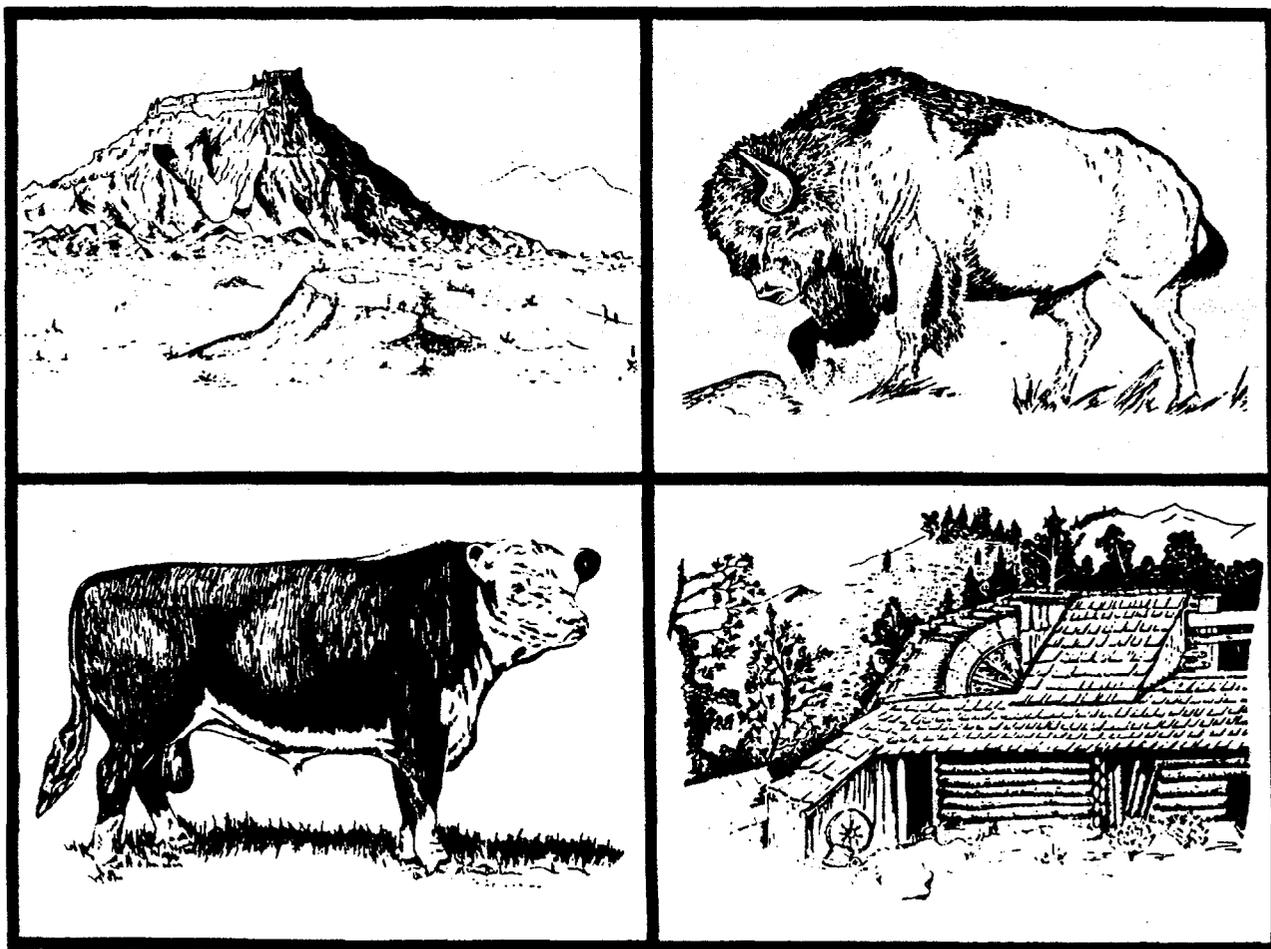


# HENRY MOUNTAIN COORDINATED RESOURCE MANAGEMENT PROPOSALS



## ENVIRONMENTAL ASSESSMENT

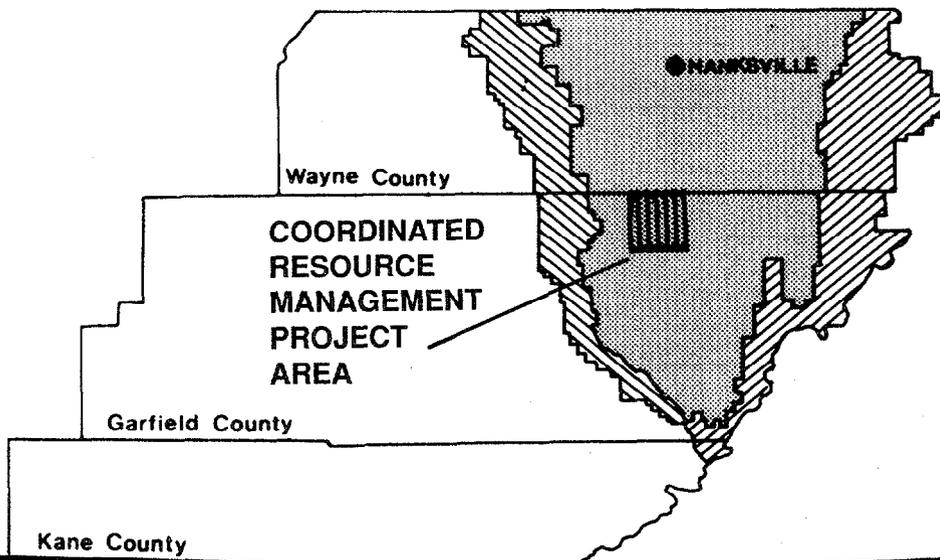
**FINAL**

**RICHFIELD DISTRICT  
BUREAU OF LAND MANAGEMENT  
U.S. DEPT. OF INTERIOR  
AUGUST, 1988**

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HENRY MOUNTAIN COORDINATED RESOURCE  
MANAGEMENT AREA ENVIRONMENTAL  
ASSESSMENT

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Henry Mountain Coordinated Resource  
Management Area  
Environmental Assessment

TABLE OF CONTENTS

	<u>PAGE</u>
I. <u>THE SETTING</u> .....	1
II. <u>BACKGROUND</u> .....	1
III. <u>FORMATION OF THE CRM TEAM</u> .....	1
IV. <u>RELATIONSHIP OF CRM, LAND-USE PLANNING, AND ENVIRONMENTAL ASSESSMENT</u> .....	3
V. <u>PURPOSE AND NEED OF THE PROPOSED ACTION</u> .....	6
VI. <u>DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES</u> .....	6
A. GENERAL.....	6
B. DISCRETE ACTIONS COMMON TO THE PROPOSAL AND ALL ALTERNATIVES.....	7
1. <u>Facilities</u> .....	7
2. <u>Vegetation Treatment</u> .....	7
3. <u>Standard Operating Procedures</u> .....	8
4. <u>Seed Mixtures</u> .....	9
5. <u>Monitoring</u> .....	10
C. SPECIFIC PROPOSALS.....	11
1. <u>The Proposed Action</u> .....	11
2. <u>Implementation of MFP</u> .....	14
3. <u>No Action</u> .....	14
D. ADDITIONAL ALTERNATIVES CONSIDERED .....	14
VII. <u>AFFECTED ENVIRONMENT</u> .....	17
A. AIR QUALITY.....	17
B. SOILS.....	17
C. WATERSHED.....	19
D. VEGETATION.....	20
1. <u>General Types</u> .....	20
2. <u>Threatened and Endangered Species</u> .....	21
3. <u>Riparian</u> .....	21
4. <u>Vegetation Conditions</u> .....	21
Ecological Condition.....	21
Specific Allotments.....	21
5. <u>Early Spring Vegetation</u> .....	22
E. WILDLIFE.....	23
1. <u>Big Game</u> .....	23
2. <u>Fish</u> .....	25
3. <u>Upland Game and Other Species</u> .....	25
4. <u>Endangered Species</u> .....	25
F. RECREATION.....	25
1. <u>Developed Recreation Sites</u> .....	25
2. <u>Undeveloped/Dispersed Recreation</u> .....	25

G.	WILDERNESS.....	26
H.	CULTURAL RESOURCES.....	26
I.	PALEONTOLOGY.....	27
J.	VISUAL RESOURCES .....	27
K.	LAND USE PLANS AND CONTROLS.....	29
L.	LIVESTOCK AND WILDLIFE GRAZING.....	29
M.	SOCIOECONOMICS .....	32
VIII.	<u>ANALYSIS OF THE PROPOSED ACTION AND ALTERNATIVES.....</u>	33
A.	THE PROPOSED ACTION.....	33
1.	<u>Environmental Impacts.....</u>	33
a.	Air Quality.....	33
b.	Soils.....	33
c.	Watershed.....	34
d.	Vegetation.....	36
(1)	General Types.....	36
(2)	Threatened and Endangered Species.....	37
(3)	Riparian.....	37
(4)	Vegetation Conditions and Trends.....	37
	Ecological Condition.....	37
	Range Condition and Trend.....	38
e.	Wildlife.....	38
f.	Recreation.....	41
g.	Wilderness.....	41
h.	Cultural Resources.....	41
i.	Visual Resources.....	42
j.	Land-Use Plans and Controls.....	43
k.	Livestock and Wildlife Grazing.....	43
l.	Socioeconomics.....	45
2.	<u>Mitigating Measures.....</u>	46
a.	Cultural Resources.....	46
b.	Land-Use Plans and Controls.....	46
3.	<u>Unavoidable Adverse Impacts.....</u>	46
4.	<u>Relationship Between Short-term Use of the Environment VS. Long-term Productivity.....</u>	47
5.	<u>Irreversible and Irretrievable Commitment of Resources.....</u>	47
B.	IMPLEMENTATION OF MFP.....	47
1.	<u>Environmental Impacts.....</u>	47
a.	Air Quality.....	47
b.	Soils.....	47
c.	Watershed.....	47
d.	Vegetation.....	48
(1)	General Types.....	48
(2)	Threatened and Endangered Species.....	49
(3)	Riparian.....	49
(4)	Vegetation Condition and Trend.....	49
	Ecological Condition.....	49
(5)	Range Condition and Trend.....	49
e.	Wildlife.....	50
f.	Recreation.....	52
g.	Wilderness.....	52
h.	Cultural Resources.....	52

i.	Visual Resources.....	53
j.	Land-Use Plans and Controls.....	54
k.	Livestock and Wildlife Grazing.....	54
l.	Socioeconomics.....	55
2.	<u>Mitigating Measures</u> .....	56
a.	Cultural Resources.....	56
3.	<u>Unavoidable Adverse Impacts</u> .....	56
4.	<u>Relationship Between Short-term Use of the Environment VS. Long-term Productivity</u> .....	56
5.	<u>Irreversible and Irretrievable Commitment of Resources</u> .....	57
C.	<u>NO ACTION ALTERNATIVE</u> .....	57
1.	<u>Environmental Impacts</u> .....	57
	Air Quality, Cultured Resources, Visual Resources.....	57
a.	Soil.....	57
b.	Vegetation.....	57
c.	Wildlife.....	57
d.	Recreation.....	58
e.	Wilderness.....	58
f.	Land use Plans and Controls.....	58
g.	Livestock and Wildlife Grazing.....	58
h.	Socioeconomics.....	58
2.	<u>Mitigating Measures</u> .....	58
a.	Land Use Plans and Controls.....	58
b.	Vegetation.....	58
c.	Wildlife.....	59
d.	Livestock.....	59
3.	<u>Unavoidable Adverse Impacts</u> .....	59
4.	<u>Relationship Between Short-term Use of the Environment VS. Long-term Productivity</u> .....	59
5.	<u>Irreversible and Irretrievable Commitment of Resources</u> .....	59
IX.	<u>RECORD OF PERSONS, GROUPS AND GOVERNMENT AGENCIES CONSULTED</u>	59
X.	<u>STATEMENT OF PUBLIC INTEREST</u> .....	60
XI.	<u>PUBLIC COMMENT AND RESPONSE</u> .....	61
APPENDIX 1	Soil Characteristics	
APPENDIX 2	Erosion Data	
APPENDIX 3	Vegetation Analysis	
APPENDIX 4	Staff Report - Threatened and Endangered Animal Species	
APPENDIX 5	Bison Stock Flow Chart	
APPENDIX 6	Staff Report - Threatened and Endangered Plant Species	
APPENDIX 7	Evaluation of Impacts to Wilderness Values	
APPENDIX 8	VRM Class Objectives	

- APPENDIX 9 Evaluation of Vegetation and Soil Data in  
the CRM Proposed Projects Area
- APPENDIX 10 Current BLM Action to Minimize Salinity
- APPENDIX 11 Economic Analysis
- APPENDIX 12 Steering Committee - Mailing List
- APPENDIX 13 Signatures of CRM Team Members
- APPENDIX 14 Memo to Southern Utah Wilderness Alliance  
re. Tarantula Mesa ACEC.

REFERENCES CITED

HENRY MOUNTAIN  
COORDINATED RESOURCE MANAGEMENT PROPOSAL

LIST OF TABLES

<u>TABLE NO.</u>	<u>TITLE</u>	<u>PAGE</u>
1	Relationship of CRM Proposal to Land Use Planning.....	5
2	CRM Proposed Action.....	13
3	Implementation of MFP.....	16
4	Current Erosion Situation.....	19
5	Current Range Condition and Trend.....	23
6	Summary of Big Game Investigations and Management Recommendations.....	24
7	Cultural Resources Potential.....	27
8	Current VRM Classes.....	28
9	Grazing Status.....	30
10	Forage Availability and Needs (AUMs).....	30
11	Current Production (AUMs) in Treatment Areas.....	32
12	Projected Erosion Situation/Proposed Action.....	36
13	Anticipated Range Condition and Trend/Proposed Action.....	38
14	Affected Bison Habitat/Proposed Action.....	39
15	Affected Mule Deer Habitat/Proposed Action.....	40
16	Cultural Resources Values at Risk/Proposed Action.....	42
17	Anticipated VRM Class Violation/Proposed Action.....	44
18	Estimated AUMs/Proposed Action.....	45
19	Economic Summary/Proposed Action.....	46

TABLE NO.	TITLE	PAGE
20	Projected Erosion Situation/Implementation of MFP.....	48
21	Anticipated Range Condition and Trend.....	50
22	Affected Bison Habitat.....	51
23	Affected Mule Deer Habitat.....	52
24	Cultural Resources/Values at Risk .....	53
25	Anticipated VRM Class Violations.....	54
26	Estimated AUMs.....	55
27	Economic Summary.....	56
28	Summary of Comment Letters.....	60

HENRY MOUNTAIN  
COORDINATED RESOURCE MANAGEMENT  
PROPOSAL

LIST OF MAPS

<u>MAP NO.</u>	<u>MAP NAME</u>	<u>PAGE</u>
1	CRM PROJECT AREA	4
2	CRM PROPOSED ACTION	12
3.	IMPLEMENTATION OF MFP	15

## I. THE SETTING

The Coordinated Resource Management (CRM) area consists of approximately 1.3 million acres in Garfield and Wayne counties, Utah, in the Henry Mountains. The land ownership is comprised of 1.25 million acres of public land (95 percent), administered by the Bureau of Land Management (BLM), Richfield District; 50,560 acres of Utah State land (3.8 percent), administered by the Utah Division of State Lands and Forestry; and 16,000 acres of private land (1.2 percent), owned by community and agricultural interests residing primarily in Wayne County. The CRM area encompasses all land within the area bordered by State Highway 24 to the north, Capitol Reef National Park to the west, with Lake Powell and the Dirty Devil River on the south and east. Hanksville is located along the northern edge of the area (see map on inside front cover). The CRM area is in the southwestern part of BLM Henry Mountain Resource Area.

The CRM area has great resource potential for the local region, the State of Utah, and the nation. The Henry Mountain area supports the only free-roaming, hunted, herd of bison in the lower 48 states. The area provides habitat for mule deer, elk, antelope and bighorn sheep. This range also provides crucial livestock forage. Several Wilderness Study Areas (WSAs) have been identified by BLM within the CRM area. In addition, the proximity of the Henry Mountains to Capitol Reef National Park and Glen Canyon National Recreation Area has attracted visitor use. This multiplicity of resource values has long been recognized by BLM, the local community, sportsmen, and wilderness proponents across the state and nation.

The items identified in the CRM proposal analyzed in this EA represent an initial effort by the CRM team. The proposed projects are concentrated on approximately six townships (138,000 acres) located in the heart of the Henry Mountains. This area (CRM Project Area) is located about 25 miles south of Hanksville. (See Location Map on inside of front cover and Map No. 1 in text.) Map 1 shows existing roads, allotment boundaries, past vegetation treatment and WSA boundaries in the CRM project area.

## II. BACKGROUND

A BLM land use plan or Management Framework Plan (MFP) was approved in 1982 for multiple-use resource management in the Henry Mountain Resource Area, including the lands now referred to in this EA as the CRM area.

A "Grazing EIS" was then prepared for the Rangeland portion of the MFP to satisfy the National Environmental Policy Act (NEPA), as directed by the courts in response to the Natural Resources Defense Council (NRDC) litigation on livestock grazing on BLM-administered public lands.

The MFP has continued to be the guiding document for management of the resources of the Henry Mountain Resource Area. As range improvements and treatments have been installed or maintained, site specific EA's have been prepared which tier to the grazing EIS for completion of the NEPA requirements. Other activity plans such as allotment management plans, watershed management plans, habitat management plans, recreation management plans, and wilderness management plans have or will be prepared to further refine and direct individual resource management.

