77 data)	Pounds Forage Prod.	Proper Use Factor	Pounds Forage Avail.	AUM's
P1B-G	60	1,335	80,100	45%	36,045	36
P1B-P	676	375	253,500	18%	45,630	46
P6S-G	583	490	285,670	45%	128,551	128
P6AC-F	30	199	5,970	33%	1,970	2
P6N-G	91	400	36,400	45%	16,380	16
P6N-F	1,787	240	428,880	33%	141,530	142
P6N-P	101	200	20,200	18%	3,636	3
P6AP-G	562	425	238,850	45%	107,482	107
P6AP-F	1,666	170	283,220	33%	93,463	93
P6AP-P	63	50	3,150	18%	567	1
PT7CP-G	272	400	108,800	45%	48,960	49
Total	5,891		1,744,740		624,214	624*

* 562 AUM's available for use by livestock after allowing 10% of indicated capacity for use by wildlife.

A summary of allotment capacity by grazing system is found in Table 3.

Table 3

ALLOTMENT GRAZING CAPACITY

	GRAZING SYSTEM		
PASTURE UNIT	REST & ROTATION	DEFERRED ROTATION	SEASON LONG
Betty	879 AUMs	227 AUMs	Not Divided Into Pasture Units
Deadman	185 AUMs	85 AUMs	
C. C.	320 AUMs	85 AUMs	
Mack	312 AUMs	113 AUMs	
King	191 AUMs	97 AUMs	
Total	*1,887 AUMs	657 AUMs	562 AUMs

* Actual allowable use under a rest and rotation grazing system will be determined by the combination of pasture units utilized and rested over the course of the grazing system. For example, under the system now being used, 1,064 AUM's would be available during the years the Betty and Deadman Units are utilized and the C.C., Mack, and King Units are rested, and 823 AUM's would be available during the years the C.C., Mack, and King Units are utilized and the Betty and Deadman Units are rested. Allowable use would then be 823 AUM's because that is the maximum amount of use the C.C, Mack, and King Units could carry.

Since the grazing capacity of the allotment under the deferred rotation and season long grazing systems and the King Unit under the rest and rotation grazing system are based on computations utilizing only one year's data, subsequent production and utilization data will be needed to verify capacity if and when these systems are initiated. Three years of production and utilization data for each pasture unit is the minimum amount necessary to verify grazing capacity under any grazing system. Therefore, more production and utilization data would be necessary to verify the capacity under the rest and rotation system also.

Other Resource Considerations

Soils

There are approximately 49 soil mapping units, as described in "Soils of the Republic and Kettle Falls Ranger Districts, Colville National Forest" (USDA, Forest Service; R.C. McConnell; November 1969), found

on the C.C. Mountain Allotment. The major soil association, as described in the report (pages 177-179) is the Togo-Growden Association (No.1). This association occupies the highest ridges and mountain slopes associated with granite bedrock. Vegetation on these soils is primarily forest, open forest, and mountain parks.

Several soil mapping units which occur on the C.C. Mountain Allotment have been identified as being particularly sensitive to range management. These soils display a medium to high erosion hazard and/or extremely low water storage capabilities which severely limit the potential for recovery from adverse grazing practices. Sensitive soil mapping units and the reason for the sensitivity are found in Table 4.

Table 4

SENSITIVE SOILS OF THE C.C. MOUNTAIN ALLOTMENT

Mapping Unit No.	Name	Slope	
14	Donavan	30-65%	Erosive
15	Donavan-Rockland	15-50%	Erosive
22	Gahee	35-65%	Erosive
24	Goddard	25-65%	Erosive
46	Manley	35-65%	Erosive
54	Nanamkin	0-15%	Low Water Capacity
55	Neuske	15-35%	Erosive
56	Neuske	35-65%	Erosive
60	Nevine-Rockland	15-50%	Erosive
62	Oxerine	15-35%	Erosive
63	Oxerine	35-65%	Erosive
65	Oxerine-Pepoon	15-35%	Erosive, Low Water Capacity
66	Oxerine-Pepoon	35-65%	Erosive, Low Water Capacity
67	Oxerine-Rockland	15-50%	Erosive, Low Water Capacity
72	Pepoon	15-35%	Erosive, Low Water Capacity
73	Pepoon-Edds	15-50%	Erosive, Low Water Capacity
74	Pepoon-Oxerine	15-50%	Erosive, Low Water Capacity
75	Pepoon-Rockland	15-50%	Erosive, Low Water Capacity
76	Pepoon-Togo	15-50%	Erosive, Low Water Capacity
84	Scar	35-65%	Erosive
92	Togo	35-65%	Erosive
93	Togo-Bamber	35-65%	Erosive
94	Togo-Rockland	15-50%	Erosive

(See soils map in Appendix for location and extent of these soils.)

Season Long Grazing

The indicated grazing capacity for a season long grazing system was calculated in the same manner as the indicated capacity for the deferred rotation grazing system except that the proper use factors were adjusted downward to reflect the needs of the vegetation under a system that provides essentially no rest periods to counteract the adverse effect of forage utilization. Proper use factors used for the season long system take the current vegetative condition into account and are as follows:

Vegetative Condition	Proper Use Factor
Good	45%
Fair	33%
Poor	18%
Very Poor	0%

The indicated capacity of the C.C. Mountain Allotment under a season long grazing system is as follows. Calculations are not broken down by pasture unit as the allotment would not be broken down into pasture units under this system.

(Table for season long grazing system on following page.)

Erosive soils on which soil cover (vegetation, moss, and litter) is reduced below 66% are subject to accelerated erosion rates. Furthermore, soils with low water capacity are less able to support a high degree of vegetative cover to help control erosion. Livestock grazing has the potential effect of further reducing the vegetative cover, causing an increased erosion risk. The primary concern of livestock management on these sensitive soils will therefore be to maintain acceptable soil cover through enhancement of vegetative condition and to minimize soil displacement through livestock trampling.

Current soil conditions on the C.C. Mountain are good to excellent. No accelerated erosion has been identified, and ground cover is generally very good. Livestock trampling, however, is evident in some places where the soils are sandy. This trampling has resulted in deep, well worn trails and terraces on slopes. The extent of this trampling is small.

Sensitive soils are limited in their distribution within suitable grazing areas. However, range management practices which fail to take into account the special needs of these soils could have a significant detrimental effect on soil productivity and erosion.

Water

The C.C. Mountain Allotment is drained by two major streams; North Fork and South Fork Deadman Creeks. These creeks join near the eastern allotment boundary to form Deadman Creek, a tributary to the

Kettle River. These waters enter the Columbia River about two miles downstream from the confluence of Deadman Creek and the Kettle River. Other smaller creeks found on the allotment are Betty Creek, Camp Creek, King Creek, Wash Creek, High Bridge Creek, and Bailey Creek. Downstream water uses have been partially identified. All of the water that enters the Columbia River is used many times for power production. Other uses include irrigation, recreation, and domestic use.