### III. FORMATION OF THE CRM TEAM

Over the years, there has been a gradual build-up of the bison herd in the Henry Mountain area. There was little concern raised by the livestock permittees and others until the 1976-77 drought years. Permittees then reduced their livestock numbers (actual use) for range protection in affected allotments. However, the bison herd continued to graze, and in certain locations their concentrated use has reduced forage productivity and range potential.

At the 1986 spring range ride (held annually to determine bison numbers and range conditions), participants discussed the growing numbers of bison, declining and stable range conditions, pinyon-juniper encroachment and other potential problems. In recent years the Henry Mountains have been in a climatic wet cycle, but when this cycle ends, the problems could be intensified. It was determined that the CRM process be organized to identify and help resolve these problems.

The CRM process attempts to coordinate and address resource conflicts at the local level by direct communication and input from interested groups.

A CRM team was organized with invitations to officials from local government agencies, interested individuals, livestock permittees, environmental groups, BLM officials, and other federal and state officials. Not all those invited would participate.

Some of the team members were aware of the MFP decision for range treatments in the area, but had seen that BLM funding had not been forthcoming to implement those projects. The team thoroughly reviewed the forage situation and assisted in the formulation of a proposed plan which identified treatment areas. This included proposals on State, private, and BLM lands with suggestions for funding beyond those normally used by BLM. Because the area of major concern was involved in the Henry Mountains MFP, many suggested projects were for the sites identified in that plan. The team was also aware of BLM's wilderness study areas and related policies and directed most of their efforts outside those boundaries.

Long-range goals of the CRM team include the following:

1. Promote multiple-use management on the Henry Mountains.
2. Reduce conflicts between bison and livestock.
3. Improve the ecological condition of the native range.
4. Improve the forage value of existing seedings and native range.
5. Improve the habitat quality of improved and native range.
6. Provide sound management of limited riparian habitat.
7. Maintain adequate vegetation cover over the entire watershed.
8. Eliminate concentrations of livestock on live waters.

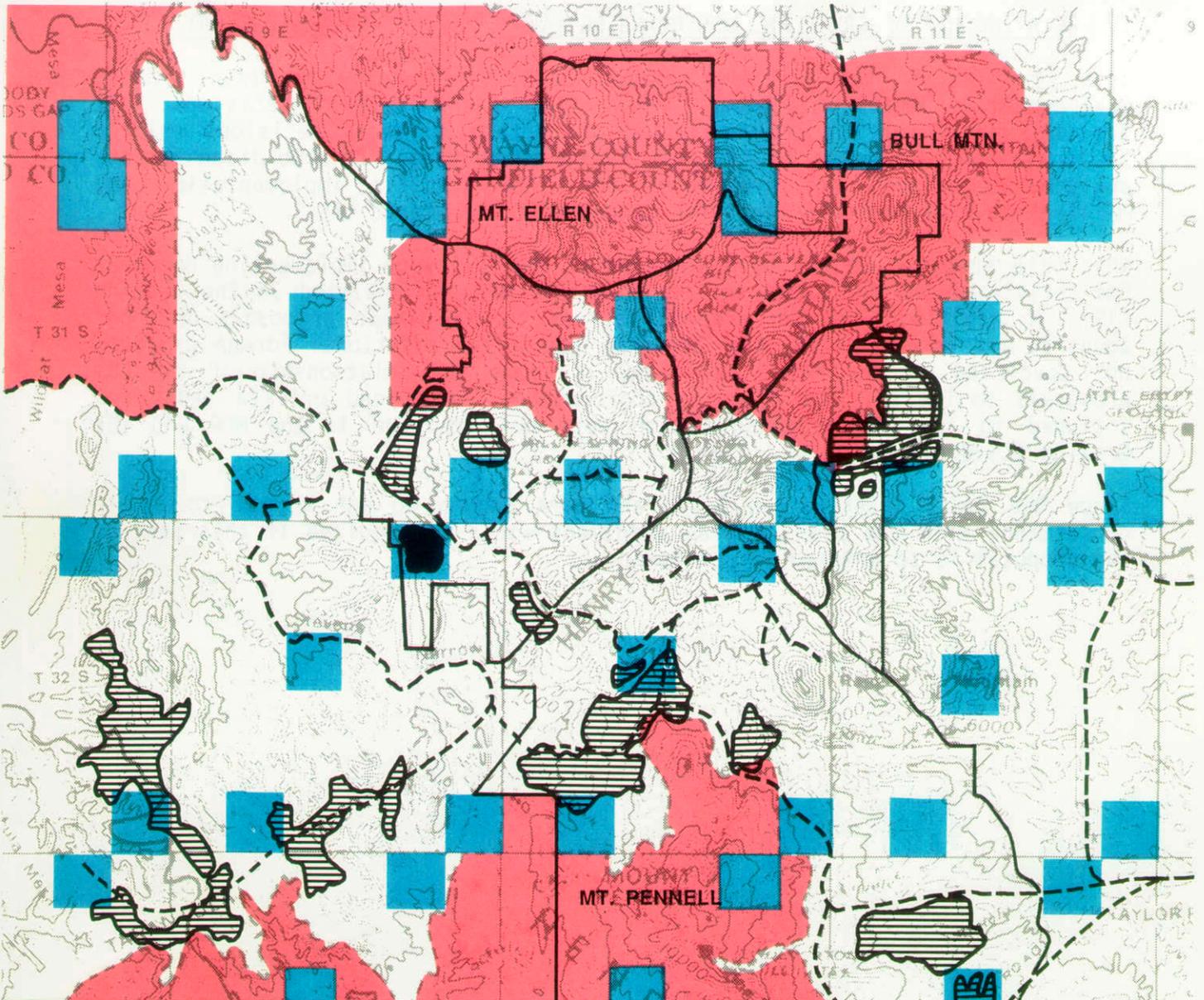
Team members then targeted their emphasis to the range used by the bison and were asked to suggest practical resource management practices in an atmosphere of cooperation. The team will meet periodically to propose coordinated actions, to implement plans, and solve problems within the CRM area.

#### IV. RELATIONSHIP OF CRM, LAND USE PLANNING, AND ENVIRONMENTAL ASSESSMENT

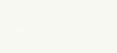
This EA tiers to the existing grazing EIS, "Final Henry Mountain Grazing Environmental Impact Statement" (May 1983), and related decisions. It provides refinement for implementation of certain of those decisions related to vegetation treatments to increase forage production. It also discusses and analyzes techniques and procedures for site specific implementation and maintenance treatments in line with concepts of the tiered EIS.

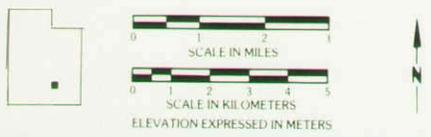
This site specific EA has been prepared as the follow-up implementing document for certain of the decisions set forth in the MFP and analyzed in the Grazing EIS. In addition, the CRM proposal serves to coordinate proposals of other agencies and users. Also, the CRM team identified additional forage projects not specified in the MFP. Table No. 1 shows the relationship of the CRM proposals to the MFP and planning conformance. State and private lands now included in the CRM proposed action were not included in the MFP and the Grazing EIS decisions.

Since the Slate Creek/Garden Basin and Dark Canyon do not appear to be in conformance with the plan, a plan amendment would be required if this part of the proposal is to proceed in conformance.



**MAP 1 LEGEND**

- Existing Land Treatment 
- Project Proposed in CRM Area completed by the state 
- WSA 
- Allotment Boundary 
- State Section 
- Access Roads 



**CRM PROJECT AREA**

TABLE 1

## RELATIONSHIP OF CRM PROPOSAL TO LAND USE PLANNING

Name Allotment/Treatment Area	CRM Proposal Treatment	CRM Units	Conformance		
			Relation to MFP Location	Units	to Land Use Plans
Nasty Flat	Planned in MFP - No fences - 1,200 acres treatment				
Sage Flat	Chain/Seed (State)	500 acres	N/A	N/A	N/A
Nasty Flat	Aerial Seed into Oak Brush	100 acres	No	Yes	Yes (a)
Dugout Chain	Burn (maintenance)	919 acres	Yes	Yes	Yes (a)
Pennell	Planned in MFP - one mile of fence - 6,100 acres of treatment				
West of Cat Ranch	Burn/seed	350 acres	Yes	Yes	Yes (b)
No. Coyote Bench	Burn/seed (State)	720 acres	N/A	N/A	N/A
No. Coyote Bench	Burn/seed	1,180 acres	Yes	Yes	Yes (b)
Sl. Cr/Grdn Bn	Chain/seed	640 acres	No	Yes	No
Crst Cr/Penn Alt	Fence 4-strand barbed	2.5 miles	(c	(c	Yes
Brown's Hole (d	Aerial seed into oak and aspen	1,000 acres	Yes	Yes	Yes (b)
E. Coyote Bench	Chain/seed	380 acres	Yes	Yes	Yes (b)
E. Coyote Fence	Temporary electric	5 miles	(c	(c	Yes
NE. of Kings Chain	Chain/seed	500 acres	Yes	Yes	Yes (b)
Airplane Spring	Roller-chop (maint.)	1,476 acres	Yes	Yes	Yes (a)
Dark Canyon	Roller-chop (maint.)	300 acres	Yes	Yes	No (a,e)
Coyote Bench	Roller-chop (maint.)	300 acres	Yes	Yes	Yes (a)
King's Chaining	Burn (Maint.) (State)	500 acres	N/A	N/A	N/A
Steele Butte	Planned in MFP No fences - no pipelines - 4,000 acres treatment.				
Tarantula	Pipeline (new)	5 miles	(c	(c	Yes
Tarantula	Pipeline (maint.)	3 miles	(c	(c	Yes
Pete Steele Bench	Interseeding	1,150 acres	No	Yes	Yes
Apple Br Bench	Chain/seed	300 acres	No	Yes	Yes
Apple Br Bench	Fence -3 strand	2 acres	(c	(c	Yes
Tarantula	Chain/seed	1,000 acres	(f	Yes	Yes (f)
Tarantula	Chain (maint.)	500 acres	Yes	Yes	Yes
Tarantula	Fence 3-strand barbed	1.5 miles	(c	(c	Yes
Crescent Creek					
Crescent Creek	Roller-Chop (maint.)	800 acres	Yes	Yes	Yes

(a) Maintenance of treated areas was addressed without site specific designation.

(b) This project implements decisions made in the Henry Mountain MFP.

(c) Fences and pipelines were not site specifically address but were allowed.

(d) This project is inside the Mt. Pennell WSA and meets wilderness criteria.

(e) This project is allowed in the range section, but would not meet the VRM requirements of the MFP.

(f) This project is not shown on map in grazing EIS, but is in the MFP.

N/A - Not Applicable, as the MFP does not include plans for State lands.

## V. PURPOSE AND NEED OF THE PROPOSED ACTION

The proposed action is the result of efforts of the CRM team. The purpose of the proposed action is to: (1) increase ground cover to reduce soil erosion and improve watershed conditions; (2) increase forage (3) improve distribution of bison; and (4) reduce salinity of the Colorado River.

The current numbers of big game (particularly bison) and allotted numbers of livestock presently overuse available forage in key (preferred use) areas. This is verified by the condition of some of the seedings which are preferred by bison early in the spring. Continuation of heavy use in these areas will reduce productivity and carrying capacity and will necessitate a reduction in the numbers of livestock and/or bison if ranges are to be protected.

The proposed action would create additional forage areas to reduce current use on overused areas, thus improving soil and watershed conditions and balancing forage use in the CRM area. Once additional forage areas were established, efforts could be directed toward maintenance of existing seedings, which currently have greatly reduced forage productivity.

Currently, bison use exceeds allocation on the Blue Bench, Dry Lakes and four Allotments in the project area. Although Blue Bench and Dry Lakes allotments are outside the CRM project area and the magnitude of overuse on the allotments is unknown. Forage needs to be developed to try to entice bison to change their pattern of use to reduce grazing in these two allotments.

## VI. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

### A. GENERAL

The proposed action was formulated by the CRM team, while the alternatives were formulated by BLM. The authority to issue resource development and livestock grazing decisions and wildlife recommendations lies with BLM District/Area Manager. Concepts of range developments and improvements were identified and evaluated in the Henry Mountain Grazing Final Environmental Impact Statement (EIS). The EIS states that the site-specific examination of the methods of implementation and alternatives must be done. BLM is, therefore, preparing this Environmental Assessment (EA). BLM District/Area Manager could choose any parts of the alternatives (including the proposal) or a mix of the projects identified in the proposed action and alternatives when making final decisions for the CRM project area. The decision that accompanies this EA reflects these choices. Also, any change in allocation of forage as a result of action covered in this EA would need to be evaluated and an amendment to the MFP prepared.

A major consideration of the alternatives is time frames because forage use is exceeding desirable levels, especially in preferred bison habitat areas and on spring ranges. Each season the increment of change increases and is becoming more critical. From an analysis standpoint, it is assumed that, should the proposal or any of the alternatives, except "No Action", be implemented, they would be completed within three years.

## B. DISCRETE ACTIONS COMMON TO THE PROPOSAL AND IMPLEMENTATION OF THE MFP ALTERNATIVES

The following describes the types of treatments and facilities that would be implemented should the proposal, any alternative, or any parts from them, be implemented.

### 1. Facilities

**Pipeline** - A 1-1/2 inch polyethylene (PE) pipe would be placed in the ground below the frost line, using a crawler tractor with ripper tooth. Should areas of rock be encountered where the ripper tooth cannot penetrate below frost line, a backhoe would be used to excavate a trench to the proper depth. This trench would not exceed two feet in width. A path about eight feet wide would be disturbed by equipment working on the line. Disturbed areas would be reseeded with the same seed mixture as identified as low elevation seed mix described in Part 4, this Section. Three cattle type watering troughs would be installed. Escape ramps for wildlife would be installed at every trough.

**Fences** - The 4-strand barbed wire fence would not exceed 42 inches in height with the bottom strand 16 inches high. The bottom wire would be smooth with the other strands being barbed.

The 3-strand barbed wire fence would not exceed 38 inches in height. The bottom strand would be smooth wire, 16 inches high.

The electric fence would be 3-strand smooth wire.

All posts and braces would be steel and painted entirely green.

The vegetation along all fence-lines would be hand-cleared.

### 2. Vegetation Treatment

All vegetation treatments would be designed to provide cover for wildlife within 600 feet at any point. The following kind of vegetation treatment would be done.

**Burn/Seed** - A fireline would be prepared prior to burning. A crawler tractor would clear a line of vegetation and dead organic matter to mineral soil approximately 20 feet wide where natural, or manmade firebreaks (i.e., rock outcrops, streams or roads) do not occur. A prescribed burn plan would be prepared and the area burned according to prescription, using manual and mechanized ignition equipment (e.g., terra-torch, helitorch, etc.). Immediately following the burn, seed would be aeriaily broadcast in the ashes. The area would remain ungrazed by livestock for one full year plus until after seed ripe the second year.

**Chain/Seed** - The chaining process involves pulling a heavy, anchor chain between two crawler tractors. The tractors crawl about 150 feet apart parallel to each other. This causes the chain to form a large "U" shape between the tractors. This breaks up and uproots most tall wooden vegetation. Immediately following the first chaining of the project area seed would be broadcast aeriaily onto the disturbed sites. After the seed is

broadcast the entire area would be rechained by pulling the anchor chain in exactly the opposite direction from the first chaining. The area would be left ungrazed by livestock for one full year plus until after seed ripe time the second year (two full growing seasons).

Interseeding - A rangeland drill would be pulled over the area distributing seed into the existing vegetative cover. The area would be left ungrazed by livestock for two full growing seasons. In the case of the Pete Steele bench project only 1,150 acres of the 6,500 acres of the bench would be treated. It would be done in two phases. the first phase would be in small plots (10 acres) to determine the best sites for rehabilitation. The second would be in plots up to 100 acres in size.

Aerial Seeding - Seeds would be broadcast aurally in Oak Brush and Aspen in the fall just prior to the leaves falling. In the case of areas within the WSA only native species would be uses. No ground disturbance would occur. The area would be left ungrazed by livestock two full growing seasons.

Burn - The area would be left ungrazed by livestock the year of the burn. A fire line would be constructed as described in Burn/ Seed. A controlled burn would be conducted as per a previously approved burn prescription. After burning, the area would remain ungrazed by livestock two full growing seasons.

Roller-Chop - A large, rolling, water filled drum approximately 6' in diameter and 16' long is pulled behind a crawler tractor. Parallel 4" blades, spaced about 18" apart, welded to the drum would cut and crush woody vegetation into 18" lengths. The area would be left ungrazed by livestock for two full growing seasons.

Burn/Chain/Seed - The burning portion of this treatment would be the same as Burn/Seed. After burning, those areas that did not burn would be chained one-way. Seed would then be applied aurally in the fall over the burned and one-way chained area. The entire area would be chained again. The chain being dragged in exactly the opposite direction from the first one-way chaining. The area would be left ungrazed by livestock for two full growing seasons.

### 3. Standard Operating Procedures

Threatened or Endangered Plant Species - An on the ground survey for these species would be conducted prior to any surface disturbing activities if a literature search indicates the potential for the species to be found on the site. Should any species be found a plan would be implemented to eliminate or mitigate adverse effects.

#### Cultural Values -

- 1) A Class III survey would be conducted on all treatment areas, which have values at risk before surface disturbing activities are conducted.
- 2) Should subsurface cultural resources be discovered during project implementation, activities would cease and the District Manager would be notified immediately. The cultural resource(s) would be evaluated and mitigated as necessary.

3) Should it be necessary to deviate from the defined treatment area, a cultural resource inventory would be conducted prior to disturbance.

4) All vehicular traffic would be confined to existing roads and inventoried areas.

Livestock Management - An agreement, in writing, would be obtained from each livestock operator permitted in the areas to be treated. This agreement would clearly outline stocking levels and location, periods of rest, and deferment of grazing during the treatment and recovery periods. No allocation of additional forage would be made to livestock at this time.

Visual Resources - Vegetation treatments would be designed to blend with the environment. Feathering of edges, scalloping, leaving islands or stringers of vegetation, or other techniques would be used to minimize impacts to form, line, and texture.

Wilderness Values - No surface disturbing activities would be done within an 1/8 mile from any WSA.

Wildlife - Water from the Tarantula Mesa pipeline would be available for wildlife use, except during the winter months. Drip stations would be installed, or overflow provided, at each watering facility. Chainings would be limited to approximately 600 feet width on crucial-critical mule deer ranges. Bison would continue to be managed at the post-hunt level of 200 head of yearling and adult animals. Deer would continue to be managed at current allocations. No allocation of additional forage, to wildlife, would be made at this time. Should additional forage be allocated, this would be done through the required land-use plan amendment process at a later date.

Vegetation - If the District or Area Manager determines that vegetation is not adequately established after the treatments, then grazing may be deferred until the manager determines establishment is sufficient.

Riparian - No mechanical treatment would be done within 150 feet of riparian areas.

#### 4. Seed Mixtures

The following seed mixtures would be used on treatment areas:

<u>High Elevation Seed Mix</u>	
	<u>Pounds/Acre</u>
Orchardgrass ( <u>Dactylis glomerata</u> )	1
Smooth brome ( <u>Bromus inermis</u> )	1
Intermediate wheatgrass ( <u>Agropyron intermedium</u> )	3
Alfalfa ( <u>Medicago sativa</u> var. <u>ladak</u> )	1
Yellow sweetclover ( <u>Melilotus officinalis</u> )	1
Chickpea Milkvetch ( <u>Astragalus cicer</u> )	1/2
Sanfoin ( <u>Onobrychis viciifolia</u> )	1
Bitterbrush ( <u>Pursha tridentata</u> )	1/2
Total	<u>9</u>

### Wilderness Seed Mix

	<u>Pounds/Acre</u>
Mountain brome ( <u>Bromus marginatus</u> )	3
Bluebunch wheatgrass ( <u>Agropyron spicatum</u> )	2
Mutton bluegrass ( <u>Poa fendleriana</u> )	1
Thurber fescue ( <u>Festuca thurberi</u> )	1
Slender wheatgrass ( <u>Agropyron trachycaulum</u> )	1
Native Forbs (as available)	
Total	8

### Lower Elevation Seed Mix

	<u>Pounds/Acre</u>
Crested wheatgrass ( <u>Agropyron cristatum</u> )	3
Pubescent wheatgrass ( <u>Agropyron tricophurum</u> )	3
Sand dropseed ( <u>Sporobolus criptandrus</u> )	1/4
Indian ricegrass ( <u>Oryzopsis hymenoides</u> )	1/4
Alfalfa ( <u>Medicago sativa</u> var. <u>ladak</u> )	1
Yellow sweetclover ( <u>Melilotus officinalis</u> )	1/2
Fourwing saltbush ( <u>Atriplex canescens</u> )	1/2
Total	8-1/2

### 5. Monitoring

BLM has been monitoring livestock use and vegetative trend for the last six years. Present monitoring will continue.

Other transects and plots would be continued, or established, to monitor bison movement and use patterns, cattle use and utilization, and range trends. The following list is the kind of studies that would be established.

<u>Data Needs</u>	<u>Type of Study</u>	<u>Data Given</u>
Vegetation utilization (including riparian)	Key forage plant method	% of vegetation used
Vegetation trend (including riparian)	Quad frequency	Direction of change in range condition
Livestock Actual Use	Statement by livestock user	No. of animals and duration of livestock grazing
Riparian trend	Macro invertebrate sampling Stream bank stability	Condition and trend
Bison Distribution	Aircraft Ground Vehicle Horse Back Hunting	Location, number, & time of Bison use
Deer Population	Pellet transects	Change in Deer numbers
Deer Use	Browse transects	% of vegetation used.

---

Monitoring data would be used to amend the land use plan.

## C. SPECIFIC PROPOSALS

### 1. The Proposed Action

The CRM team's proposed specific actions are:

a. New vegetative treatment would be implemented on a total of about 7,820 acres (includes 6,400 acres BLM and 1,420 acres of State).

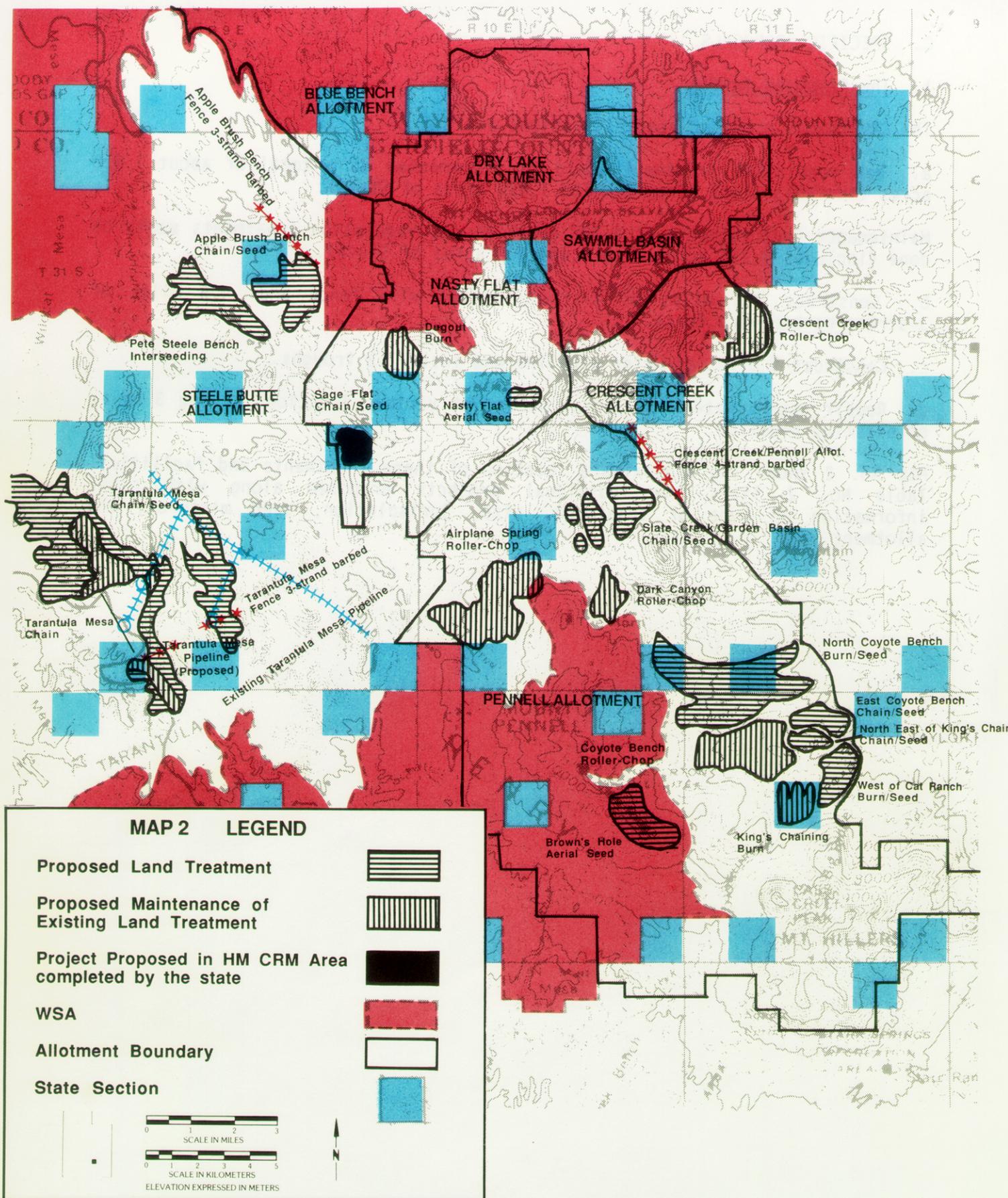
Maintenance (retreatment) of 4,795 acres of old vegetation treatments would be done (includes 4,295 acres of BLM and 500 acres of State).

b. Construct 2.5 miles of 4-strand barbed wire fence and 4.5 miles of 3-strand barbed wire fence.

c. Construct 5 miles of water pipeline and install 3 troughs.

d. Repair approximately 500 total yards, at various locations, along 3 miles of existing pipeline.

Map No. 2 shows the approximate location of these treatments and facilities. Table No. 2 lists the individual projects proposed along with other information on type of treatment, size, jurisdiction, seed mixtures, and allotment name.



**MAP 2 LEGEND**

Proposed Land Treatment



Proposed Maintenance of Existing Land Treatment



Project Proposed in HM CRM Area completed by the state



WSA



Allotment Boundary



State Section



ELEVATION EXPRESSED IN METERS



**PROPOSED ACTION**

TABLE 2  
CRM PROPOSED ACTION

Treatment Area	Treatment	Units	Jurisdiction		Seed Mixture
			BLM	State	
Tarantula Mesa	Pipeline (new)	5 miles	5	0	N/A
No. Coyote Bench	Burn/seed	1,900 acres	1,180	720	L/H
Sage Flat <sup>a</sup>	Chain/seed	500 acres	0	500	N/A
Slate Cr/Garden Basin	Chain/seed	640 acres	640	0	H
Crescent Cr./Penn Allt	Fence 4-strand barbed	2.5 miles	2.5	0	N/A
Apple Brush Bench	Chain/seed	300 acres	300	0	L
Apple Brush Bench	Fence 3-strand barbed	2 miles	2	0	N/A
Pete Steele Bench	Interseeding	1,150 acres	1,150	0	L
East Coyote Bench	Chain/seed	380 acres	380	0	L
East Coyote Bench	Fence - Temp. electric	5 miles	5	0	N/A
N.E. of King's Chain	Chain/seed	500 acres	500	0	L
West of Cat Ranch	Burn/seed	350 acres	350	0	L
Tarantula Mesa	Chain/seed	1,000 acres	800	200	L
Tarantula Mesa	Chain (maint.)	500 acres	500	0	N/A
Tarantula Mesa	Fence 3-strand barbed	1.5 miles	1.5	0	N/A
Nasty Flat	Aerial Seed (in Bigsage)	100 acres	100	0	H
Brown's Hole <sup>b</sup>	Aerial Seed (in Oak and Aspen)	1,000 acres	1,000	0	W
Dugout	Burn (maint.)	919 acres	919	0	N/A
Airplane Spring	Roller-chop (maint.)	1,476 acres	1,476	0	N/A
Dark Canyon	Roller-chop (maint.)	300 acres	300	0	N/A
Crescent Creek <sup>c</sup>	Roller-chop (maint.)	800 acres	800	0	N/A
Coyote Bench	Roller-chop (maint.)	300 acres	300	0	N/A
King's Chaining	Burn (maint.) (State)	500 acres	0	500	N/A
Total Treatment (New Projects)		7,820 acres	6,400	1,420	
Total Treatment (maintenance)		4,795 acres	4,295	500	
Total Facilities (New Projects)		16 miles	16	0	

<sup>a</sup> Sage Flat is on State Land. This project is already completed.

<sup>b</sup> This project is inside the Mt. Pennell WSA.

<sup>c</sup> The Crescent Creek Area was chained in December 1966. Approximately 40 percent of the Crescent Creek Chaining is inside what is now the Bull Mountain WSA. However, the land inside the WSA plus at least a 1/8-mile strip next to the WSA would not be treated.

Key to Seed Mixture Codes

L = Low elevation seed mixture.

H = High elevation seed mixture.

W = Wilderness seed mixture.

N/A = Not Applicable

## 2. Implementation of MFP

Implementation of this alternative means continue the current management. In other words, the decisions made in the current Henry Mountain MFP/EIS would be implemented. These include the same projects as the proposal with the exception of the Slate Creek/Garden Basin project which would not be done. Some treatment techniques are different. See Map 3 and Table 3.

Though the treatment techniques are not specified in the MFP/EIS they are described generally. The treatments identified in this alternative represent BLM's preferred scenario.

## 3. No Action

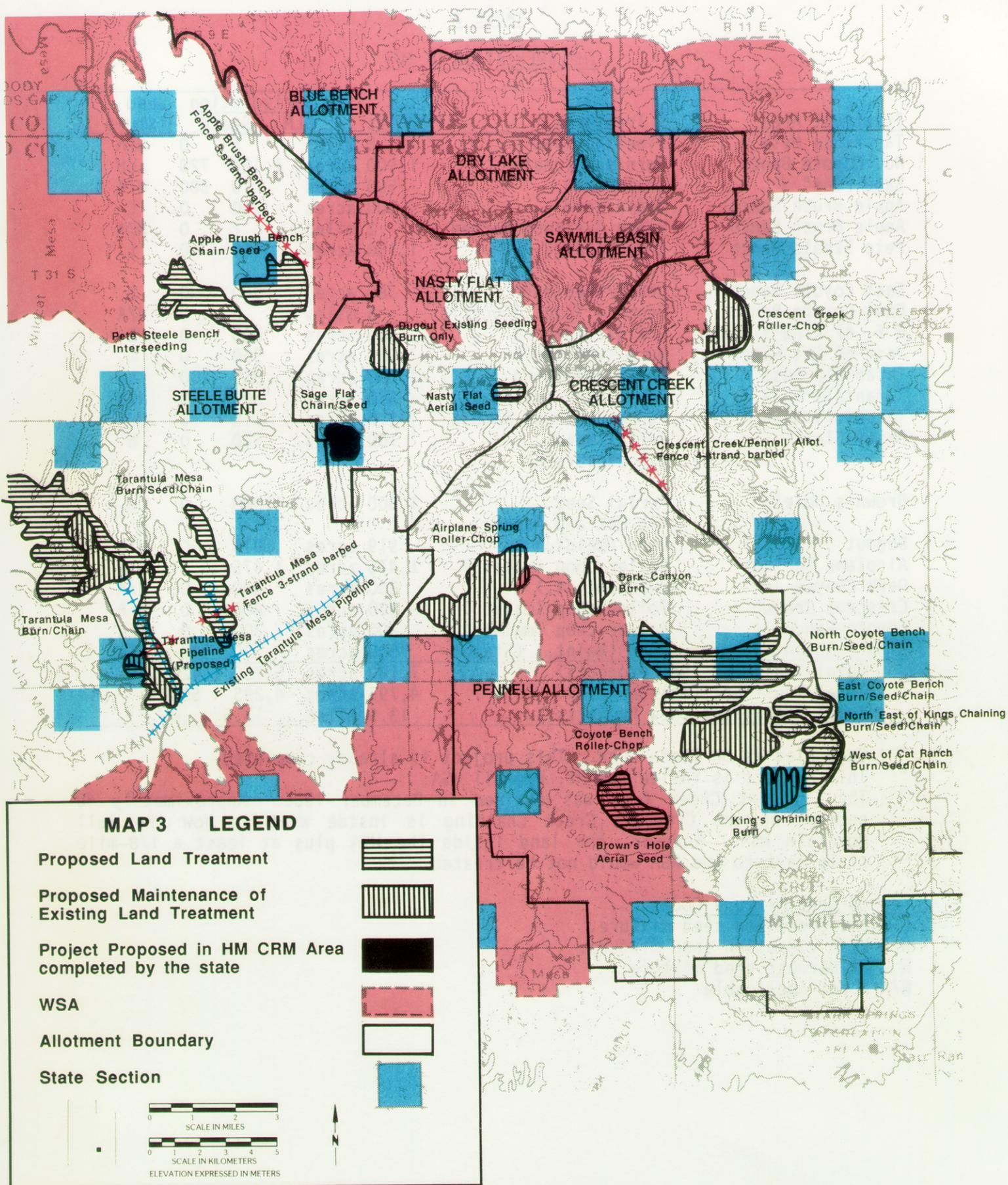
This alternative means to do none of the proposed actions. Vegetation treatment and range improvement would not be completed. Discreet actions described earlier would not apply, however, maintenance of existing facilities and monitoring as described in the Discreet Action section would continue.

Because decisions have already been made to maintain and revegetated areas for livestock and big game use, this alternative would not be in conformance with the MFP. Therefore, to do the No Action Alternative, would require amending the MFP.

## D. ADDITIONAL ALTERNATIVES CONSIDERED

Other alternative treatment methods were considered but not proposed or analyzed because of prohibitive costs. These alternatives included tractor piling and hand cutting of existing undesirable vegetation. Also, maintenance of a portion of the Crescent Creek chaining, which is inside the Bull Mountain WSA, and other new treatments inside other WSAs were considered. Treatments within these areas were not proposed or analyzed further because of the sensitivity. Other treatment areas outside WSAs were also considered, but dismissed without merit because of cost, access factors, and non-conformance to planning documents.

An alternative to eliminate livestock was considered during formation of the Henry Mountain Planning Area MFP/EIS; however, this alternative was without merit and not evaluated further. Since a decision to maintain a 200 head bison herd of adults and calves over 6 months of age at a post-hunt level was made in the Henry Mountain MFP/EIS, any number less than this would not be in conformance to the plan. Therefore, any alternative to eliminate or reduce bison populations below this level would not be in conformance with the MFP. Therefore, these were not considered viable and not analyzed any further in this EA.