Water uses between the allotment boundary and the Kettle River have not been adequately inventoried. However, these uses are thought to include fisheries and small amounts for domestic use and irrigation.

Water monitoring has been done on Deadman Creek at the Forest boundary (just below the confluence of North Fork and South Fork Deadman Creeks) since 1972. The quality of water produced from the allotment, as measured at this monitoring station, is high, meeting or exceeding State of Washington standards for Class AA waters.

Streamside Management Unit Stream Classes of the creeks found within the C.C. Mountain Allotment are as follows:

Deadman Creek	IQF*
North Fork Deadman Creek	IQF, IIQF, IIIQ
South Fork Deadman Creek	IQF, IIQF
Betty Creek	IIIQ
Camp Creek	IIIQ
High Bridge	IIIQ
King Creek	IV
Wash Creek	IV
Bailey Creek	IV

* Water use classification can be found in FSM 8223-2, Colville Supp. #1.

Deadman Creek, lower North Fork Deadman Creek, and lower South Fork Deadman Creek all flow enough water to have more than a 30% influence on Class I waters, and have the potential for high quality fisheries habitat. The middle reach of North Fork Deadman Creek and the upper portion of South Deadman Creek flow enough water to have more than a 30% influence on Class II waters, and have the potential for moderate quality fisheries. Upper North Deadman Creek, Betty Creek, Camp Creek, and High Bridge Creek flow enough water to have more than a 30% influence on Class II waters. King Creek, Wash Creek, and Bailey Creek are intermittent streams which do not meet higher class criteria.

Management activities that take place within Streamside Management Units must meet the goals established for each class of stream. (See FSM 8223, R-6 Supplement #2.)

Fisheries and Wildlife

Deadman Creek, North Fork Deadman Creek, and South Fork Deadman Creek support a significant fisheries. Deadman Creek and the lower portions of North and South Fork Deadman Creeks have the potential for high quality fisheries habitat. The middle reach of North Fork Deadman Creek and the upper portion of South Fork Deadman Creek have the potential for moderate quality fisheries habitat.

Maintenance or improvement of the fisheries values of these streams is dependent on the maintenance or improvement of suitable habitat areas and the water quality, including high dissolved oxygen, relatively low water temperature, low turbidity, and optimum pH.

These streams are somewhat unique for the area in that they support a pure population of native rainbow trout. These trout are not commonly known to inhabit other streams in the area.

Grazing practices which meet Streamside Management Unit objectives should adequately maintain or improve fisheries habitat.

Cattle damage to streambanks through trampling has been noted in some areas of these streams. This results in reduction of protective undercut banks and possible silting in of spawning gravels. Damage to streambanks by cattle is found only in small localized areas at this time.

A full complement of wildlife species generally found on the Colville National Forest is found on the C.C. Mountain Allotment. (See checklists "Birds of the Colville National Forest", "Reptiles and Amphibians of the Colville National Forest", and "Mammals of the Colville National Forest", for species found in the vicinity.)

Some of the more unique or high public demand species found on the allotment are: mountain lion, bobcat, lynx, black bear, mule deer, white-tailed deer, ruffed grouse, Franklins spruce grouse, blue grouse, beaver, showshoe hare, shorttail and longtail weasel, marten and golden eagle.

There are no known rare, threatened, or endangered wildlife species known to inhabit the allotment area at this time. However, the status of the marten, lynx, and the wolverine which may be occasional on the

allotment, is classed as undetermined by the U.S. Department of Interior, Fish and Wildlife Service.

Species on the allotment which may be most sensitive to grazing management are deer and grouse. Cattle may compete directly with these species for forage and browse and indirectly by causing habitat changes such as reducing nesting and brooding cover for grouse.

Winter ranges for deer are generally considered as a limiting factor for populations of these animals. No key deer winter range has been identified on the C.C. Mountain allotment, however, the area north of Deadman Creek near the eastern allotment boundary may be used somewhat by deer as winter range. The major deer winter ranges in the Deadman Creek area are east of the C.C. Mountain allotment.

Primary consideration for habitat requirements for deer winter range should be given on areas identified as such. In relationship to livestock grazing, the primary consideration would be the composition, density, vigor, availability of browse species, and the allocation of browse between livestock and deer. On key winter ranges, sufficient browse should be allocated to deer to meet population demands.

On the possible deer winter range on the C.C. Mountain Allotment, browse composition, density, and availability are moderate to high. Browse vigor is generally low to moderate. Livestock use of the browse in this area may directly influence browse vigor.

Critical grouse habitats are around watering places, and in breeding, nesting, brooding, and wintering areas. Livestock grazing probably has the most effect on watering, nesting, and brooding habitat since grouse are dependent on low growing vegetation for cover at this time.

Key nesting and brooding areas have not been identified on the C.C. Mountain Allotment. When these areas are identified, an attempt should be made to protect cover in these areas until, at least, the middle of July.

Adequate cover can be assured around watering areas by fencing springs and managing to meet Streamside Management Unit objectives.

Generally, livestock grazing on the C.C. Mountain Allotment does not appear to be in conflict with critical habitat needs of grouse except in small scattered areas which receive heavy livestock use.

Riparian zones around springs, ponds, marshes, and along streams are important habitats for other wildlife species as well. These are often key livestock use areas also. Wildlife needs in these areas are for a good mixed vegetative composition to provide feed and cover. Again, these needs can be met by fencing springs, and managing to meet Streamside Management Unit objectives.

High elevation open ridges on the C.C. Mountain Allotment are important habitats for raptors and other birds. This is particularly important during fall migrations, as well as during the summer, for raptor hunting ranges. Species that make up the food source for the hunting birds are dependent on low growing vegetation such as grasses, forbs,

and shrubs for their habitats. Maintenance of good vegetative cover is essential to providing a quality environment for these species.

Recreation and Visuals

There are no developed recreation sites within the C.C. Mountain Allotment. However, dispersed area sites are common along all of the roads. These sites are favorite camping and picnicking sites and are used by campers, picnickers, hikers, hunters, fishermen, and sight seers. The major use is by hunters during hunting season after most of the cattle are off of the allotment.

Several trails on the Allotment are used moderately by hikers, hunters and off road vehicle users, as well as the livestock operator. These include the Twin Sisters Trail, trail No. 109; the Mack Mountain Trail, trail No. 98; the Emerald Lake Trail, trail No. 17; and the C.C. Mountain Trail, trail No. 81. The C.C. Mountain trail has recently been broken by timber sale road construction which accesses the same area as the trail.