**IMPLEMENTATION OF MFP**

TABLE 3  
IMPLEMENTATION OF MFP

Treatment Area	Treatment	Units	Jurisdiction		Seed Mixture	
			BLM	State		
Tarantula Mesa	Pipeline (new)	5 miles		5	0	N/A
No. Coyote Bench	Burn/seed/chain	1,900 acres	1,180	720		L/H
Sage Flat <sup>a</sup>	Chain/seed	500 acres	0	500		N/A
Apple Brush Bench	Chain/seed	300 acres	300	0		L
Apple Brush Bench	Fence 3-strand barbed	2 miles	2	0		N/A
Pete Steele Bench	Interseeding	1,150 acres	1,150	0		L
East Coyote Bench	Chain/seed/burn	380 acres	380	0		L
East Coyote Bench	Fence - Temp. electric	5 miles	5	0		N/A
N.E. of King's Chain	Chain/seed/burn	500 acres	500	0		L
West of Cat Ranch	Burn/seed/chain	350 acres	350	0		L
Tarantula Mesa	Chain/seed/burn	1,000 acres	800	200		L
Tarantula Mesa	Chain/burn (maint.)	500 acres	500	0		N/A
Tarantula Mesa	Fence 3-strand barbed	1.5 miles	1.5	0		N/A
Nasty Flat	Aerial Seed (in Sagebrush)	100 acres	100	0		H
Brown's Hole <sup>b</sup>	Aerial Seed (in Oak and Aspen)	1,000 acres	1,000	0		W
Dugout	Burn (maint.)	919 acres	919	0		N/A
Airplane Spring	Roller-chop (maint.)	1,476 acres	1,476	0		N/A
Dark Canyon	Burn (maint.)	300 acres	300	0		N/A
Crescent Creek <sup>c</sup>	Roller-chop (maint.)	800 acres	800	0		N/A
Coyote Bench	Roller-chop (maint.)	300 acres	300	0		N/A
King's Chaining	Burn (maint.) (State)	500 acres	0	500		N/A
Total Treatment (New Projects)		7,180 acres	5,760	1,420		
Total Treatment (maintenance)		4,795 acres	4,295	500		
Total Facilities (New Projects)		13.5 miles	13.5	0		

<sup>a</sup> Sage Flat is on State Land. This project is already completed.

<sup>b</sup> This project is inside the Mt. Pennell WSA.

<sup>c</sup> The Crescent Creek Area was chained in December 1966. Approximately 40 percent of the Crescent Creek Chaining is inside what is now the Bull Mountain WSA. However, the land inside the WSA plus at least a 1/8-mile strip next to the WSA would not be treated.

Key to Seed Mixture Codes

L = Low elevation seed mixture.

H = High elevation seed mixture.

W = Wilderness seed mixture.

N/A = Not Applicable

## VII. AFFECTED ENVIRONMENT

This section addresses only the environmental components that would be affected by the proposed action and alternatives. Resources not affected include minerals, oil and gas, and paleontology.

### A. AIR QUALITY

Air quality in the CRM area is generally very good (Prevention of Significant Deterioration [PSD] Class II). There are no major pollution sources in the area. PSD Class II allows for burning of agricultural wastes such as range rehabilitation when weather conditions would dissipate smoke.

### B. SOILS

A third order soil survey has been conducted in the area. An abridgement of this survey shows that soils within the CRM area consist of three general associations. A detailed report of the individual soils and factors related to vegetation treatment is included as Appendix 1. The success rates of seeding for each soil as listed in Appendix 1, was determined by applying soil and precipitation data to a guide developed for this purpose. A fully successful seeding is one that is readily established and lasts for a long period with a higher level of production with available moisture and/or it meets the planned objective. If a seeding does not meet this criteria it does not mean it was a failure, only that it failed to meet the full criteria for definition of fully successful. The probability for seeding success in the treatment areas ranges generally from 50 percent to 70 percent. Most of the treatment areas have a higher than 50 percent probability of success. Past seedings on these soils, in the Henry Mountains, have proven to be successful (See Appendix 10). Soils are classified as non-saline and slightly saline. Soil associations are described below.

#### 1. Shallow to Very Deep Soils of the Very Cold, High Mountains

Some soils of this association occupy the steep slopes and ridges of the very high mountains. Most are very stony or rocky and are formed in residuum and colluvium from shale or igneous rocks. They occur at elevations of 8,400 to 11,500 feet. The mean annual temperature is about 32 to 35 degrees, the frost-free period less than 50 days, and the average annual precipitation about 25 to 30 inches. Most of this precipitation occurs as snowfall.

#### 2. Deep to very deep soils of the lower mountain slopes.

The soils of this association occupy the somewhat lower mountain slopes. They are mostly deep or very deep and are formed from residuum or colluvium from shale or igneous rocks. They occur at elevations of about 7,500 to 9,500 feet. The mean annual temperature is about 35 to 40 degrees, the frost-free period from 50 to 75 days, and the average annual precipitation is 16 to 25 inches.

### 3. Shallow to Very Deep Soils of the Higher Benches and Footslopes

The soils of this association occupy the uplands and higher benches on gentle to steep slopes. They are shallow to very deep and are formed in residuum from shale or igneous rocks or from alluvial water deposits derived from these materials. They occur at elevations of 6,500 to 8,000 feet. The mean annual temperature is about 40 to 45 degrees, the frost-free period is from 75 to 100 days, and the average annual precipitation is about 12 to 16 inches.

Erosion condition was determined by measuring soil surface factors (SSFs) during the soil-vegetation inventory (See Appendix 2 and Table 4). Soil erosion evaluations and watershed cover transects were conducted in the Henry Mountain area during 1972-73 and again in 1979-80. A study in the CRM area by Dave McWhirter, BLM hydrologist, is reported as follows: "Infiltrometer studies were conducted on the Airplane, South Creek, and Eagle Bench seedings and on adjacent unchained pinyon-juniper vegetative subtypes in July, 1979. Studies generally showed that there was a much greater infiltration to precipitation ratio in the seeded areas and that a much greater sediment yield occurred from the adjacent P-J areas. Sediment yield ranged from 0.18 to 0.30 acre feet/square mile on the seeded areas. The unchained pinyon-juniper areas had sediment yields ranging from 0.48 to 0.66 acre feet/square mile. Infiltration to precipitation ratios ranged from 0.71 to 0.77 on seeded areas to 0.53 to 0.58 on the P-J areas. Slope on all plots were consistently between 4 to 8 percent and bare ground ranged from 13 to 46 percent in seeded areas to 40 to 61 percent in P-J areas. These studies have shown that vegetative type manipulation has been highly effective in the Henry Mountains in terms of decreasing sediment yield and runoff and increasing infiltration." (USDI, BLM, 1981).

TABLE 4  
CURRENT EROSION SITUATION

Treatment Area	Total BLM Acres	Current Erosion Condition	Calculated Annual Soil Loss (Tons/Acre)	Calculated Annual Soil Loss (Total Tons)
North Coyote Bench	1,180	Moderate	1.70	2,006
Slate Cr/Garden Basin	640	Slight	.96	614
Apple Brush Bench	300	Slight	.96	288
Pete Steele Bench	1,150	Slight	.58	667
East Coyote Bench	380	Moderate	1.82	692
N.E. of King's Chaining	500	Moderate	1.88	940
West of Cat Ranch	350	Moderate	1.84	644
Tarantula Mesa	800	Moderate	1.09	872
Nasty Flat	100	Slight	.65	65
Brown's Hole	1,000	Slight	.79	790
Tarantula Mesa	500	Moderate	1.02	510
Dugout	919	Slight	.54	496
Airplane Spring	1,476	Slight	.75	1,107
Dark Canyon	300	Slight	.97 <sup>a</sup>	291
Crescent Creek	800	Slight	.74	592
Coyote Bench	300	Slight	.52	156
	<u>10,695</u>			<u>10,730</u>

<sup>a</sup> Site write-up area was outside of the seeding with a calculated soil loss of 1.88 tons/acre. The lower rate was used to be more in line with other seedings in the area.

### C. WATERSHED

The Henry Mountain planning area is located in the Upper Colorado River Sub-Basin of the Colorado Hydrologic Region and contains 113 streams (many are intermittent). The planning area is divided into four drainage subareas: the Lower Fremont River, the Lower Muddy River, the Dirty Devil River, and direct drainage into the Colorado River. The State of Utah is in the process of assuming enforcement authority for the nonpoint source pollution program (Section 319 of the Clean Water Act). The State is developing a program which will identify best management practices (BMP's). Best management practices identified will involve BLM participation in utilizing these practices on public land. Utah has tentatively identified high priority nonpoint source watersheds. To date, no watersheds in the CRM Project area, or in the Henry Mountains generally have been identified as high priority.

The 113 streams referred to above generally originate on and flow through public lands. Snowmelt in spring and early summer provides most of the runoff for perennial streams with subsurface flow being the major contributor during the rest of the year. A large number of streams are intermittent and flow only for brief periods during snowmelt and high intensity thunderstorms.

It is common for streams in the area to be heavily laden with sediment following intense storms. It was recently reported that in the CRM area where a road crossed an arroyo, runoff from a storm had made a two-foot deep cut through the road. An eight foot wall of water from storm runoff from the Henry Mountains was seen coming down North Wash (Patterson 1988). A survey/study by Hunt, Averitt, and Miller reported:

"Arroyo cutting is widespread and has extended onto the mountains at several places. South Creek and Dugout Creek on Mount Ellen have been most seriously affected. Both these streams have eroded deep arroyos in their valley fill nearly to their heads and today can be crossed at few places and only with difficulty.

In the lower parts of the canyons tributary to Glen Canyon, pictographs and other human signs high on the canyon walls testify to recent removal of alluvium there." (Hunt, et al. 1953).

Water quality is generally good in the upper portions of the streams and decreases downstream as salts accumulate, ground cover diminishes, water temperatures increase, fecal coliform counts from livestock and wildlife increase, and sediment accumulates from runoff of snowmelt (USDI, 1974).

In 1977, BLM estimated that roughly 700,000 tons of salt annually was contributed to the Colorado River from the upper basin States of Colorado, Utah, and Wyoming. Over half of this yield was contributed from slightly saline soils. Approximately 11,000 tons of salt added to the Colorado River in the upper basin account for 1 mg/l increase at Imperial Dam. Current BLM actions to minimize salinity contributions include vegetation manipulation to increase cover and reduce runoff and sediment yield (USDI, BLM 1987).

The entire project area is within the Colorado River drainage area and, consequently, contributes water and salinity to the Colorado River system.

#### D. VEGETATION

##### 1. General Types

The four allotments of the Project area contain 78,502 acres of pinyon-juniper type and 8,716 acres of sagebrush. The individual project area would be located in these vegetation types. The lower benches Apple Brush Bench and Pete Steele Bench are typical of the cold desert shrub community. The major species consist of black sagebrush, spiny hopsage (apple brush), Douglas rabbitbrush, shadscale, four-wing saltbush, pricklypear cactus, and a sparse complement of needlegrass, Indian ricegrass, and galleta grass. There is a high concentration of broom snakeweed and locoweed. Juniper trees are encroaching into the Apple Brush Bench area. Apple Brush Bench contains a large pure stand of spiny hopsage (Greyia spinosa).

The intermediate elevations, represented by the Coyote Bench, Airplane, Crescent Creek, and Tarantula Mesa, are dominated by pinyon-juniper forest, some of which have already been chained and reseeded. The understory vegetation is a mixture of grasses and shrubs consisting of Indian ricegrass, sand dropseed, sagebrush, rabbitbrush, and bitterbrush. In the older chained areas there is a mixture of wheatgrasses, alfalfa, bitterbrush and big sage. Both treated and untreated areas are being invaded and occupied by pinyon pine and Utah juniper.

At the higher elevations, represented by Nasty Flat, Dugout, Garden Basin, and Brown's Hole, are stands of Gambel oak with some aspen. Where there is an understory, it is composed of sagebrush, sandberg bluegrass, mountain brome, bluebunch wheatgrass, mutton grass, western wheatgrass, thurber fescue, bottlebrush squirreltail, lupine and locoweed. (See Appendix 3 for more vegetation information related to treatment areas.)

## 2. Threatened and Endangered Species.

Wright's fishhook cactus (Sclerocactus wrightiae) and Jones cycladenia (Cycladenia humilis var. jonesii) which are listed as threatened can be found within the CRM areas. However, according to field surveys, these species are not found within the CRM project area. (See Appendix 4).

## 3. Riparian

Three perennial streams; Dugout, South Creek, and Bullfrog, and several small seeps and springs are found in the area. Riparian habitat along these streams is in poor condition due to past management, to topographic and climatic influences in the upper watershed. For example, until the 1960's sheep grazing was occurring extensively throughout the Henry Mountains. Also, deer numbers in the late 1950's and early 1960's was high. Altogether grazing reduced the vegetative cover which in turn increased the rate of overland flow to the stream channels causing stream scouring. Furthermore, naturally occurring factors such as steep slopes, shallow soils, deep snow pack and sporadic summer precipitation have caused small stringers and islands of riparian vegetation rather than well developed streambank vegetation and consequently establishment of riparian vegetation has been slow.

## 4. Vegetation Conditions

Vegetation condition may be rated on scales related to either ecological condition or range (forage) condition. When sites are treated and non-native forage species are introduced into an area the sites are no longer rated as to ecological status, but are rated in relation to forage production in range condition classes.

### Ecological Condition

Ecological status is the present state of vegetation of a range site in relation to the potential natural community for the site. Ecological site status is used independently. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a community resemble that of the potential natural community. The four ranking in this series are "Other" and three ecological status classes, called early seral, late seral, and potential natural community.

Because of proximity to the CRM project area both the Dry Lakes allotment (allocated exclusively to wildlife) and Blue Bench allotment are affected by the proposal and alternatives. Studies were established in the Dry Lakes allotment in 1987 to monitor the use by wildlife (bison in particular). Forage condition is estimated to be fair and trend stable in the Dry Lakes Allotment. There has been some recent improvement in the Dry Lakes allotment

since all livestock use has been eliminated. Recent observations estimate the forage condition in the Blue Bench allotment as fair to good and trend slightly downward in the area of bison use. The remainder of the Blue Bench allotment studies showing stable with two slightly upward.

#### Specific Allotments

Table 5 shows the current general overall condition and treatment for the sites.

#### 5. Early Spring Vegetation

Annual spring grazing has caused a decrease in vigor and productivity on palatable species and contributed to the invasion of less palatable species.

C. Wayne Cook "Effects of Season and Intensity of use on Desert Vegetation" states, "Desert plants can tolerate about 25 percent utilization if grazed every year in the spring and only 50 to 60 percent, if these plants are grazed every other spring."

Livestock grazing begins June 1, on Pennell, Nasty Flat, and Crescent Creek allotments. On the Pennell allotment a three pasture deferred grazing system has been implemented, providing for an additional rest from livestock grazing on each pasture every third year. A deferred grazing system has been implemented on the Blue Bench allotment, which provides for spring rest on one pasture each year. On Steele Bench allotment the livestock are moved to Tarantula Mesa to rest native species during the Spring. However, bison continue to graze all areas as soon as the snow melts and plants begin to grow.

TABLE 5

## CURRENT RANGE CONDITION AND TREND

Range	Proposed Treatment Site	Condition	Trend
Allotment			
Pennell	No. Coyote Bench	Poor	Stable
Pennell	Slate Creek/Garden Basin	Fair	Stable
Steele Butte	Apple Brush Bench	Fair	Stable <sup>a</sup>
Steele Butte	Pete Steele Bench	Poor	Upward <sup>a</sup>
Pennell	East Coyote Bench	Poor	Stable
Pennell	NE King's Chaining	Poor	Stable
Pennell	West of Cat Ranch	Poor	Stable
Steele Butte	Tarantula Mesa	Poor	Stable
Nasty Flat	Nasty Flat	Fair <sup>a</sup>	Upward <sup>a</sup>
Pennell	Brown's Hole	Poor	Stable
Pennell	Dugout (Maint.)	Fair	Downward
Pennell	Airplane Spring (Maint.)	Fair	Downward
Pennell	Dark Canyon (Maint.)	Poor	Downward
Crescent Creek	Crescent Creek (Maint.)	Fair	Stable <sup>a</sup>
Pennell	Coyote Bench (Maint.)	Fair	Stable

<sup>a</sup> These three areas have shown a change from that observed during the preparation of the EIS. It is felt this is a result of reducing unauthorized livestock grazing use in these areas in recent years.

E. WILDLIFE1. Big Game

The CRM area provides forage for bison, deer, antelope, and bighorn sheep. In the CRM project area, only deer and bison are of concern.

The following table shows UDWR bison harvest and population trends for 1982-1987. Normally, not all animals are counted with this type inventory due to terrain and cover. Appendix 5 is a stock flow chart showing the detail of bison in the area by age, class, sex and season.

TABLE 6

SUMMARY OF BIG GAME INVESTIGATIONS AND MANAGEMENT RECOMMENDATIONS

Year	Permits Issued			Harvest	Preseason Population Trend <sup>b</sup>	Calves (Under 6 Months)	Preseason Population Trend <sup>c</sup>
	Resident	Non-Resident	Bid				
1982	25	2	1	28	252	61	130
1983	25	2	1	28	308	62	184
1984	32	3	1	35	314	69	176
1985	36	4	1	41	365	72	221
1986	50	5	1	56	352	74	204
1987	50	5	1	55	368	76	237

<sup>a</sup> Harvest recommendation for 1988 is 60 resident, 6 non-resident and 1 bid permit. Of these, 40 resident, 4 non-resident and the bid permit is for hunters choice; and 20 resident, 2 non-resident are for cows.

<sup>b</sup> This is a total of calves, yearlings, cows and bulls.

<sup>c</sup> This includes yearlings, cows and bulls as per UDWR/BLM agreement.