The areas west of Twin Sisters, in the vicinity of Mack and King Mountains, and Hoodoo Canyon within the C.C. Mountain Allotment have been designated as limited access areas under provisions of the Kettle Range Land Management Plan. Management of the limited access areas is intended to emphasize dispersed recreation experiences

emphasizing a "relative sense of solitude, physical challenge, and unregulated activity", in a setting where the "primitive forest environment" is dominant. Livestock grazing and other resource activities are allowed in these areas only to the extent at which they are compatible with the intent of the limited access strategy.

Merkel Canyon which is within the C.C. Mountain Allotment has been designated as an unusual interest area by the Kettle Range Land Management Plan. This canyon is recognized for its scenic and geologic interest, and botanic interest associated with large, old-growth cedar. Activities or uses which would cause irreversible damage to this area are prohibited. (See Final Environmental Statement, Kettle Range Planning Unit, Colville National Forest.)

Timber and Fuels

Most of the C.C. Mountain Allotment is forested by heavy to open timber. Major tree species include ponderosa pine, Douglas fir, western larch, lodgepole pine, subalpine fir, Englemann spruce, and western redcedar.

Timber management activities have been and will continue to be a major resource management activity on the allotment. Timber management activities that have occurred or expected to occur on the Allotment include commercial harvest, precommercial and commercial thinning, planting, and insect and disease control. Past harvest methods have

ranged from partial cutting to clearcutting. Opening of the canopy associated with harvest has often stimulated herbaceous and shrub growth that can be utilized as forage, as well as tree regeneration and growth. Often, areas previously unsuitable for livestock grazing due to heavy tree cover have been made available on a transitory basis by timber harvest. Road and trail building associated with the timber sale program has often improved access to areas previously ungrazed or lightly grazed.

There are two active timber sales on the C.C. Mountain Allotment at this time. These are the Deadman Sale and the C.C.-Bailey Sale. The Deadman Sale is located in the southeast corner of the Allotment, primarily within the Deadman Unit. This sale was estimated to contain 5.17 MM board feet of timber. The sale is scheduled for completion by September 1980.

The C.C.-Bailey Timber Sale is located primarily on the south slope of C.C. Mountain within the C.C. and Mack Units of the Allotment. Estimated volume to be removed from this sale is 6.28 MM board feet of timber. The sale is scheduled for completion by March 1980.

The Kettle Falls Ranger District five year action plan for timber sales from 1979-1983 calls for three timber sales within the C.C. Mountain Allotment. These are North Deadman, 1979; Betty, 1981; and Alligator, 1982; all within the Betty Unit of the Allotment.

The North Deadman Timber Sale will remove approximately 16.0 MM board feet of timber from about 1,698 acres. Approximately 16.2 miles of road construction will be necessary to access the sale area. Partial cutting and some clearcutting are the silvicultural prescriptions for this sale.

Some fencing and cattleguards will be needed to maintain existing pasture unit boundaries where proposed road construction will break natural barriers.

The Betty Timber Sale is designed to harvest approximately 10.0 MM board feet of timber from 1,051 acres by clearcutting and partial removal. Approximately 7.4 miles of road will be constructed for this sale.

The Alligator Sale will harvest approximately 12.0 MM board feet of timber from 1,440 acres, about 480 acres of which is within the C.C. Mountain Allotment. The remainder of this sale is within the Bulldog Allotment. Partial cutting will be used to accomplish the silvicultural objectives.

Fuel conditions on the allotment, both natural and created through management activities, range from light to heavy. Heavy accumulations of fuel on the ground in some instances are restricting movement of livestock through areas and are thus the reason for the area being unsuitable for livestock grazing. Management activities which create heavy fuel accumulations will be detrimental to livesotck grazing by limiting accessibility.

Cultural, Historical, and Archeological

The C.C. Mountain Allotment area was originally part of the north half of the Colville Indian Reservation, formed in 1872. In 1892 Congress passed a law to allow purchase of the north half, and in 1896 it was opened to mineral entry. In 1900, the area was opened for resettlement. The Colville Confederated Indian Tribes retain their hunting and fishing rights in this area to the present time.

The Washington State Inventory of Historic Places lists an Indian trail that ran along the north side of North Fork of Deadman Creek and Deadman Creek. Near the head of North Fork of Deadman Creek, it swung north of Copper Butte and along the North Fork of the San Poil River. Prior to the coming of the white man, this trail, among others, was used as a migration route between the Okanogan and San Poil Rivers and Kettle Falls, an important salmon fishing ground. At the present time, there are no specific locations where this trail is still visible. Early prospectors and miners also used this trail to move men and supplies into the Eureka mining camp, now known as Republic.

Other known sites that may have cultural historic significance that are on the allotment are an old cabin near the upper portion of North Fork Deadman Creek, and an old homestead on the ridge north of Deadman Creek near the northeast allotment boundary. Nothing is known of the history of these sites at the present time.

Livestock ranching itself is an important part of the cultural heritage of the area. Livestock on the range and cowboys working the stock are reminiscent of the old west era. Livestock and range facilities necessary for handling and managing livestock may contribute to the enjoyment of the forest range landscape.

Minerals

There are several mining claims within the allotment area. However, none of these claims are in commercial production at this time.

Minerals exploration is still active in the area.

Transportation

The C.C. Mountain Allotment is accessed by the North and South Deadman Roads from the east. South Deadman Road traverses the length of the Allotment from east to west, connecting with the Albian Hill Road which gives access to the Sherman Pass Highway to the south and South Boulder Road to the north. The Albian Hill Road also gives access to the Mack Mountain and Twin Sisters jeep trails on the west side of the allotment. (See area map, page 1A.)

A large portion of the Allotment is unroaded at the present time and accessible only by Forest Service trails or game and stock trails. As the timber sale program is developed, more roads are expected to be built and access improved.

At the present time, the South Deadman Road is the only road suitable for use by cattle trucks.

Rare, Threatened, and Endangered Plants and Animals

No rare, threatened, and endangered plants or animals have been inventoried as occurring on the Allotment at this time. However, the marten and lynx which are occasional on the allotment, and the wolverine which may be occasional on the allotment are classified as status undetermined by the U.S. Department of the Interior, Fish and Wildlife Service.

III. EVALUATION CRITERIA

The following criteria describes the goals, objectives and tests of feasibility used to evaluate the alternatives developed for grazing on the C.C. Mountain Allotment and identify a preferred alternative. The criteria reflect District, Forest, Regional, and National direction, regulations, and policies. The criteria have been identified as musts and wants according to their degree of importance to help in analysis of the alternatives.