Figures from the "Henry Mountain Grazing Final EIS" show that 69 percent of the bison use is made on the four allotments of the project area. Calculations from the Grazing EIS show the following bison forage situation:

<u>Allotment</u>	<u>Demand</u>	<u>Available</u>	<u>Deficit</u>
Nasty Flat	576	576	0
Steele Butte	296	202	94
Pennell	835	829	6
Crescent Creek	55	55	0
TOTAL	1762	1,662	100

The EIS, completed in 1983, identified a need for an additional 203 AUMs (one AUM is the amount of forage necessary for one cow for one month) to satisfy the forage requirements for the agreed number of bison within the CRM area. However, within the CRM project area, an additional 100 AUMs are needed. Within the CRM proposal and alternative treatment areas, there are about 1,840 acres of critical yearlong bison range, 5,390 acres of critical summer range, and 1,280 acres of critical winter range.

The project area provides yearlong mule deer habitat, with about 3,400 acres of critical summer habitat, and 4,835 acres of critical winter habitat. Mule deer are currently below the allocated number, however, their forage preference is different than bison and cattle and they do not directly compete for forage except during the Spring season. Bighorn sheep and antelope habitats have not been identified within the CRM project area.

## 2. Fish

There are no fish in any waters within the proposed project areas. Nor are there any waters inhabited by fish off-site and downstream.

## 3. Other Upland Game and Species

Other wildlife species present either seasonally or yearlong, include cougar, coyote, bobcat, cottontail rabbits, small mammals, birds, and reptiles. No critical or essential habitat for these species has been identified within the project area. Overall, the distribution and abundance of these species within the pinyon-juniper forest of the Henry Mountains is limited. Also, the diversity of other wildlife species is low due to the homogenous composition and low production of forage species of the pinyon-juniper forest.

## 4. Endangered Species

No federally listed threatened or endangered wildlife species inhabit or use the CRM project area. (See Appendix 6).

## F. RECREATION

The high quality recreational and scenic resources within and around the CRM area are of national significance. While the recreational resources and potential of the area are great, the proximity of competing recreation areas, isolation from major population centers, and lack of development result in relatively low recreational use. The most popular recreation activities in the area include: camping, hunting, sightseeing, hiking and rockclimbing.

### 1. Developed Recreation Sites

Developed recreation sites within the CRM area are Lonesome Beaver, McMillan Springs, and Starr Springs campgrounds and Dandelion Flat Picnic Area. Starr Springs is heavily used by tourists and visitors on their way to Lake Powell. Mineral exploration and mining personnel have also accounted for a significant portion of the high use of Starr Springs Campground. Use of Lonesome Beaver, McMillan Springs Campgrounds, and Dandelion Flat Picnic Area is well below capacity because of their relative inaccessibility. McMillan Springs campground is the only developed site within the CRM project area.

### 2. Undeveloped/Dispersed Recreation

Sightseeing is very important in the Henry Mountain area. Many people drive back country roads to sightsee. Adjacent highways receive continuous heavy traffic during the summer. The Henry Mountains offer opportunities to observe a diversity of plants, animals, and geology. The views of surrounding country are spectacular. Observation of the free-roaming bison herd has international interest.

People from all parts of the United States, and as far away as Japan, enjoy this unique resource. No records exist within the CRM area indicating numbers, destination, and purpose of visitation.

## G. WILDERNESS

There are ten WSAs in the Henry Mountain Resource Area. Proposed vegetation treatment projects are within, or close to, four WSAs: Mt. Ellen-Blue Hills, Mt. Pennell, Mt. Hillers, and Bull Mountain (refer to Map 1). These four WSAs total 187,826 acres. BLM has recommended approximately 113,080 acres in these WSAs for wilderness designation. Approximately 320 acres within the Bull Mountain WSA were chained prior to designation as a WSA. Visits to these WSA's is low to moderate. The most visited site is Mount Ellen Peak within the Mt. Ellen/Blue Hills WSA. A wilderness evaluation report has been prepared (see Appendix 7). This report states that no wilderness values would be adversely affected as directed under the Interim Management Policy (IMP).

Wildlife, especially bison, continue to use the Dry Lake Allotment excessively; with overgrazing and loss of native vegetation adversely affecting naturalness in the Mt. Ellen-Blue Hills WSA.

## H. CULTURAL RESOURCES

Cultures represented in the area include Archaic groups and the Formative Fremont and Anasazi. These cultural groups are represented by various site types including villages, rock shelters, camps, limited activity sites and rock art. Cultural resource inventory in the area is somewhat limited and spotty; but, based on what we do know, there was no doubt a lot of historic activity in the area. Table 8 shows the probability for finding valuable archaeological resources within the treatment areas.

TABLE 7

CULTURAL RESOURCES POTENTIAL

<u>Treatment Area</u>	<u>Values</u>
Tarantula Mesa Pipeline	High
Tarantula Mesa Pipeline (Maint.)	Low
No. Coyote Bench	Low
Sage Flat <sup>a</sup>	N/A
Slate Creek/Garden Basin	High
Crescent Creek/Pennell Allotment	Moderate
Apple Brush Bench	Moderate
Apple Brush Bench Fence	Moderate
Pete Steele Bench	Moderate
East Coyote Bench	Low
East Coyote Bench - Electric Fence	Low
NE of King's Chaining	Low
West of Cat Ranch	Low
Tarantula Mesa	High
Tarantula Mesa (Maint.)	Low
Tarantula Mesa - Fence	High
Nasty Flat	Moderate
Brown's Hole <sup>b</sup>	N/A
Dugout (Maint.)	Low
Airplane Spring (Maint.)	Low
Dark Canyon (Maint.)	Low
Crescent Creek (Maint.)	Low
Coyote Bench (Maint.)	Low
King's Chaining (Maint.)	N/A

<sup>a</sup>Sage Flat is on State Land.

<sup>b</sup>This project is inside the Mt. Pennell WSA. No surface disturbance would occur.

N/A Not applicable.

## I. PALEONTOLOGY

Many significant fossils have been found throughout the area, including vertebrates, invertebrates and plants. Pleistocene and recent sediments of many types are found and have yielded important vertebrate fossils.

The cretaceous Mancos Shale consists of five members: 1) Masuk Shale, 2) Emery Sandstone, 3) Blue Gate Shale, 4) Ferron Sandstone, and 5) Tununk Shale. All of these are exposed in the Henry Mountains.

These areas are not suitable for range improvement and vegetation treatment and are not within the areas proposed for treatments.

## J. VISUAL RESOURCES

The Henry Mountains, rising over 6,000 feet above the surrounding desert, visually dominate the Henry Mountain Planning Area and are rated highest in scenic quality. Within this range, there are several large basins and seven

major peaks of volcanic origin which have thrust through and deformed the sandstone rockbeds. Pinyon-juniper, spruce, aspen, and mixed conifer forests interspersed with grass slopes, meadows, and tundra like alpine vegetation add diversity to the visual values. Visual intrusions are generally limited to chained areas and occasional mining cabins. The planning area includes Visual Resource Management (VRM) Classes II, III and IV. Appendix 8 defines the visual quality objectives of the various classes. Three of the proposed treatment areas and three of the proposed maintenance projects are within VRM Class II areas. One of these maintenance projects (Dark Canyon) has regrown to such a degree that the open space aspect from the original treatment has nearly disappeared. The other two maintenance projects (Dugout and Airplane Spring) still appear as treated areas with debris and disturbed rocks quite evident. Table 8 shows the current VRM class for each project area.

TABLE 8

CURRENT VRM CLASSES	
Project Area	Current VRM Class
Tarantula Mesa Pipeline	IV
Tarantula Mesa Pipeline (Maint)	IV
No. Coyote Bench	IV
Sage Flat <sup>a</sup>	N/A
Slate Creek/Garden Basin	II
Crescent Crk/Penn. Allot	II
Apple Brush Bench	IV
Apple Brush Bench - Fence	IV
Pete Steele Bench	IV
East Coyote Bench	IV
East Coyote Bench Fence	IV
NE of King's Chaining	IV
West of Cat Ranch	IV
Tarantula Mesa	IV
Tarantula Mesa (Maint)	IV
Tarantula Mesa - Fence	IV
Nasty Flat	II
Brown's Hole <sup>b</sup>	II
Dugout (Maint)	II
Airplane Spring (Maint)	II
Dark Canyon (Maint)	II
Crescent Creek <sup>c</sup> (Maint)	IV
Coyote Bench (Maint)	IV
King's Chaining (Maint) <sup>a</sup>	N/A

<sup>a</sup> Sage Flat and King's Chaining are State Land. Sage Flats is already completed.

<sup>b</sup> This project is inside the Mt. Pennell WSA.

<sup>c</sup> The Crescent Creek Area was chained in December 1966. Approximately 40% of the Crescent Creek Chaining is inside what is now the Bull Mountain WSA. However, the land inside the WSA plus a 1/8-mile strip would not be treated.

## K. LAND-USE PLANS AND CONTROLS

Wildland resources are currently being managed under the guidelines of the Henry Mountain MFP. The Henry Mountain Grazing Final EIS (1983) analyzed range treatments, facilities, and both livestock and wildlife grazing and their impacts at the planning area level. This provided an opportunity for public comment. Site-specific analysis (such as this EA) is needed to specifically address individual treatment areas and methods. No State, County, or local land-use plans exist in the CRM project area.

## L. LIVESTOCK AND WILDLIFE GRAZING

Livestock have been grazing within the CRM area since about 1890 when the first large cattle and sheep herds were introduced on the Henry Mountains. Many of the early livestock men were sheep and cattle operators whose livestock moved from the mountains to the desert on a seasonal basis. Over the course of years, livestock grazing has shifted from sheep and cattle to primarily cattle. Annual seasonal movement from the high country to the deserts still occurs.

Although bison use the allotment outside the project area, 69 percent of their use is made in the four allotments in the project area. Table 9 shows the grazing status for the four allotments in the area containing the CRM proposals. Forage availability and needs for the same four allotments are shown on Table 10.

A grazing plan was recently implemented to relieve spring grazing on the Steele Butte Allotment. This plan directs the movement of livestock from the lower winter areas on to Tarantula Mesa.

TABLE 9  
GRAZING STATUS

ALLOTMENT	Total Acres	Season of Use	AUM		Authorized Users	No. of Permittees
			Total Active Preference			
Crescent Creek	BLM	8,488	6/1-9/15	332	285	2
	State	1,114				
	Private	101				
Nasty Flat	BLM	13,851	6/1-9/30	474	474	2
	State	2,230				
	Private	1,260				
Pennell	BLM	56,367	6/1-10/31	2,594	2,594	4
	State	6,887				
Steele Butte <sup>b</sup>	BLM	74,132	10/16-5/31	5,034	3,281	(3) <sup>a</sup>
	State	7,173				
	Private	2,138				

<sup>a</sup> The permittees in the Steele Butte Allotment have summer permits in the Nasty Flat and/or Pennell Allotments.

<sup>b</sup> The Spring grazing use on the Steele Butte allotment (4/16-5/31) is restricted to Tarantula Mesa.

TABLE 10  
FORAGE AVAILABILITY AND NEEDS (AUMS)<sup>a</sup>

GRAZING ALLOTMENT	Total		Livestock		Deer		Bison <sup>a</sup>	
	Avail <sup>b</sup>	Need <sup>c</sup>	Avail <sup>b</sup>	Need	Avail <sup>b</sup>	Need	Avail	Need <sup>d</sup>
Nasty Flat	1185	1298	499	474	210	248	576	576
Steele Butte	2564	4065	1874	3281 <sup>c</sup>	488	488	202	296
Pennell	4213	4479	2560	2594	824	1050	829	835
Crescent Creek	524	622	187	285 <sup>c</sup>	282	282 <sup>d</sup>	55	55
TOTAL	8486	10,461	5020	6634	1804	2068 <sup>c</sup>	1662	1762

<sup>a</sup> These numbers are based on 200 post hunt animals as per the Henry Mtn. MFP/EIS and Rangeland Program Summary - 1987. This assumes that BLM managed land would provide 87% of the forage needs for the Bison need and that all animals over 6 months would be counted as part of the 200 head.

<sup>b</sup> Available: As per the Henry Mountain MFP/EIS. Preliminary monitoring studies indicate that these capacities are low.

<sup>c</sup> Per allocation in Henry Mountain MFP/EIS or Decisions.

1. Forage Need Based on 200 Bison

The MFP and Range Program Summary identified the following shortages in the CRM project area as derived from Table 10:

<u>Total</u>	<u>Livestock</u>	<u>Deer</u>	<u>Bison</u>
1,978	1,614	264	100

2. Forage Need Based on 200 Bison and Calves

Further analysis and calculations show that in order to maintain a two hundred head post hunt herd of mature bison, that is, yearling and adult animals, the following AUMS would be needed:

200 Yearlings and adults year round	2400 AUMs
75 Calves for 6 months (Age 0 to 6 months of age)	0 AUMs
50 Calves for 12 months (Age 6 months to 18 months)	600 AUMs
Total	<u>3000 AUMs</u>

Based on the MFP, 69% of bison forage is produced on the four allotments. Thus, based on 3000 AUMs, with BLM land providing 87 percent of the needs, the following would be required:

<u>Grazing Allotment</u>	<u>AUM Needs for Bison</u>
Nasty Flat	594
Steele Butte	306
Pennell	846
Crescent Creek	55
TOTAL	<u>1,801</u>

This shows the following shortages in the CRM project area:

<u>Total</u>	<u>Livestock</u>	<u>Deer</u>	<u>Bison</u>
2,017	1,614	264	139

3. Forage Need Based on Current Bison Population

In September of 1987, a pre-hunt count was made of the bison. An official number of 365 animals of all ages as recorded. Appendix 9 shows the number of AUMs needed for the numbers at that time. This calculation shows 3,202 AUMs would be needed with 69% coming from the four allotments. Thus, a total of 2,209 AUMs needed, or 547 more AUMs than are currently available. Since BLM administers only 87% of the land in these allotments, there is a need for 1,921 AUMs or 476 more AUMs than are currently available.

Based on 3,202 AUMs, with BLM providing the same 87% of needs, the following additional forage would be required.

<u>Grazing Allotment</u>	<u>AUM Needs for Bison</u>
Nasty Flat	634
Steele Butte	327
Pennell	903
Crescent Creek	57
TOTAL	<u>1,921</u>

This shows the following shortages in the CRM project area:

<u>Total</u>	<u>Livestock</u>	<u>Deer</u>	<u>Bison</u>
2,354	1,614	264	476

Table 11 shows the amount of AUMs currently being provided by the areas proposed for treatment. (See Appendix 9 for origin of carrying capacity figures.)

TABLE 11

CURRENT PRODUCTION AUMS IN TREATMENT AREAS

<u>AREA</u>	<u>TOTAL PRODUCTION</u>		
	<u>NO. ACRES</u>	<u>ACRES/AUM</u>	<u>(AUMS)</u>
No. Coyote Bench	1,180	56.6	21
Slate Creek/Garden Basin	640	37	17
Apple Brush Bench	300	65	5
Pete Steel Bench	1,150	65	18
East Coyote Bench	380	56.6	7
NE of King's Chaining	500	56.6	9
West of Cat Ranch	350	56.6	6
Tarantula Mesa	800	36	22
Nasty Flat	100	5.5	18
Brown's Hole	1,000	35	29
Tarantula Mesa (Maint)	500	6	83
Dugout Maint (Maint)	919	6	153
Airplane Spring (Maint)	1,476	6	246
Dark Canyon (Maint)	300	7	43
Crescent Creek (Maint)	800	8	100
Coyote Bench (Maint)	300	56.6	5
Totals	<u>10,695</u>	<u>N/A</u>	<u>782</u>

M. SOCIOECONOMICS

The majority of livestock permittees live in Wayne County. However, because of existing geographic and economic interrelationships, the economic impact area involved include Wayne, Sevier and Garfield counties, all in Utah.

The people of Wayne and Garfield counties are economically dependent upon having access to and using the natural resources in and near the Henry Mountain Planning Area. The livestock industry and production of livestock forage on public lands have traditionally been a major element in their economy. Many livestock permittees work at other jobs, and livestock operations are not always their sole source of income. Sevier County, while still rural in nature, has a more diverse economic base and is a service center for Wayne and Garfield counties.

The population of these three counties increased from 14,743 people in 1970 to 20,311 people in 1980. This represents a 38 percent increase or an annual growth rate of 3.26 percent. During this same time, the State of Utah population increased by 38 percent, or an annual growth rate of 3.3 percent. Thus, these counties grew at rates comparable to the State average (U.S. Department of Commerce [USDC], Bureau of the Census, 1981b).

The farm sector in all three counties had a decrease in employment of between 5 and 6 percent for the period from 1974 to 1979 (USDC, Bureau of the Census, 1981a). In 1978, the value of livestock and livestock products sold in Wayne, Garfield, and Sevier counties was \$2,971,000, \$2,869,000 and \$23,538,000, respectively. The total in the three-county area was \$29,378,000, which accounted for 85 percent of the total agricultural products sold (USDC, Bureau of the Census, 1981c).

Livestock forage in this region is valued at \$5.65 per AUM (1985 Grazing Fees Report). This value approximates all forage-related expenses incurred by stockmen (what they are willing to pay) including: grazing fees, interest on purchase of permit, maintenance of developments, and costs associated with tending animals on remote ranges. The present cost of an AUM on public land is \$1.54. The economic benefit of agriculture products is wide spread, and several different counties received those benefits.

It is estimated that bison hunters spend about \$110.00/day and that other big game (deer) hunters spend about \$89.00/day (USDA, FS, 1977). At those rates, the estimated 108 bison hunter days and 208 deer hunter days in 1980 generated about \$30,392 in sales (\$11,880 for bison and \$18,512 for deer).