MUSTS

1. Obtain management level "C" within the Limited Access Strategy area and management level "D" within the General Forest Strategy area of the Kettle Range Land Management Plan. (Forest-Range Environmental Study, Kettle Falls District Management Team)
2. Provide a system of practical livestock management for the C.C. Mountain Allotment which will insure efficient, optimum sustained use of the forage consistent with other resource values. (FSM 2202.02)
3. Stop any basic or other resource damage by 1984. (FSM 2203.1 Supplement #34)
4. Develop and utilize the Limited Access Strategy area only to a degree which will not impare the visual quality or primative forest environment character of the area. (Kettle Range Management Plan)

5. Meet Streamside Management Unit objectives along streams within the C.C. Mountain Allotment. (FSM 8222.-2 Colville Supplement No. 1)
6. Provide needed coordination between grazing and timber management particularly in relation to establishment of tree regeneration and critical site management. (FSM 2205.12 and FSM 2472.02)

WANTS

1. Allocate adequate amounts of forage for use by wildlife. (FSM 2205.14)
2. Reverse any downward trends in range condition and improve fair, poor, and very poor areas where possible by one condition class by 1984. (FSM 2203.1)
3. Place unused or underused suitable range into livestock production under proper management. (FSM 2205.1-11 Supplement #34)
4. Maintain the stability of family ranches and farms affected. (FSM 2203.1)
5. Employ the most cost effective methods practical to achieve quality range management. (Recommended Renewable Resource Program as required by the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA))

IV. ALTERNATIVES CONSIDERED

The C.C. Mountain Allotment is located in an area covered by the Kettle Range Land Management Plan. This plan does not specify the level of Range Management to be applied to the allotment. (See Forest-Range

Environmental Study for management levels.) In order to establish a management level on the allotment, the management team of the Kettle Falls Ranger District has set criteria for the level of management. Only management levels "A" through "D" were considered as being practical on National Forest ranges.

Criteria for establishing management levels were developed separately for the Limited Access Strategy area and the General Forest Strategy area. The management team felt that management direction for these different strategies were distinct enough to warrant separate criteria. Criteria for establishing management levels are as follows:

Limited Access Strategy

MUSTS

1. Maintain the primitive forest environment.
2. Maintain cultural resources.
3. Stop or prevent basic resource damage.
4. Provide forage for livestock consistent with other resource considerations.

General Forest Strategy

MUSTS

1. Stop or prevent basic resource damage.
2. Provide forage for livestock.
3. Utilize grazing practices that will not significantly damage the timber resource.
4. Provide for sustained use of forage consistent with other resource uses.

WANTS

1. Provide forage for wildlife.
2. Reverse downward trends in range condition by 1984.
3. Place unused or underused suitable range into production.
4. Maintain or enhance stability of family ranches.
5. Employ cost effective methods.
6. Provide for a noxious weed control program.

Management levels were evaluated according to the Kepner-Tregoe analytical method as displayed in the matrix in Table 3.

Management levels "A" and "B" were considered inappropriate in both the Limited Access Strategy areas and the General Forest Strategy areas because "A" did not provide forage for livestock, and use of "B" could not insure stopping or preventing resource damage.

Management level "C" is preferred within the Limited Access Strategy areas, while level "D" is preferred within the General Forest Strategy area. The district management team felt that use of certain cultural range management practices within the Limited Access Strategy area did not meet the intent of the strategy, whereas, they were acceptable and often very beneficial within the General Forest Strategy areas.

These levels of range management as decided upon by the district management team will determine range management direction on the C.C. Mountain Allotment until such time as different direction is provided by higher order plans such as a Forest Land Management Plan.

TABLE 3

Decision Analysis Worksheet—Comparison of Alternatives

Decision Statement: LIMITED ACCESS STRATEGY

Objectives		Alternatives								
		A Environmental Manage, Without Livestock			B Environmental Manage w/Livestock			C Extensive Management		
Must		**Info**		**Go/No**	**Info**		**Go/No**	**Info**		**Go/No**
Maintain Primitive Forest Environment				Go			Go			Go
Maintain Cultural Resources				Go			Go			Go
Stop or Prevent Basic Resource Damage				Go	May result in some resource damage		No			Go
Provide Forage for Livestock		Would not provide forage for livestock		No			Go			Go
Want	**Wt.**	**Info**	**Sc.**	**Wt. Sc.**	**Info**	**Sc.**	**Wt. Sc.**	**Info**	**Sc.**	**Wt. Sc.**
		Total								

TABLE 3

Decision Analysis Worksheet—Comparison of Alternatives

LIMITED ACCESS STRATEGY

Decision Statement

Objectives	Alternatives									
	D Intensive Management				B			C		
Must	Info	Go/No			Info	Go/No		Info	Go/No	
Maintain Primitive Forest Environment	Certain imp. practices may detract from prim. for. environ.	No								
Maintain Cultural Resources		Go								
Stop or Prevent Basic Resource Damage		Go								
Provide Forage for Livestock		Go								
Want	Wt.	Info	Sc.	Wt. Sc.	Info	Sc.	Wt. Sc.	Info	Sc.	Wt. Sc.
Total										

TABLE 3

Decision Analysis Worksheet—Comparison of Alternatives

Decision Statement: GENERAL FOREST STRATEGY

Objectives	Alternatives								
	A Environmental Manage. Without livestock			B Environ.Manage w/ Livestock			C Extensive Management		
Must	Info	Go/No		Info	Go/No		Info	Go/No	
Stop or Prevent Basic Resource Damage		Go		May result in some resource damage	No			Go	
Provide Forage for Livestock	Would not provide forage for wildlife	No			Go			Go	
No Significant Damage to Timber Resource		Go		May Damage Regeneration	No			Go	
Sustained Use of Forage		Go			Go			Go	
Want	**Wt.**	Info	Sc.	Wt. Sc.	Info	Sc.	Wt. Sc.	Info	Sc.	Wt. Sc.
Provide Forage for Wildlife.	7								3	21
Reverse Downward Trend	10								3	30
Utilize Unused or Under-used Suitable Range	4								2	8
Stability of Family Ranch	5								4	20
Cost Effectiveness	6								4	24
Noxious Weed Control	4								1	4
			Total							107

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TABLE 3

Decision Analysis Worksheet—Comparison of Alternatives

Decision Statement: GENERAL FOREST STRATEGY

Objectives	Alternatives									
	D Intensive Management				B			C		
Must	Info	Go/No			Info	Go/No		Info	Go/No	
Stop or Prevent Basic Resource Damage		Go								
Provide Forage for Livestock		Go								
No Significant Damage to Timber Resources		Go								
Sustained Use of Forage		Go								
Want	**Wt.**	Info	Sc.	Wt. Sc.	Info	Sc.	Wt. Sc.	Info	Sc.	Wt. Sc.
Provide Forage for Wildlife	7		4	28						
Reverse Downward Trend	10		4	40						
Utilize Unused or Under-Used Suitable Range	4		4	16						
Stability of Family Ranch	5		3	15						
Cost Effectiveness	6		2	12						
Noxious Weed Control	4		4	16						
		Total		127						

Only alternatives that would achieve or proceed toward achieving management levels "C" and "D" have been considered in this assessment. These management levels call for improved livestock management practices and relative uniform distribution of livestock and plant use. Techniques such as fencing and water development are employed. Maximization of forage consistent with constraints of the environment and multiple use concepts is considered under management level "D".