## VIII. ANALYSIS OF THE PROPOSED ACTION AND ALTERNATIVES

### A. THE PROPOSED ACTION

The CRM proposal is to treat 12,500 acres (10,695 BLM acres) to improve forage production.

#### 1. Environmental Impacts

##### a. Air Quality

Air quality would be adversely affected in the vegetation treatment areas during burning (2 weeks to 2 months on each treatment area) and equipment operation. Most contaminants would be smoke from fires and smoke and dust from equipment. However, burning and dust would not violate the Class II standard.

##### b. Soils

Some soils in treatment areas would be compacted by the equipment manipulating the vegetation. However, the naturally occurring freeze-thaw action in the soil would reverse most of the compaction within the first year following treatment. Burning and vegetation manipulation would also temporarily expose the soil to increased erosion. Research has indicated that no significant difference in sediment yield or erosion rates occurred where debris was left in place on the chained sites (Clary, 1975; Gifford, 1975; as cited in

Phillips, 1977). Burning in wooded areas could scorch soils, possibly making some nutrients unavailable for plant growth for several years. Chemical properties of the soil are highly variable and, depending on fire intensity, may or may not decrease nutrients required for revegetation purposes (USDA, FS, 1979). Aro, 1971 reports that no evidence was found to support a common notion that hot pinyon-juniper fires sterilize the soil making it unfit for grass establishment. On Hualapai Indian Reservation land in Northern Arizona, a burned pinyon-juniper site was seeded and deferred from grazing for three years to allow full vegetation establishment. Adjacent unburned areas averaged about 60 pounds per acre while production on the seeded burn was 1,660 pounds per acre. Seedings on 33,000 acres of burned woodland had an average increase of 500 pounds per acre (Aro, 1971). Chaining would break up the soil, prepare a seedbed and allow revegetation to occur during the following season. There is enough precipitation that the probability of success is generally estimated as 50 to 70 percent for the soil types involved (see Appendix 1 for additional detail). However, other seedings in the project area have all been fully successful. In one or two growing seasons, ground cover would increase, stabilizing the soil and further reducing erosion levels.

Soil along the proposed pipeline would be disturbed for approximately 8' wide and 36" deep. There would be some soil compaction along the path because of the weight of the bulldozer used to install the pipe. However, newly established vegetation and freeze-thaw actions would correct this disturbance and compaction.

#### c. Watershed

The presence of a protective soil cover composed of living plants and litter becomes increasingly important as slope and storm intensity become more severe. There is no existing watershed data that will provide a long-term estimate of the amount of water and soil that can be retained on-site for untreated and treated pinyon-juniper sites. However, a study in the project area (refer to Soils section, Affected Environment) showed a decrease in sediment yield of from .18 to .48 acre-feet per square mile (or .52 tons/acre to 1.29 tons/acre) per year in treated areas. Infiltration to precipitation ratios were about .18 higher (30 percent) in treated areas than on untreated areas. The study showed vegetation treatments in the project area to be highly effective in increasing infiltration rates and decreasing runoff and sediment yields (USDI, BLM, 1981). There is a large volume of empirical data to document the difference in water loss and sedimentation that can be expected to result from changes in ground cover. "It is widely recognized that vegetation increases the amount of large pore space in the soil, thus minimizing surface runoff and encouraging the storage of water in the soil; that it may augment available soil storage space by removing water through transpiration; and that it stabilizes soil by physical means" (Chow, 1964).

The proposed land treatments are expected to increase ground cover significantly (Henry Mtn. Studies 1977-1981, Summarized by Buchanan & Chappell, 1988; USDI, BLM, 1981; Phillips, 1977; Payne, 1980). Currently in the proposed treatment areas, the canopy cover from pinyon-juniper trees is providing some protection from direct raindrop impact. However, the amount of understory is inversely proportional to the degree of canopy closure. There are large bare interspaces between the trees that are not protected from water

erosion. Tree roots grow well beyond the crowns of the trees underneath these interspaces, uptaking water and nutrients. This has resulted in the elimination of herbs and shrubs that once grew in these interspaces and protected the soil surface from erosion (West, 1984). As a result, there is much indirect evidence that such pinyon-juniper sites are degrading due to accelerated erosion (West, 1978; Payne, 1980; West, 1984; Tausch, et al., 1981). There is also direct evidence from studies conducted by the Bureau of Land Management on sites within the proposed treatment area that indicate erosion is more active in the pinyon-juniper community versus the same ecological site which has been chained with debris left in place and seeded (See Appendix 10).

Another study evaluated 20 pinyon-juniper chained and seeded sites and adjacent unchained areas throughout Utah. The chainings ranged in age from one to 25 years. Findings regarding watershed conditions were that most treated sites were either significantly improved or the trend was toward improvement as a result of chaining and seeding. "Eight of the sites show significantly less soil movement on the chained areas. Even though no significant difference exists on the remaining 12 sites, the soil movement values show a trend toward less soil loss on the treated areas" (Payne, 1980).

The tree conversion projects were selected because of their relative lack of understory and their potential to respond to treatment. The proposed vegetation treatments would increase ground cover and reduce runoff and soil loss. Summer and fall storms which are typically of high intensity, increase run-off and erosion. The proposed projects would decrease soil erosion and improve watershed conditions after two years. This would reduce salinity in the Colorado River system. Soils of the CRM project area are slightly saline and non-saline. Any reduction to the salinity of the Colorado River from the proposed projects would be small and unmeasurable at Imperial Dam, but would contribute to BLM's goal of decreasing the salt load to the Colorado River system (see Appendix 11).

Table 14 shows the projected erosion condition and sediment yield that would be expected should the proposal be implemented.

TABLE 12

## PROJECTED EROSION SITUATION/PROPOSED ACTION

Project Area	Treatment	Total BLM Acres	Projected Erosion Condition	Calculated Annual Soil Loss (Tons/Acre)	Calculated Annual Soil Loss (Total Tons)
No. Coyote Bench	Burn/Seed	1180	Moderate	1.05	1,239
Slate/Garden Basin	Chain/Seed	640	Stable	.47	301
Apple Brush Bench	Chain/Seed	300	Stable	.46	138
Pete Steele Bench	Interseeding	1150	Stable	.40	460
East Coyote Bench	Chain/Seed	380	Slight	.90	342
NE of King's Chain	Chain/Seed	500	Slight	.93	465
West of Cat Ranch	Burn/Seed	350	Moderate	1.14	399
Tarantula Mesa	Chain/Seed	800	Slight	.58	464
Nasty Flat	Aerial Seed	100	Slight	.56	56
	(in Bigsage)				
Brown's Hole	Aerial Seed	1000	Slight	.61	610
	(in Oak & Aspen)				
Tarantula Mesa	Chain (Maint.)	500	Moderate	1.02	510
Dugout	Burn (Maint.)	919	Slight	.54	496
Airplane Springs	Roller-Chop	1476	Slight	.75	1,107
	(Maint.)				
Dark Canyon	Roller-Chop	300	Slight	.58	174
	(Maint.)				
Crescent Creek	Roller-Chop	800	Slight	.74	592
	(Maint.)				
Coyote Bench	Roller-Chop	300	Slight	.52	156
	(Maint.)				
	TOTAL	10,695			7,509

In summary, Table 12 shows that the two areas to be burned and seeded without covering the seed (No Coyote Bench and West of Cat Ranch) would not show an improvement of one condition class as would those areas on which the seed would be covered. However, this alternative would result in a cumulative annual reduction of soil loss of 3221 tons (25 percent) over the current situation (as a result of increases in ground cover in and outside the treatment area). Of the maintenance projects only the Dark Canyon project would show a significant improvement in erosion condition.

#### d. Vegetation

##### (1) General Types

Increased introduced grasses and forbs, as well as native galleta, needlegrasses, and Indian ricegrass, is expected in the lower areas around Pete Steele Butte and Apple Brush Bench. The encroachment of juniper into Apple Brush Bench would be curtailed. Cactus, snakeweed, locoweed, and rabbitbrush would decrease.

In the intermediate sites which would be chained and seeded, native, as well as introduced grasses and forbs; would increase. Brush and tree encroachment and density would be greatly reduced. In the areas to be burned and seeded; introduced grass would not be as evident, even though native species would increase significantly. Since burning is variable, the amount of acreage that would be affected is unknown.

At the higher elevations, an increase in density and production of native and introduced grasses and forbs would be expected. Only native species would increase in the Brown's Hole area. A decrease in trees is expected in Garden Basin as the aspect would change from forest to ground covering vegetation.

The proposed vegetation and water development projects would help disperse livestock, bison, and other wildlife grazing to areas that in the past have not provided usable forage for grazing animals or have been only lightly grazed. This would provide better distribution and take grazing pressure away from areas that have historically received heavy grazing use. This would result in all vegetation in areas receiving lighter use and would allow the vegetation to recover. As a result, the range trend in all allotments should begin to improve.

The treatments proposed on pinyon-juniper types would involve 13 percent of the area dominated by those trees in the four allotments in which the project would occur. The sagebrush sites proposed for treatment involve 14 percent of total sagebrush dominated area in the four allotments. Areas that have been treated would create the appearance of naturally occurring meadows, or openings in the pinyon-juniper forest.

#### (2) Threatened and Endangered Species

There would be no affect on any threatened or endangered species of plants.

#### (3) Riparian Areas

Trend would be upward on the three live streams in the project area. However, due to the steep topography, large boulders, and habits of grazing animals the condition would improve very slowly.

#### (4) Vegetation Condition and Trend

##### Ecological Condition

Treating a site with natural species, those already found in an area, such as would be done in Brown's Hole would have a positive effect in moving the condition toward the potential natural community. On the other hand the sites treated with introduced species would be placed in an "other" category so far as ecological condition is concerned and are then rated as to range (forage) condition but not ecological condition.

In related allotments ecological condition would also be affected. Ecological condition in the Dry Lakes Allotment would continue to improve and within ten years be near natural potential. Because of the grazing agreement which provides for reduced livestock, and reduced bison use, in the Blue Bench Allotment, it is estimated that condition would move toward a higher seral stage.

## Range Condition and Trend

Should the proposal be implemented, range condition and trend would be expected to be as shown on Table 13.

TABLE 13  
ANTICIPATED RANGE CONDITION AND TREND/PROPOSED ACTION

Area	Within 3 Years		Within 10 Years	
	Condition	Trend	Condition	Trend
North Coyote Bench	Fair <sup>a</sup>	Upward	Fair <sup>a</sup>	Upward
Slate Creek/Garden Basin	Good	Upward	Excellent	Stable
Apple Brush Bench	Good	Upward	Good	Stable
Pete Steele Bench	Fair	Upward <sup>a</sup>	Good	Stable
East Coyote Bench	Good	Upward	Good	Stable
E of King's Chaining	Good	Upward	Good	Stable
West of Cat Ranch	Fair	Upward	Fair	Upward <sup>a</sup>
Tarantula Mesa	Good	Upward	Good	Stable
Nasty Flat	Good	Upward <sup>a</sup>	Good	Stable
Brown's Hole	Fair	Upward	Fair	Upward <sup>a</sup>
Dugout (Maint.)	Good	Upward	Good	Stable
Airplane Spring (Maint.)	Good	Upward	Excellent	Stable
Dark Canyon (Maint.)	Good	Upward	Excellent	Stable
Crescent Creek (Maint.)	Good	Upward	Good	Stable
Coyote Bench (Maint.)	Good	Upward	Good	Stable

<sup>a</sup> No change from current situation.

Because of the limited seedling establishment on those areas that would be treated without covering the seed, some areas would be slow to respond and would not reach good condition until after ten years (if at all). These include North Coyote Bench, West of Cat Ranch, and Brown's Hole.

### e. Wildlife

The treated areas would also provide open space with nearby islands for protective cover and escape. The increased size of the edge effect would benefit most animal species.

The treated areas would attract bison away from traditionally overgrazed areas, allowing additional production of early spring wheatgrass. This additional forage would reduce stress to bison during the critical spring season. This would improve habitat conditions for bison and deer in the project area.

Should the proposal be implemented an estimated additional 2,168 AUMs would be produced. With this amount of forage, there would be sufficient feed to meet

the allocated bison needs of 200 head of adults and yearlings. There would be sufficient forage to meet current mule deer numbers and allocation.

Table 14 summarizes the affected crucial bison habitat within the areas involved. The 7,250 acres of crucial habitat involved represents less than six percent of total bison crucial habitat in the CRM area.

During the operational phase of these treatments, bison would temporarily disperse into adjacent areas. These areas would receive an increase in use for a short time. In spite of this, there would be no increase in competition for food, water, cover or space due to size of the bison herd and short time frames involved in relation to the total habitat available. Also, because of the proposed livestock non-use, competition between livestock and bison would be minimized during the three-year treatment phase.

Observations by range specialists indicate that livestock fences have little affect on the movement of bison in the Henry Mountains. Consequently, the eleven miles of fence proposed would not restrict the bison movement.

TABLE 14  
AFFECTED BISON HABITAT/PROPOSED ACTION

TREATMENT AREA	TREATMENT	ACRES
<u>Crucial Winter</u>		
Apple Brush Bench	Chain/Seed	300
Pete Steele Bench	Interseeding	<u>320</u>
	Sub-Total	620
<u>Crucial Summer</u>		
Nasty Flat	Aerial Seed (in oak)	100
Brown's Hole	Aerial Seed (in oak & aspen)	1,000
Crescent Creek	Roller-Chop (Maintenance)	800
Airplane Spring	Roller-Chop (Maintenance)	640
Dark Canyon	Roller-Chop (Maintenance)	300
North Coyote Bench	Burn/Seed	1,180
Slate Creek/Garden Basin	Chain/Seed	640
East Coyote Bench	Chain/Seed	380
West of Cat Ranch	Burn/Seed	<u>350</u>
	Sub-Total	5,390
<u>Crucial Yearlong</u>		
Dugout	Burn (Maintenance)	600
Airplane Spring	Roller-Chop (Maintenance)	<u>640</u>
	Sub-Total	1,240
	Grand Total	<u>7,250</u>

As a result of increased forage, the overall condition of habitat would improve over the long-term. Therefore, implementation of the proposed action would cause an increase in the forage base for bison, improve their distribution and improve habitat condition and trend.

Referring to Table 15, implementation of the proposed action would involve treatment of a total of 4,835 acres of crucial winter, and 3,440 acres of crucial summer deer habitat. This represents only seven percent of the total crucial habitat for deer in the CRM area.

During the operational phase of these treatments, deer would temporarily disperse into nearby habitat. Since current deer numbers are below carrying capacity of the habitat, there would be no competition for food, water, cover and space between resident deer and the dispersed deer. Also, since the total number of acres of habitat represents about ten percent of the total amount of crucial winter and less than one percent of crucial summer habitat, there would be no significant adverse impact to deer. In the long-term, the increase in forb production resulting from the inclusion of alfalfa, yellow sweetclover, and other forb species in the seed mix would especially benefit deer during the important spring lactating period. The construction of eleven miles of fence of the type proposed would have little, if any, affect on the distribution and abundance of deer.

TABLE 15  
AFFECTED MULE DEER HABITAT/PROPOSED ACTION

TREATMENT AREA	TREATMENT	ACRES
<u>Crucial Winter</u>		
Apple Brush Bench	Chain/Seed	300
Pete Steele Bench	Interseeding	500
North Coyote Bench	Burn/Seed	1,180
East Coyote Bench	Chain/Seed	380
NE of King's Chaining	Chain/Seed	500
West of Cat Ranch	Burn/Seed	350
Coyote Bench	Roller-Chop (Maintenance)	300
Sub-Total		3,510
<u>Crucial Summer</u>		
Nasty Flat	Aerial Seed (in oak)	100
Brown's Hole	Aerial Seed (in oak & aspen)	1,000
Dugout	Burn (Maintenance)	200
Crescent Creek	Roller-Chop (Maintenance)	600
Airplane Spring	Roller-Chop (Maintenance)	900
Slate Creek/Garden Basin	Chain/Seed	640
Sub-Total		3,440
Grand Total		6,950

Since no threatened nor endangered species exist within the area, there would be no affect.

f. Recreation

The treatment would change the recreation use, sightseeing from one of closed pinyon-juniper forest to open vistas. in creating the open vista there would be degradation of forest views. The new open vistas would provide the observer more opportunities to see bison, wildlife, other Henry Mountain peaks, as well as other distant landmarks. This is clearly a change in sightseeing opportunities.

g. Wilderness

Since bison would be enticed into other areas for forage, the heavy-grazing in the Dry Lakes Allotment (which is in the Mt. Ellen-Blue Hills WSA) would cease, vegetation improved, and naturalness enhanced.

h. Cultural Resources

This proposal has the potential to disturb some 10,695 acres, 19 linear miles, and the cultural resources located there. Although standard mitigation measures designed to inventory and protect cultural resources would be implemented as thoroughly as possible prior to any ground disturbing activity, the sites present in the areas to be treated would be subject to inadvertent damage by project activities. Experience has demonstrated that the probability of this happening is quite rare, but the possibility is there nevertheless.

The accompanying table summarizes the nature and magnitude of the proposed action, the probability of cultural resources occurring in the specific area (values column), and the risk these sites would be subject to from any given project. Existing inventory in this area is very sketchy, very few sites have been recorded, so the "values" estimate (likelihood of finding cultural resources in that area) provided in the table is necessarily based on professional judgment. Risk values were assigned based on a project's potential of damaging cultural resources. For example, all projects involving chaining and chemical treatment (which also involves chaining) were assigned a risk factor of 5. Interseeding and roller-chopping were assigned a risk factor of 4 because they are a little less destructive, and fencelines and pipelines were assigned a risk factor of 3 because they are easily moved and/or modified to avoid cultural resources. Aerial seeding presents no threat at all to cultural resources because there is no ground disturbance. Those projects being maintained only, present no threat to cultural resources because any resources present in those project areas were disturbed when the projects were originally implemented. The probability of sites existing in these areas is low for that reason.

As outlined on Table 16, chaining and interseeding (those projects having the most potential to adversely impact cultural resources) would take place on 3,770 acres under the proposed action, and cultural resources in these areas would be subject to inadvertent damage. The chaining and interseeding

proposed on areas that have moderate to high potential of actually containing cultural resources would take place on 2,890 acres. The remaining acreage involves low potential or low risk areas.

TABLE 16  
CULTURAL RESOURCES VALUE AT RISK/Proposed Action

Project	Treatment	Units	Values	Risk <sup>a</sup>
Tarantula Mesa	Pipeline (New)	5 mi	High	3
Tarantula Mesa	Pipeline (Maint.)	3 mi	Low	0
No. Coyote Bench	Burn/Seed	1180 ac	Low	3
Sage Flat <sup>b</sup>	Chain/seed	N/A	N/A	0
Slate Creek/Garden Basin	Chain/Seed	640 ac	High	5
Crescent Creek/Penn Allot.	Fence	2.5 mi	Moderate	3
Apple Brush Bench	Chain/Seed	300 ac	Moderate	5
Apple Brush Bench	Fence	2 mi	Moderate	3
Pete Steele Bench	Interseeding	1150 ac	Moderate	4
East Coyote Bench	Chain/Seed	380 ac	Low	5
East Coyote Bench	Fence	5 mi	Low	3
NE of King's Chaining	Chain/Seed	500 ac	Low	5
West of Cat Ranch	Burn/Seed	350 ac	Low	3
Tarantula Mesa	Chain/Seed	800 ac	High	5
Tarantula Mesa	Chain (Maint.)	500 ac	Low	0
Tarantula Mesa	Fence	1.5 mi	High	3
Nasty Flat	Aerial Seed	100 ac	Moderate	0
Brown's Hole <sup>c</sup>	Aerial seed	1000 ac	N/A	0
Dugout	Burn (Maint.)	919 ac	Low	0
Airplane Spring	Roller-Chop (Maint.)	1476 ac	Low	0
Dark Canyon	Roller-Chop (Maint.)	300 ac	Low	0
Crescent Creek	Roller-Chop (Maint.)	800 ac	Low	0
Coyote Bench	Roller-Chop (Maint.)	300 ac	Low	0
King's Chaining	Burn (Maint)	N/A	N/A	0
	TOTAL	10,695 ac 19 mi		

<sup>a</sup> 0=Low to None. 5=Highest

<sup>b</sup> Sage Flat is on State land. The acres and miles listed under units are BLM only.

<sup>c</sup> This project is inside the Mt. Pennell WSA. No surface disturbance would occur.

N/A Not applicable.

i. Visual Resources

As shown all or portions of six proposed land treatments are located in VRM Class II areas, two of those treatments would exceed the Class II objectives. One proposed new project (Slate Creek/Garden Basin), totaling 640 acres, would create contrasts exceeding VRM Class II objectives. One maintenance project

(Dark Canyon), totaling 300 acres, would create contrasts exceeding VRM Class II objectives. The other four areas, (two aerial seeding projects, and two other maintenance projects) which are in VRM Class II would meet VRM Class II objectives.

Other treatments in VRM Class IV areas meet the VRM objective for those areas, even though their appearance would change from that of forest aspects to one of open space.

Table 17 summarizes the affects to VRM Classes should the proposal be implemented.

#### j. Land Use Plans and Controls

No State or local land-use plan policy or control would be affected. Five of the proposed projects actually implement decisions in the current BLM Land-Use Plan; all others are in conformance except two (Slate Creek/Garden Basin and Dark Canyon). These appear to violate VRM decisions in relation to Class II designations.

#### k. Livestock and Wildlife Grazing

There could be some disturbance to cattle caused by herding and moving them away from familiar ranges to other areas during rest periods for treated areas. The new fences would only be 80 to 90 percent effective in controlling livestock because of bison caused fence breakage.

Although increased forage production from vegetation treatments would benefit cattle, it is impossible to predict specifically the benefits because of (1) the free-roaming nature of big game, especially bison, which will also use the forage; and (2) the allocation of any additional forage will not be made at this time, but would be a decision made later on. That decision would be made through the planning process after the analysis showed increases in forage production occurred. Table 20 shows the expected forage increase by allotment and treatment area.

In summary, Table 18 shows that within three years, there would be sufficient vegetation produced for a 1,522 AUM increase. The cumulative affect of other projects such as fences, water developments, and the increased vigor and volume from better management provided by these projects would cause an additional increase of up to 400 AUMs throughout the project area. All together we would expect that increased productivity would be 2,168 AUMs. This would be 186 AUM's short of meeting the current forage short fall of 2,354 AUMs and would be well within an acceptable level of variation caused by different climatic conditions in different years. Forage would be sufficient to meet the 200 yearling and adult post-hunt levels and forage would be sufficient to meet current bison numbers.

TABLE 17

## ANTICIPATED VRM CLASS VIOLATION/PROPOSED ACTION

Project Area	Treatment	Current VRM Class	Consistent With VRM Class
Tarantula Mesa	Pipeline (New)	IV	Yes
Tarantula Mesa	Pipeline (Maint)	IV	Yes
No. Coyote Bench	Burn/Seed	IV	Yes
Slate Creek/Garden Basin	Chain/Seed	II	No
Crescent Crk/Penn. Allot	Fence 4-strand barbed	II	Yes
Apple Brush Bench	Chain/Seed	IV	Yes
Apple Brush Bench	Fence 3-strand barbed	IV	Yes
Pete Steele Bench	Interseeding	IV	Yes
East Coyote Bench	Chain/Seed	IV	Yes
East Coyote Bench	Fence - Temp. Electric	IV	Yes
NE of King's Chaining	Chain/Seed	IV	Yes
West of Cat Ranch	Burn/Seed	IV	Yes
Tarantula Mesa	Chain/Seed	IV	Yes
Tarantula Mesa	Chain (Maint)	IV	Yes
Tarantula Mesa	Fence 3-strand barbed	IV	Yes
Nasty Flat	Aerial Seed (in Bigsage)	II	Yes
Brown's Hole <sup>a</sup>	Aerial Seed (in Oak & Aspen)	II	Yes
Dugout	Burn (Maint)	II	Yes <sup>b</sup>
Airplane Spring	Roller-Chop (Maint)	II	No <sup>b</sup>
Dark Canyon	Roller-Chop (Maint)	II	Yes
Crescent Creek <sup>c</sup>	Roller-Chop (Maint)	IV	Yes
Coyote Bench	Roller-Chop (Maint)	IV	Yes

<sup>a</sup> This project is inside the Mt. Pennell WSA.

<sup>b</sup> This proposal is to maintain an existing treated area - color, form, line and texture would not be measurably affected.

<sup>c</sup> The Crescent Creek Area was chained in December 1966. Approximately 40% of the Crescent Creek Chaining is inside what is now the Bull Mountain WSA. However, the land inside the WSA plus about an 1/8-mile strip will not be treated.

TABLE 18

## ESTIMATED AUMS/PROPOSED ACTION

Treatment Area	Total BLM Acres	Cur- rent AUM	Three Years			Ten Years		
			Acres per AUM	AUMS		Acres per AUM	AUMS	
				TOTAL	GAIN		TOTAL	GAIN
No. Coyote Bench (Burn/Seed)	1180	21	8	147	126	5	236	215
Slate/Garden Basin (Chain/Seed)	640	17	4	160	143	4	160	143
Apple Brush Bench (Chain/Seed)	300	5	5	60	55	5	60	55
Pete Steele Bench (Interseeding)	1150	18	7	164	146	7	164	146
East Coyote Bench (Chain/Seed)	380	7	4	5	88	4	95	88
NE of King's Chain (Chain/Seed)	500	9	4	125	116	4	125	116
West of Cat Ranch (Burn/Seed)	350	6	8	44	38	5	70	64
Tarantula Mesa (Chain/Seed)	800	22	5	160	138	4	200	178
Nasty Flat (Aerial Seed in oak)	100	18	4	25	7	3	33	15
Brown's Hole (Aerial Seed in Oak & Aspen)	1000	29	4	250	221	3	333	304
Tarantula Mesa (Chain Maint.)	500	83	4	125	42	4	125	42
Dugout (Burn Maint.)	919	153	4	230	77	4	230	77
Airplane Spring (Roller-chop Maint.)	1476	246	4	369	123	4	369	123
Dark Canyon (Roller-chop Maint.)	300	43	4	75	32	4	75	32
Crescent Creek (Roller-chop Maint.)	800	100	4	200	100	4	200	100
Coyote Bench (Roller-chop Maint.)	300	5	4	75	70	4	75	70
TOTAL	10695	782		2304	1522		2450	1768

## 1. Socioeconomics

Livestock permittees would have to control their livestock to protect treated areas during revegetation periods. They would also have to reduce their use during this period. Permittees might have to sell some of their livestock or find another source of feed while these areas were treated and rested. However, when the projects are completed increased forage would contribute to the continuation of the livestock industry and ranching way of life in the Wayne County area.

Assuming a three-year (1988-1990) implementation period and subsequent accrual of benefits, Table 19 shows the benefit/cost (B/C) ratio based on exclusive allocation of forage to a particular species. No benefits were calculated for any other resource than livestock and wildlife forage. (See Appendix 12 for additional information).

TABLE 19  
ECONOMIC SUMMARY/PROPOSED ACTION

Project Cost	Present Value		Benefit Cost
356,995	Livestock	198,263	0.56
	Bison	746,743	2.09
	Mule Deer	<u>1,130,909</u>	<u>3.17</u>
	Average	691,972	1.94

## 2. Mitigating Measures

### a. Cultural Resources

Cultural values would be inventoried before work began. Any sites flagged during inventory would be avoided during project work. If during treatment any previously undiscovered archaeological values were discovered, all work would stop immediately and the district archaeologist would be notified. The archaeologist would then determine what actions must be taken for avoidance, mitigation, or salvage.

### b. Land-Use Plans and Controls

A plan amendment for the current MFP in the Henry Mountain Resource Area to allow the two non-conforming projects, Slate Creek/Garden Basin and Dark Canyon, to proceed in conformance.

## 3. Unavoidable Adverse Impacts

Salvage or mitigation would minimize impacts to cultural resources. Otherwise the cumulative unavoidable adverse impacts would be the inadvertent loss caused by ground disturbing activities.

#### 4. Relationship Between Short-Term Use of the Environment vs. Long-Term Productivity

The short-term loss of the visual quality, accelerated erosion, and forest type would provide long-term increases in forage for big game and livestock. This would have a long-term cumulative impacts to visual, vegetation, soil, water, and wildlife resources as well as recreation, woodland, and livestock use. Also, investments in previously treated sites would be recovered. The loss of soil and unused AUMs is short-term; lasting only until vegetative ground cover is established. This is estimated to be no longer than three years. In the long-term, pinyon-juniper would be suppressed as treated areas are retreated or maintained; therefore, full recovery to natural ecological condition is not expected. An open space visual aspect would be enhanced while a closed pinyon-juniper forest aspect would be degraded. Long-term improvement in rangeland and riparian condition would be expected.

#### 5. Irreversible and Irrecoverable Commitment of Resources

The short-term loss of soils and AUMs is irretrievable. Since it is common practice to continue retreatment of areas cleared of trees to perpetuate the forage resource, it is expected the development of open space and loss of closed stands of trees would continue into the foreseeable future and would be therefore be considered irreversible.

Any impact to cultural resources, regardless of the nature, would be irretrievable. The impacting action would be reversible; it could be stopped, but the information lost in the interim would be gone forever.

### B. IMPLEMENTATION OF MFP

Install the projects proposed in the Henry Mountain MFP and Final Grazing EIS to improve forage production for wildlife and livestock use.

#### 1. Environmental Impacts

##### a. Air Quality

Air quality would be adversely affected in the vegetation treatment areas during burning (2 weeks to 2 months on each treatment area) and equipment operation. Most contaminants would be smoke from fires, and smoke and dust from equipment. However, burning and dust would not violate the Class II standard.

##### b. Soils

Impacts to soils would be much the same as those described under the proposed action with benefits occurring to revegetated areas after the seedings become established or vegetation increased.

##### c. Watershed

Impacts to watershed would be very much the same as described for the proposal and other alternatives. Table 20 shows additional detail on projected watershed condition and sediment yield should this alternative be implemented. A significant disadvantage of this alternative would be when compared to the proposed action, leaving Slate Creek/Garden Basin untreated. Soil loss from

this site would be double (614 tons/year) as compared to the proposed action if it were treated. Other differences (316 tons/year) would result in West of Cat Ranch and North Coyote Bench as increased vegetation would be established by chaining. Overall this alternative would yield (617 tons/year) less than the proposed action.

TABLE 20  
PROJECTED EROSION SITUATION/IMPLEMENTATION OF MFP

Loss Project Area	Treatment	Total BLM Acres	Projected Erosion Condition	Calculated Annual Soil Loss (Ton/Acre)	Calculated Annual Soil Loss (Total Tons)
No. Coyote Bench	Burn/Seed/Chain	1180	Slight	.85	1003
Slate Cr/Garden Basin	No Treatment	640	Slight	.96	614
Apple Brush Bench	Chain/Seed	300	Stable	.46	138
Pete Steele Bench	Interseeding	1150	Stable	.40	460
East Coyote Bench	Burn/Seed/Chain	380	Slight	.90	342
NE of King's Chaining	Burn/Seed/Chain	500	Slight	.93	465
West of Cat Ranch	Burn/Seed/Chain	350	Slight	.91	319
Tarantula Mesa*	Burn/Seed/Chain	800	Slight	.58	464
Nasty Flat	Aerial Seed (in Bigsage)	100	Slight	.56	56
Brown's Hole	Aerial Seed (in Oak & Aspen)	1000	Slight	.61	610
Tarantula Mesa	Chain (Maint.)	500	Moderate	1.02	510
Dugout	Burn (Maint.)	919	Slight	.54	496
Airplane Spring	Roller-Chop (Maint.)	1476	Slight	.75	1107
Dark Canyon	Burn (Maint.)	300	Slight	.58	174
Crescent Creek	Roller-Chop (Maint.)	800	Slight	.74	592
Coyote Bench	Roller-Chop (Maint.)	300	Slight	.52	156
	TOTAL	10055			6892

d. Vegetation

(1) General Types

After treatment, introduced grasses and forbs, as well as native galleta, needlegrass and Indian rice grass, are expected to increase in the lower areas around Pete Steele Bench and Apple Brush Bench. The encroachment of juniper into Apple Brush Bench would be curtailed. Cactus, snakeweed, locoweed, and rabbitbrush would decrease. Before treatment, juniper, cactus, snakeweed, locoweed, and rabbit-brush would continue to increase.

Prior to implementation in the intermediate sites native brush as well as introduced grasses and forbs would increase. Tree encroachment and density would be greatly reduced. After implementation, unpalatable weedy species of many kinds would continue to invade and increase.

Prior to implementation, at the higher elevations, an increase in native and introduced grasses and forbs would be expected. Only native species would increase in the Brown's Hole area.

## (2) Threatened and Endangered Species

There would be no affect on threatened or endangered species of plants.

## (3) Riparian

There would be an upward trend on the three live streams in the project. However as described in the proposed action little change to the condition could be expected because of the topography, large boulders, and habits of grazing animals.

## (4) Vegetation Condition and Trend

### Ecological Conditions

As discussed in the analysis of the proposal, chained and seeded areas would no longer be given a rating as to their ecological condition. These areas would be rate as to their range (forage) conditions. Areas seeded with natural species would improve in ecological condition as the components of the natural plant community is changed.

## (5) Range Condition and Trend

Ecological condition in the Dry Lakes Allotment would continue to improve and trend would be reversed toward the potential natural community implemented.

In the Blue Bench Allotment areas that are stable or downward in trend would begin to improve as projects are implemented.

With this alternative range condition and trend are expected to change as shown in Table 21.

TABLE 21

## ANTICIPATED RANGE CONDITION AND TREND/IMPLEMENTATION OF MFP

AREA	WITHIN 3 YEARS		WITHIN 10 YEARS	
	CONDITION	TREND	CONDITION	TREND
North Coyote Bench	Good	Upward	Good	Stable
Apple Brush Bench	Good	Upward	Good	Stable
Pete Steele Bench	Fair	Upward	Good	Stable
East Coyote Bench	Good	Stable	Good	Stable
NE of King's Chaining	Good	Stable	Good	Upward
West of Cat Ranch	Good	Stable	Good	Upward
Tarantula Mesa	Good	Stable	Good	Upward
Nasty Flat	Good	Upward	Good	Upward
Brown's Hole	Fair	Stable	Fair	Upward
Dugout (Maint.)	Good	Downward	Good	Upward
Airplane Spring (Maint.)	Good	Downward	Good	Stable
Dark Canyon (Maint.)	Fair	Downward	Fair	Upward
Crescent Creek (Maint.)	Good	Downward	Good	Upward
Coyote Bench (Maint.)	Good	Stable	Good	Upward

With this alternative it is estimated that most of the areas would have improved to good condition within three years.

e. Wildlife

Additional forage would be produced. This forage would directly affect both bison and deer, and would help eliminate heavy grazing. The treated areas would also provide open space with nearby islands for protective cover and escape. The increased size of the edge effect would benefit most animal species.

The treated areas would attract bison away from traditionally overgrazed areas, allowing additional production of early spring wheatgrass. This additional forage would reduce stress to bison during the critical spring season.