Furthermore, only management alternatives which are tailored to the inherent characteristics and conditions of the allotment have been considered. All management alternatives considered have the potential to meet plant physiology and soil stabilization requirements on all parts of the allotment, and be fully coordinated with the needs of other uses and activities.

The following is a brief description of the alternatives considered in this analysis:

A. No Action

This alternative calls for continuation of the present management system as described under Affected Environment, Present Range Use. Livestock numbers would remain at current levels. Only structural and nonstructural range improvement development needed to maintain present conditions would be considered. This would include reconstruction of deteriorated water developments and fences, construction of allotment boundary fence where needed to control livestock on the allotment, and construction of fence needed to replace natural barriers broken by some activity such as road building or timber harvest.

B. Deferred Rotation Grazing

The deferred rotation alternative would utilize existing pasture units to implement a system which would provide forage plants with periodic deferment or partial season's rest. Additionally, pasture units would be systematically rotated as the season progressed. Use on one or more pasture units each year would be delayed until plants in the area had a chance to initiate reproduction and restore vigor, and new plants had a chance to become established.

Deferred rotation grazing is designed to counteract the natural tendencies of grazing animals to select certain preferred plants, utilizing them heavily, by providing planned rest periods in the form of deferment to allow the plants to recover from the adverse effects of heavy utilization.

The stocking rate on the allotment would be adjusted to the indicated capacity for the system.

Pasture units would be deferred once every four years. The C.C. unit would be utilized early in the season three out of four years. Whereas, the Deadman unit would be utilized early two out of four years. The proposed rotation schedule is as follows:

	PASTURE UNIT				
YEAR	DEADMAN	BETTY	C.C.	MACK	KING
1	6/18-8/2	8/3-10/15	6/1-6/17	6/18-8/2	8/2-10/15
2	9/29-10/15	6/18-10/15	6/1-6/17	6/18-9/29	6/18-9/29
3	6/1-6/17	6/17-10/15	9/10-10/15	6/17-9/10	6/17-9/10
4	6/1-7/5	7/5-10/15	6/1-7/5	7/5-10/15	7/5-10/15

REPEAT CYCLE

Construction of approximately 3/4 mile of fence would be needed to control the boundary between the Mack and King units.

Water developments and other range improvements would be constructed to encourage improved distribution.

C. Rest and Rotation Grazing - Two Year Cycle

Rest and rotation grazing includes further refinements and combinations of deferment and rotation with the additional component of complete rest on parts of the range each year. The rest periods combined with deferment and rotation provides plants with the opportunity for restoration of vigor, reproduction, and establishment of new seedlings. Allowable use on forage species is greater than for deferred rotation grazing because longer and more frequent restoration periods are allowed.

This alternative is similar to the no action alternative in that the same pasture units are utilized and the same rotation schedule is used. However, stocking will be adjusted to the indicated capacity and improvements will be developed in an attempt to improve livestock distribution and protect sensitive sites.

D. Rest and Rotation Grazing - Three Year Cycle

This system would utilize rest and rotation on existing pasture units to benefit the vegetation as with alternatives A and C, however, the rotation system would be somewhat different. One or two pasture

units would be rested per year rather than two or three units as in alternatives A and C. The proposed rotation system is as follows:

PASTURE UNIT

YEAR	DEADMAN	BETTY	C.C.	MACK	KING
1	6/1-6/24	Rest	6/25-8/8	8/9-10/15	8/9-10/15
2	6/1-6/24	6/25-10/15	Rest	Rest	6/25-10/15
3	Rest	7/1-10/15	6/1-6/30	7/1-10/15	Rest

REPEAT CYCLE

Construction of approximately 3/4 mile of fence would be needed to control the boundary between Mack and King units.

Water developments and other improvements would be constructed to encourage improved livestock distribution and to protect sensitive sites.

Stocking would be adjusted to the indicated capacity for the system.

V. EFFECTS OF IMPLEMENTATION

The following discussion describes the consequences of implementing each alternative in terms of the effects on the resources or areas of impact. The discussion assumes that predictable responses can be obtained from the various actions proposed.

The following is a discussion, by alternative, of the probable effects implementation of that alternative will have on the various resources considered in this assessment.

A. No Action - Rest and Rotation Grazing

Stocking and Season of Use

Stocking rates and season of use would remain as they are currently. A total of 172 cattle would be allowed to graze the allotment from about June 1 until October 15 yearly, for a total of 774 animal unit months of use. No adjustments in the grazing permit would be necessary.

Range Condition and Trend

Range condition is expected to improve under this alternative due to the system of alternate years rest on all parts of the allotment. This rest, coupled with stocking somewhat below the indicated capacity, should result in utilization of forage species somewhat below proper use levels, which should allow forage plants a chance to restore and maintain vigor, reproduce more successfully, and allow new reproduction to become established.

Downward range trends should rapidly change to upward where grazing is the primary influence on trend.

Soils

Soil condition should improve in the long run under this alternative because of the improvement in range condition and the increase in plant litter accumulation that will take place on pasture units during years of no grazing.

Short term effects, however, may include some soil displacement, compaction, and exposure of bare ground due to a large number of animals concentrated on only a portion of the allotment. This may result in some siltation into streams during use years, but this effect is expected to be minimal and decrease as overall range condition improves.

Rest periods are expected to provide soils which have been compacted due to heavy concentrations of livestock a chance to recover from compaction through the action of moisture, temperature, small animal activity, and root action.

Water

Watershed and water quality conditions are expected to be maintained or improved as range condition improves. Siltation into streams is expected to decrease and stream bank stability increased as vegetative cover is improved to hold and protect the soil.

Short term effects on water that can be expected due to the increased concentration of livestock in pasture units is the possibility of increased bacteria entering the water through feces and urine, and increased trampling of stream banks. These effects will be restricted to only one-half of the allotment per year and should decrease as overall range condition improves.

Streams in rested portions of the allotment will be uneffected by cattle, and will have a chance to cleanse themselves through flushing and protective bank and soil cover will be restored.

Fish and Wildlife

Fish life in streams within grazed units will be adversly affected by changes in water quality and stream bank conditions during periods of grazing. These effects are expected to be short term, only during and shortly after the time cattle are within the pasture units. Fish life in streams within units not grazed in any one year will not be affected by these short term conditions.

Long term conditions near streams which may affect fish life should be improved as range condition improves. These conditions include stream bank stability and protective shrub growth which would be favored by periodic rest from livestock grazing.

Short term conflicts in allocation of forage between domestic livestock and wildlife may develop on grazed areas due to the intensive stocking rate. This is mitigated somewhat by the fact that proper use levels are designed to account for actual use made by wildlife as well as livestock, and should resolve any conflicts for summer forage and browse. Some browse needed for wildlife winter range may be lost to summer grazing on the Deadman Unit during the years it is grazed. By grazing this unit only in the early summer, use on browse should be kept to a minimum, however. Proper use within this unit will have to consider use on browse.

Forage and browse within ungrazed units would be totally available for use by wildlife.

As range condition improves, more forage and browse is expected to become available for use by wildlife, as well as by livestock.

Recreation and Visuals

Recreation and visual values within grazed units may be temporarily degraded during and shortly after use due to the presence of livestock and the sounds and smells associated with them. Relatively heavy forage utilization will cause reduced vegetative cover and some soil disturbance will be caused by the large number of animals trampling on the area. These affects may cause reduced visual quality during the years pasture units are grazed. Areas where cattle congregate will become less desirable for camping due to the presence of the animals and the deposition of their wastes on the area.

On the other hand, about one-half of the allotment will be totally ungrazed each year. Recreation and visuals will be totally uneffected by grazing on these areas.

Timber and Fuels

Alternate years use on half of the allotment will provide an opportunity to coordinate grazing with the needs of timber management for such things as protection of post sale activities such as erosion control seeding and tree planting. Cattle use in some cases may be used to help provide a certain amount of site preparation on areas planned for planting or seeding. This may be done by grazing the activity area heavily for one or more years, causing a reduction in vigor of plants that may potentially compete with trees, and causing soil disturbance that may more readily accept seed or seedlings.

By flexibly applying the rotation schedule, two or more growing season's rest may be provided activity areas which may benefit from protection from grazing.

Some tree or seedling damage may occur on grazed areas due to the relatively intensive stocking rates. Rubbing and trampling of trees may be more common where cattle concentrate.

The relatively heavy utilization level within grazed pastures may tend to reduce fine fuels (i.e. grass) and thus reduce the rate of spread of any fires which may break out within the area. This will occur on approximately one half of the allotment per year. Grass on the ungrazed half of the allotment will be allowed to grow to its maximum volume, thus contributing to the fine fuels loading.

Cultural, Historic and Archeological

Use of Alternative A is expected to have very little impact on the cultural, historic and archeological resources. Grazing may have some effect in maintaining the fields associated with old homestead activity in the area by controlling, somewhat, tree encroachment into these areas. This may be done by favoring sod grass species or by actual physical damage to the encroaching trees by rubbing or trampling.

Relatively heavy cattle use in the area may result in the establishment of many cow trails. The presence of these trails may tend to mask any evidence of the Indian Trail that may still be present.

Utilization of the allotment by livestock may help to maintain the ranching culture within the area.

Minerals

Cattle grazing in general is expected to have little or no effect on the minerals resource.

Transportation

Relatively heavy stocking rates associated wtih the use of alternative A may cause cattle concentrations along roads which could inconvenience road users and increase the safety hazard somewhat. Also, cattle grazing along roads may cause some damage to cut and fill slopes, requiring greater stabilization efforts. Truck and other vehicle traffic associated with hauling of cattle and management acitvities will utilize the road system.

Roads within unutilized pasture units will not be affected by cattle or traffic associated with management activities during the years units are rested.

Rare, Threatened, or Endangered Plants and Animals

Since no rare, threatened or endangered plants and animals are known to exist on the allotment, use of alternative A will have no known effect on this class of species.

Social and Economic

No change in the stocking, season of use, or management of the allotment is expected to result in any significant social or economic effects either on the permittee or surrounding area.

An economic analysis of the alternatives considered in this report is found in Appendix E. Findings of that analysis for Alternative A are as follows:

Economic Analysis - Alternative A

	Interest Rate			
	6.6625%	7%	10%	15%
Net Present Worth	$17,404	$16,868	$13,281	$9,490
Benefit Cost Ratio	1.53	1.53	1.53	1.54
Internal Rate of Return	6%	6%	6%	6%
Gross Income to Permittee		$17,695		

Somewhat fewer animal unit months of forage will be harvested from the allotment than the indicated capacity. Beef production from the allotment, therefore, will be slightly below the potential for the area.

B. Deferred Rotation Grazing

Stocking and Season of Use

Stocking under this system of management would be adjusted to levels that are indicated to be necessary to achieve proper utilization on areas of primary range. This would result in a reduction of cattle numbers from 172 head to 146 head, a reduction of 15 percent. The season of use would remain at approximately July 1 to October 15. A total of 657 animal unit months of livestock use would be allowed on the allotment.

Range Condition and Trend

Range condition on bunchgrass and bluegrass areas is expected to improve under the deferred rotation alternative, but at a slightly slower rate than alternative A. This is because heavy grazing is still likely to occur on the most preferred portions of the allotment and shorter and

less frequent rest periods would be provided to counteract this effect.

Range condition on pinegrass areas is expected to be relativeiy uneffected by use of the deferred rotation system. This is because pinegrass is a relatively late maturing species, and use on pinegrass cannot be deferred long enough for this species to complete its life cycle before grazing occurs. Some benefit may be obtained on the pinegrass areas because of the effect the construction of new range improvements may have on improved livestock distribution and thus lighter utilization on the forage.

Soils

Soil condition should benefit under this alternative because of improved vegetative condition, improved livestock distribution, and lighter stocking rates. Heavy livestock concentrations are still expected around preferred areas such as water developments. Some soil damage is expected in these areas, although it should be restricted to smaller areas.

Livestock would have access to all portions of the allotment every year, thus there would be some soil disturbance throughout the allotment each season. Recovery of disturbed sites is expected to be somewhat slower than under alternative A due to the less frequent and shorter rest periods.

Water

Impacts on streams is expected to be somewhat less during periods of grazing than alternative A. However, all streams are likely to be impacted every year. Lighter stocking rates and more frequent moves between pastures should result in less concentration around streams with the result of less introduction of bacteria into the water and less trampling of streambanks per unit area. However, more miles of stream are likely to be effected each season.

Watershed conditions should show modest improvement, overall, due to improved vegetative condition. The amount and rate of improvement is expected to be less than alternative A due to less frequent and shorter rest periods. Critical areas near streams are still expected to receive the heaviest livestock use.

Fish and Wildlife

A lighter concentration of livestock around streams is expected under alternative B than under alternative A, primarily due to the lighter stocking rate. This may result in less impact in the form of siltation and bank trampling which would be more favorable to fish life. However, streamside vegetation would be subject to yearly grazing and would not be allowed to develop for maximum protection of the habitat. This would be particularly true of shrubs. Annual leader growth would be available for grazing every year, and shrubs would not have a chance to reach their maximum obtainable size. Smaller shrubs are not as effective in shading streams, which is important in keeping water temperature low.

Competition between wildlife and livestock for forage and browse should be somewhat less on grazed areas than for alternative A because of the reduced stocking level and lighter livestock utilization. Livestock grazing, however, will take place on all portions of the allotment every year so no areas will be available exclusively for use by wildlife as there would be under alternatives A, C and D.

Recreation and Visuals

Lower stocking rates, lighter utilization, and improved distribution obtained with alternative B on used pasture units should result in less impact on recreation and visuals than for alternative A. Fewer animals per unit area should reduce the contact between livestock and recreationists, and relatively longer stubble heights should lessen the visual impact of grazing.

Use of alternative B, however, will subject the entire allotment to the impacts of grazing on recreation and visuals every year. Whereas, use of alternatives A, C and D only subjects a portion of the allotment to these impacts each year.

Furthermore, the long range effects of use of alternative B may have less total effect of improving visual quality by improving range condition than use of alternative A.

Timber and Fuels

Slightly less flexibility in coordinating grazing management with timber management is available under alternative B than alternative A.

This is because all portions of the range are utilized every year and there is no opportunity to provide full years' rest to activity areas needing protection without altering the grazing management system. Some measures that may be necessary to adequately meet timber management objectives on activity areas under this alternative are partial non-use of the grazing permit or temporary fencing around activity areas to exclude livestock.

On the other hand, lighter concentrations of livestock should impact regeneration areas less through trampling or rubbing of small trees. All portions of the allotment will be exposed to cattle every year which may lead to repeated damage to the same areas every year without a chance for trees to grow beyond the stage where they are susceptable to damage.

Grass fuels will be moderately controlled by deferred rotation grazing on all portions of the allotment every year. This will be sufficient to reduce the rate of fire spread, if only to a small degree.

Cultural, Historic and Archeological

Grazing intensity is expected to be heavy enough to help maintain old homestead fields in grass and forb cover.

The recognition of the Indian Trail is expected to be little affected by the deferred rotation grazing system due to the large number of livestock, game and recreation trails already in the area.

Maintenance of the ranching culture is expected to continue.

Minerals

Use of the deferred rotation grazing system is expected to have little or no effect on the minerals.

Transportation

Cattle use of roads and areas adjacent to roads is expected to be somewhat less intense than for alternative A due to the relatively lighter stocking rate. This is expected to decrease the interference with motorists and reduce the safety hazard slightly. Also, damage to road cuts and fills should be less severe, although more frequent.

Vehicle use of roads, associated with management of the allotment, is expected to be somewhat greater because of the necessity to access more pasture units each year. Also, trailing livestock on roads is expected to increase because of the need to move cattle between pasture units more often and because more pasture units are utilized each year. Therefore, hazards and delays due to the cattle drives on roads will be increased.

Rare, Threatened or Endangered Plants and Animals

Since no rare, threatened or endangered plants or animals are known to exist on the allotment, use of the deferred rotation alternative will have no known effect on this class of species.

Social and Economic

A reduced number of livestock permitted on the allotment coupled with increased costs for range improvement construction and livestock management will reduce the value of the allotment in terms of outputs to the permittee and the public. The permittee will have to reduce the

size of his cow herd or find alternative summer range for those cattle that would have been permitted on the allotment. Reduction of the herd would mean decreased gross return to the permittee. Utilizing alternative summer range could increase his operating costs by forcing him to manage two separate herds of cattle in widely separated locations.

Returns to the Government in the form of grazing fees would be diminished to some extent, and costs in the form of the Government's share of range improvements would be greater per animal unit month.

If the permittee chose to reduce his cow herd, fewer numbers would mean less beef reaching the market for public comsumption.

An economic analysis of the alternatives considered in this report is found in Appendix E. Findings of that analysis for alternative B are as follows:

Economic Analisys - Alternative B

	Interest Rates			
	6.6625%	7%	10%	15%
Net Present Worth	-$9,147	-$9,080	-$8,680	-$8,180
Benefit Cost Ratio	.82	.82	.79	.74
Internal Rate of Return	5%	5%	7%	9%
Gross Income to Permittee		$15,029		

C. Rest and Rotation Grazing - Two Year Cycle with Adjusted Stocking Rate

Stocking and Season of Use

Stocking under this alternative would be adjusted to the indicated capacity of the two year cycle rest and rotation grazing system. This would mean an increase in stocking of 49 animal unit months over the stocking rate of alternative A. The grazing permit would be adjusted from 172 cattle, 6/1 to 10/15, to 183 cattle, 6/1 to 10/15, for a net increase of 11 cattle.

Range Condition and Trend

The reaction of range condition and trend under this alternative is thought to be about the same as for alternative A. Range condition should improve on all portions of the allotment due to periodic full years' rest. Although forage utilization may be somewhat higher under this alternative due to slightly more cattle numbers, it is expected to be within proper use limits. Construction of the indicated range improvements may mitigate the effect of heavier utilization by improving livestock distribution.

Soils

Soils under this alternative should react in much the same manner as for alternative A. Rest periods will be the same in frequency and duration and should result in an overall improvement in soil condition.

Short term impacts of this alternative will be similar to those of alternative A. Soil displacement, compaction, and exposure of bare soil would be expected to occur to some extent on pastures utilized in any one season. These effects would occur on only half of the allotment each year.

Water

The effects of alternative C on water quality and watershed conditions is not expected to be significantly different than alternative A. Some additional benefit may be derived from fencing springs to exclude livestock in conjunction with the range improvement program when these springs ultimately feed into streams. Fencing of these springs may reduce silt and bacteria entering these springs.

Fish and Wildlife

Use of alternative C will have essentially the same effects of fisheries and wildlife as alternative A. A benefit not derived from alternative A is that by fencing springs in conjunction with the range improvement program, additional riparian habitat is provided for exclusive use by wildlife.

Recreation and Visuals

Again, the effect of alternative C on recreation and visuals is virtually the same as alternative A.

Timber and Fuels

Opportunities for coordinating grazing management and timber management are the same for alternative C as for alternative A. Other impacts of grazing on timber are also the same.

There is no difference between alternatives C and A in their effect on fuels.

Cultural, Historic and Archeological

Alternatives C and A will have virtually the same impact on this resource.

Minerals

Cattle grazing is expected to have little or no effect on the minerals resource.

Transportation

The effects of alternative C on the transportation system are the same as those of alternative A.

Rare, Threatened or Endangered Plants and Animals

Since no rare, threatened or endangered plants or animals are known to exist on the allotment, use of alternative C will have no known effect of this class of species.

Social and Economic

The slight increase in the stocking level of this alternative over present levels will increase the economic outputs from the allotment.

The permittees gross income is expected to rise slightly. Necessary construction of range improvements will have an impact on the permittee as he will be expected to contribute to their construction and maintenance. There will also be cost to the Government in construction of these improvements for materials, labor, and increased administration.

Findings of the economic analysis from Appendix E for alternative C are as follows:

Economic Analysis - Alternative C

	Interest Rate			
	6.6625%	7%	10%	15%
Net Present Worth	$15,847	$15,190	$10,789	$6,135
Benefit Cost Ratio	1.42	1.43	1.36	1.27
Internal Rate of Return	9%	9%	13%	17%
Gross Income to Permittee		$18,907		

D. Rest and Rotation - Three Year Cycle

Stocking and Season of Use

Stocking under this alternative would be increased to 1,010 animal unit months per year. The season of use would remain June 1 to October 15. The total number of cattle on the allotment would increase from 172 to 224 for a 30 percent increase in permitted numbers.

Range Condition and Trend

Forage utilization is expected to be the same under this system of management as under alternative C even though cattle numbers are increased. This is because a larger portion of the allotment will be grazed each year, resulting in approximately the same number of cattle per unit area. However, because a larger portion of the allotment will be grazed each year, a smaller portion wil be rested. This will result in rest periods less frequent than alternatives A and C, although they will be for the entire year during years of rest. Rest periods will be provided within all pasture units one out of every three years. For this reason, range condition and trend is not expected to respond as rapidly or as completely as under alternatives A and C.

Planned rest periods under alternative D are more frequent and of longer duration than under alternative B. Therefore, range condition and trend is expected to respond more quickly and more completely than under alternative B.

Soils

Short and long term effects on soils are expected to be similar to those found for alternatives A and C. More of the allotment area will be effected each year, and because rest periods are less frequent, it is expected that short term adverse impacts will take longer to recover. In other words, a larger portion of the allotment will be affected for a longer period of time, which will result in slightly more displacement, compaction, and exposure of bare ground which may be subject to erosion.

Water

Streams will also be impacted more often than they will be under alternatives A or C. This may result in an overall increase in degradation of water quality and more disturbance of stream banks than for these alterantives.

Improvement in stream bank cover is expected to occur at a rate somewhat slower than under alternatives A and C, but slightly faster than under alternative B. Overall watershed conditions are expected to react similarly. Range improvements constructed under this alternative may favor water conditions by improving livestock distribution and protecting springs.

Fish and Wildlife

The short term effects if this alternative on fisheries habitat is expected to be similar to alternatives A and C, but more adverse than alternative B within pasture units during years of use. These impacts will be spread over a larger area than for alternatives A and C, but a smaller area than for alternative B. Alternative D is expected to favor long term conditions which benefit the fisheries resource less than alternatives A and C due to less frequent rest periods, but benefit these conditions more than alternative B due to more frequent and longer rest.

Competition between livestock and wildlife may be greatest under this alternative because of the larger area grazed each year than under alternatives A and C, and the higher proper utilization standards than alternative B. The same benefit from fencing springs would be derived

under this alternative as under alternatives B and C. This benefit would not be gained from alternative A as no new range improvement would take place.

Utilization standards under this alternative which are similar to alternatives A and C would allow the removal of the most low cover, which may be important to small animals. This removal would take place over a larger area than alternatives A and C, however, a portion of the allotment would remain ungrazed each year and thus totally available for use by wildlife.

Recreation and Visuals

Recreation and visuals impacts of this alternative would be similar to those of alternatives A and C, with the exception that they would be over a larger area. Recreation and visuals impacts would be slightly greater than alternative B, but spread over a smaller area each year.

Timber and Fuels

Opportunities for coordinating grazing management with timber management are to some extent less for alternative D than for alternatives A and C, but slightly greater than for alternative B. Only one to two pasture units are available for rest to protect post-sale activity under alternative D, whereas, two to three pasture units are available under alternatives A&C. Deferment is relied upon to furnish needed protection under alternative B. By restricting the number of units that can be rested in any one year, the area on which post-sale activities can be successfully carried out may be limited. Therefore, the flexibility in planning these activities is somewhat limited.

The effect of alternative D on fuels is the same as for alternatives A and D except that fuels reduction takes place on a larger area.

Cultural, Historic and Archeological

The effect of alternative D on this resource is essentially the same as alternatives A and C.

Minerals

As with the other alternatives, alternative D is expected to have little or no impact on the minerals resource.

Transportation

The effect of alternative D on the transportation system is essentially the same as alternatives A and C except that a larger area will be affected each year under alternative D.

Rare, Threatened or Endangered Plants and Animals

As no rare, threatened or endangered plants or animals are known to exist on the allotment, use of alternative D will have no known effect on this class of species.

Social and Economic

The increase in the stocking level of this alternative over present levels will significantly increase the economic outputs from the allotment. The permittees gross income would be expected to rise. The increased work load due to increased management requirements and construction of range improvements may generate increased employment or

retail trade opportunities associated with the permittee's ranching operation. Increased cattle numbers may necessitate change in the permittee's off-Forest operations such as obtaining more fall, winter, and spring pasture or feed.

More funds will be collected by the Forest Service in the form of grazing fees. Forest Service expenditures as their part of the range improvements will increase in the short term.

Higher stocking rates and more outputs would result in there being more beef available for public consumption.

Findings of the economic analysis from Appendix E for alternative D are as follows:

Economic Analysis - Alternative D

	Interest Rate			
	6.6625%	7%	10%	15%
Net Present Worth	$17,864	$17,091	$11,910	$6,443
Benefit Cost Ratio	1.38	1.37	1.31	1.22
Internal Rate of Return	9%	9%	13%	16%
Gross Income to Permittee		$23,028		

VI. EVALUATION OF ALTERNATIVES

The Kepner-Tregoe analytical process was used to evaluate the alternative management systems according to the established evaluation criteria. Evaluation criteria were divided into "must" and "want" categories. "Must" items were those criteria that were essential in a range management system. "Want" items were those criteria that were highly desirable but not critical. "Want" items were weighted as to their relative importance on a scale of one to ten. A score of one being the least important and ten being the most important.

Each alternative was then evaluated as to whether or not the systems met the must criteria. If an alternative failed to meet any of the must criteria, it was dropped from consideration. The remaining alternatives were then evaluated against the "want" criteria. In evaluating the alternatives, a numerical rating was assigned the alternatives for each criteria depending on how well that alternative met the criteria. Again, a scale of one to ten was used; one being used as least beneficial and ten being most beneficial. The Forest Service preferred alternative was the alternative meeting all "must" criteria and scoring highest on the "want" criteria.

The effects of implementation were used in evaluating how well each alternative met the evaluation criteria.

The matrix found in Table 4 displays the results of this analysis.