Should the MFP be implemented, it is estimated that an additional 2,318 AUMs would be produced. These forage increases would be 46 AUMs short of meeting the forage need of 2,354 AUMs by the end of 10 years.

There would be sufficient forage to meet current mule deer numbers and allocation.

Table 22 summarizes the affected crucial bison habitat within the areas involved. The 6,610 acres of crucial habitat involved in treatments represents less than six percent of total bison crucial habitat in the CRM area.

During the operational phase of these treatments, bison would temporarily disperse into adjacent areas. These areas would receive an increase in use for a short time. In spite of this, there would be no increase in competition for food, water, cover or space due to size of the bison herd in relation to the habitat. Also, because of the proposed livestock non-use, competition between livestock and bison would be minimized during the treatment phase.

Observations by range specialists indicate that livestock fences have little affect on the movement of bison in the Henry Mountains. Consequently, the 8.5 miles of fence proposed would not restrict the bison.

TABLE 22  
AFFECTED BISON HABITAT/IMPLEMENTATION OF MFP

PROJECT TREATMENT AREA	TREATMENT	ACRES
	<u>Crucial Winter</u>	
Same as proposal	Same as proposal	620
	<u>Crucial Summer</u>	
Same as proposal	Same as proposal	2,840
Different from proposal:		
North Coyote Bench	Burn/Seed/Chain	1,180
East Coyote Bench	Burn/Seed/Chain	380
West of Cat Ranch	Burn/Seed/Chain	350
	Sub-Total	4,750
	<u>Crucial Yearlong</u>	
Same as proposal	Same as Proposal	1,240
	Grand Total	6,610

Referring to Table 23, implementation of the MFP would involve treatment of a total of 3,510 acres of crucial winter, and 2,800 acres of crucial summer deer habitat. This represents less than seven percent of the total crucial habitat for deer.

During the operational phase of these treatments, deer would temporarily disperse into nearby habitat. Since deer numbers are below carrying capacity of the habitat, there would be no competition for food, water, cover and space between resident deer and the dispersed deer. Since the total number of acres of habitat represents about ten percent of the total amount of crucial winter and less than one percent of crucial summer habitat, there would be no significant adverse impact to deer.

In the long-term, the increase in forb production, resulting from the inclusion of alfalfa, yellow sweet clover, and other forb species in the seed

mix, would especially benefit deer during the important spring lactating period. Because of the lack of competition for preferred forage between deer, bison, and livestock, sufficient feed should be available for deer.

TABLE 23

AFFECTED MULE DEER HABITAT/IMPLEMENTATION OF MFP

TREATMENT AREA	TREATMENT	ACRES
<u>Crucial Winter</u>		
Same as proposal	Same as proposal	2,280
Different from proposal:		
East Coyote Bench	Burn/Seed/Chain	380
NE of King's Chaining	Burn/Seed/Chain	500
West of Cat Ranch	Burn/Seed/Chain	350
	Sub-Total	3,510
<u>Crucial Summer</u>		
Same as proposal	Same as proposal	2,800 <sup>a</sup>
	Grand Total	6,310

<sup>a</sup> 640 acres less than proposed action because Slate Creek/Garden Basin was not included in the MFP, and is, therefore, not a part of this alternative.

Since no threatened nor endangered animal species exist within the area, there would be no affect.

f. Recreation

Because land treatments would create openings in the pinyon-juniper cover and bison would use these areas, opportunities for sightseers to view bison would be increased. The proposed treatments would increase the already substantial areas of existing vegetation treatments in lower mountain elevations. Vegetation treatments and rangeland improvements could adversely impact general sightseeing and reduce the feeling of remoteness.

g. Wilderness

Since bison would be enticed into other areas for forage, the heavy-grazing in the Dry Lakes Allotment (which is in the Mt. Ellen-Blue Hills WSA) would cease, vegetation improved, and naturalness enhanced.

h. Cultural Resources

This alternative would implement the existing MFP. With just the existing planned projects, this alternative would have the potential to disturb some 10,055 acres, 16 linear miles, and the cultural resources located there. As outlined on Table 24, chaining and interseeding (those projects having the

most potential to adversely impacting cultural resources) would take place on 4,310 acres and cultural resources in these areas would be subject to inadvertent damage. The chaining and interseeding proposed on areas that have moderate to high potential of actually containing cultural resources would take place on 2,250 acres. The remaining acreage involves low potential or low risk areas.

TABLE 24  
CULTURAL RESOURCES/VALUES AT RISK/IMPLEMENTATION OF MFP

Proposed Area	Treatment	Units	Values	Risk <sup>a</sup>
Tarantula Mesa	Pipeline (New)	5 mi	High	3
No. Coyote Bench	Burn/seed/chain	1180 ac	Low	5
Crescent Creek/Penn Allt	Fence	2.5 mi	Moderate	3
Apple Brush Bench	Chain/seed	300 ac	Moderate	5
Apple Brush Bench	Fence	2 mi	Moderate	3
Pete Steele Bench	Interseeding	1150 ac	Moderate	4
East Coyote Bench	Burn/seed/chain	380 ac	Low	5
East Coyote Bench	Fence	5 mi	Low	3
NE of King's Chaining	Burn/seed/chain	500 ac	Low	5
West of Cat Ranch	Burn/seed/chain	350 ac	Low	3
Tarantula Mesa	Burn/seed/chain	800 ac	High	5
Tarantula Mesa	Burn/chain (Maint)	500 ac	Low	0
Tarantula Mesa	Fence	1.5 mi	High	3
Nasty Flat	Aerial seed	100 ac	Moderate	0
Brown's Hole <sup>b</sup>	Aerial seed	1000 ac	N/A	0
Dugout	Burn (Maint)	919 ac	Low	0
Airplane Spring	Roller-chop (Maint)	1476 ac	Low	0
Dark Canyon	Burn (Maint)	300 ac	Low	0
Crescent Creek	Roller-chop (Maint)	800 ac	Low	0
Coyote Bench	Roller-chop (Maint)	300 ac	Low	0
	TOTAL	10,055 ac		
		16 mi		

<sup>a</sup> 0 = Low to None. 5 = High

<sup>b</sup> This project is inside the Mt. Pennell WSA. No surface disturbance would occur.

N/A Not Applicable.

i. Visual Resources

Impacts would be very similar to those described for the proposed action, except that the Slate Creek/Garden Basin would not be treated. One maintenance project (Dark Canyon) would violate VRM Class II.

Table 25 summarizes the affects to VRM classes if this alternative is implemented.

TABLE 25

## ANTICIPATED VRM CLASS VIOLATION/IMPLEMENTATION OF MFP

TREATMENT AREA	TREATMENT	VRM CLASS	CONSISTENT WITH VRM CLASS
Trantula Mesa	Pipeline (New)	IV	YES
No. Coyote Bench	Burn/seed/chain	IV	YES
Crescent Crk/Penn. Allot.	Fence 4-strand barbed	II	YES
Apple Brush Bench	Chain/seed	IV	YES
Apple Brush Bench	Fence 3-strand barbed	IV	YES
Pete Steele Bench	Interseeding	IV	YES
East Coyote Bench	Burn/Seed/Chain	IV	YES
East Coyote Bench	Fence - Temp. Electric	IV	YES
NE of King's Chaining	Burn/Seed/Chain	IV	YES
West of Cat Ranch	Burn/Seed/Chain	IV	YES
Tarantula Mesa	Burn/Seed/Chain	IV	YES
Tarantula Mesa	Burn/Chain (Maint)	IV	YES
Tarantula Mesa	Fence 3-strand barbed	IV	YES
Nasty Flat	Aerial Seed (in Bigsage)	II	YES
Brown's Hole <sup>a</sup>	Aerial Seed (in Oak and Aspen)	II	YES
Dugout	Burn (Maint)	II	YES <sup>b</sup>
Airplane Spring	Roller-Chop (Maint)	II	YES
Dark Canyon	Burn (Maint)	II	NO
Crescent Creek <sup>c</sup>	Roller-Chop (Maint)	IV	YES
Coyote Bench	Roller-Chop (Maint)	IV	YES

<sup>a</sup> This project is inside the Mt. Pennell WSA.

<sup>b</sup> This alternative is to maintain an existing treated area by burning. This treatment would not measurably affect the current form, line and texture.

<sup>c</sup> The Crescent Creek Area was chained December 1966. Approximately 40% of the Crescent Creek Chaining is inside what is now the Bull Mountain WSA. However, the land inside the WSA plus at least a 1/8-mile contiguous strip would not be treated.

#### j. Land Use Plans and Controls

No State or local land use plan policy or control would be affected. Five of the proposed projects actually implement decisions in the current BLM land use plan; all others are in conformance except one. This one (Dark Canyon) appears to violate VRM decisions in relation to Class II designations. This appears to be a dilemma in the MFP. The MFP calls for the maintenance of previous treatments, but also the preservation of VRM Classes.

#### k. Livestock and Wildlife Grazing

Table 26 shows the expected forage increase by Allotment and Treatment area.

The three year and 10 year total production increases from the treatment project would be 64 more AUM's at the third year and 50 AUM's less by the 10th year than the proposed action. The major difference would be the production from Slate Creek/Garden Basin in the proposed action

Cummulatively the net results would be about the same as that of the proposal when related to livestock and wildlife use. The production increases from treatments and related increases for surrounding areas due to vigor and volume response would be within an acceptable level of variation with about 2,318 AUM's being produced and 2,354 being needed.

TABLE 26  
ESTIMATED AUMS/IMPLEMENTATION OF MFP

Treatment Area	Total BLM Acres	Cur- rent AUM	Three Years			Ten Years		
			Acres per AUM	AUMS		Acres per AUM	AUMS	
				TOTAL	GAIN		TOTAL	GAIN
No. Coyote Bench (Burn/Seed)	1180	21	8	147	126	5	236	215
Slate/Garden Basin (Chain/Seed)	640	17	4	160	143	4	160	143
Apple Brush Bench (Chain/Seed)	300	5	7	60	55	5	60	55
Pete Steele Bench (Interseeding)	1150	18	4	164	146	7	164	146
East Coyote Bench (Chain/Seed)	380	7	4	95	88	4	95	88
NE of King's Chain (Chain/Seed)	500	9	4	125	116	4	125	116
West of Cat Ranch (Burn/Seed)	350	6	4	87	81	5	70	64
Tarantula Mesa (Chain/Seed)	800	22	5	160	138	4	200	178
Nasty Flat (Aerial Seed in oak)	100	18	4	25	7	3	33	15
Brown's Hole (Aerial Seed in Oak & Aspen)	1000	29	4	250	221	3	333	304
Tarantula Mesa (Chain Maint.)	500	83	4	125	42	4	125	42
Dugout (Burn Maint.)	919	153	4	230	77	4	230	77
Airplane Spring (Roller-chop Maint.)	1476	246	4	369	123	4	369	123
Dark Canyon (Roller-chop Maint.)	300	43	4	75	32	4	75	32
Crescent Creek (Roller-chop Maint.)	800	100	4	200	100	4	200	100
Coyote Bench (Roller-chop Maint.)	300	5	4	75	70	4	75	70
TOTAL	10695	782		2304	1522		2450	1768

### 1. Socioeconomics

Livestock permittees would have to control their livestock to protect treated areas during revegetation periods. They would also have to reduce their use during this period. Permittees might have to sell some of their livestock or find another source of feed while these areas were treated and rested. This

proposal would contribute to the continuation of the livestock industry and ranching way of life in the Wayne County area.

Table 27 shows the benefit/cost (B/C) ratio based on exclusive allocation of forage to a particular species. No benefits were calculated for any other resource than livestock and wildlife forage. If these had been factored in a much more favorable B/C, ratio would be evident (see Appendix 12 for additional information).

TABLE 27  
ECONOMIC SUMMARY/IMPLEMENTION OF MFP

PROJECT COST		PRESENT	
		VALUE	BENEFIT: COST
\$236,506	Livestock	\$152,139	0.47
	Bison	588,568	1.80
	Mule Deer	891,360	2.73
	Average	544,022	1.66

This alternative has a favorable B/C ratio, However, it is not as favorable as the proposed action.

2. Mitigating Measures

a. Cultural Resources

Cultural values would be inventoried before work began. Any sites flagged during inventory would be avoided during project work. If during treatment any previously undiscovered archaeological values were discovered, all work would stop immediately and the district archaeologist would be notified. The archaeologist would then determine what actions must be taken for avoidance, mitigation, or salvage.

3. Unavoidable Adverse Impacts

An undetermined amount of salvage or mitigation of impacts to cultural resources would be required. However, the cumulative affect of inadvertent loss of cultural resources caused by ground disturbance would still occur. Also there would be an unavoidable loss of visual quality due to the treatment area and removal of pinyon-juniper trees.

4. Relationship Between Short-Term Use of the Environment VS. Long-Term Productivity

The relationship of short-term vs. long-term would be the same as the proposal except for the non-treated Slate Creek/Garden Basin and the additional chaining in this alternative. The long term cumulative benefits to livestock and bison grazing would be compensive for short term soil and visual losses.

## 5. Irreversible and Irretrievable Commitment of Resources

The short-term loss of soils and AUMs is irretrievable. Since it is common practice to continue retreatment of areas cleared of trees to perpetuate the forage resource, it is expected the development of open space and loss of closed stands of trees would continue into the foreseeable future would be therefore considered irreversible. Any impact to cultural resources, regardless of the nature, would be irretrievable. The impacting action would be reversible, it could be stopped, but the information lost as a result would be gone forever.

### C. NO ACTION ALTERNATIVE

In this alternative none of the proposed areas would be treated. This would result in continued heavy grazing use which would eventually cause a need for grazing reduction in livestock and wildlife.

#### 1. Environmental Impacts

##### Air Quality, Cultural Resources, Visual Resources

There would be no impact.

##### a. Soil

As stated in the affected environment section the sediment yield is more than double on a pinyon-juniper area than that of a treated area. The infiltration on pinyon-juniper is about 70 percent of that on a treated area and the bareground on pinyon-juniper about twice that of a treated area. Consequently the cumulative effect of leaving 4,295 acres of revegetated areas to encroachment by pinyon-juniper and not treating 7,020 acres to provide a desirable soil cover would result in increased soil loss above that shown in Table 6 (10,730 ton/year) and contribute sediment salinity to the Colorado River System. The effect of not treating along with heavy grazing and continued pinyon-juniper invasion is expected to have a compounding affect on soil losses.

##### b. Vegetation

Table 7 shows the trend in all treatment areas to be downward or stable except Pete Steele Bench and Nasty Flat. The downward trends are in the maintenance treatment areas. The cumulative affect of allowing these trends to continue together with heavy grazing in adjacent areas would result in a compounding loss to the vegetation resource. There would be no affect to threatened or endangered species of plants. Riparian areas would continue to deteriorate as a result of heavy grazing use from all grazing animals and increased water and soil movement.

The riparian areas of the three live streams would have decreased vegetation and the appearance of these watercourses would increasingly become "boulder field" channels.

##### c. Wildlife

Habitat condition for bison would continue to decline as the cumulative affect of downward vegetation trends and heavy grazing use occurs. Deer

forage would be damaged although its decline would lag behind that of bison. Deer cover in the form of pinyon-juniper trees would increase. Neither current allocated levels of use nor current demands for bison could be met.

d. Recreation

The implementation of this alternative would have little affect on the major recreation uses in the project area other than hunting and sightseeing for bison. As openings are invaded by pinyon-juniper there would be less viewing opportunities and as forage decreases the bison would be adversely affected. These factors would have an adverse impact on hunting values.

e. Wilderness

Continued heavy grazing use in the Mt. Ellen-Blue Hills WSA could have a negative impact on wilderness values as naturalness would be reduced in areas of use concentration.

f. Land Use Plans and Controls

The alternative of No Action would not comply with the MFP in that revegetated areas would not be maintained, proposed levels of grazing could not be maintained nor would the intended treatment be completed. This alternative would require a plan amendment to delete these elements from the Land Use Plan.

g. Livestock and Wildlife Grazing

The cumulative effects of the No Action Alternative would be a forage short fall which would continue to increase, ultimately requiring a reduction in permitted livestock use and for additional limitations on size of the bison herd. The 1,978 AUM's needed to meet the current allocation for livestock would not be attained as would the 2,353 AUM's needed to meet the bison numbers. A new allocation would be considered: however, it is assumed that reduction in livestock and bison use in approximately these amounts would be needed, adjusted on a year-by-year basis as determined by wet-or-dry conditions (i.e. forage availability).

h. Socioeconomics

The economic advantages of the proposed action or the implementation of the MFP alternative would not occur. As heavy grazing continues at a rate which could reduce the ability of the project area to support the present use levels, adverse impacts to economics could occur. Federal livestock revenues would be lost and rancher income of up to \$198,263 would be foregone unless substitute feed could be obtained elsewhere in the region. It is doubtful that lifestyles or the overall livestock industry of Wayne, Garfield, or Sevier Counties would be adversely affected. The economics related to bison hunting would be reduced over the long-term. Increases in economics related to deer hunting also would be foregone.

2. Mitigating Measures

a. Land Use Plans and Controls

The land use plan would be amended to delete the requirement to maintain the present revegetation area, to delete the proposals to do rehabilitation projects and to present a new level of allocation for livestock and bison in order for the No Action Alternative to be implemented.

b. Vegetation

Limit the level of vegetation use to the sustained use level.

c. Wildlife

Bison use would be curtailed to levels which would balance with vegetation production and other use.

d. Livestock

Livestock use would be curtailed to levels which would balance with vegetation production and other use.

3. Unavoidable Adverse Impacts

The current 10,730 tons of soil loss per year from proposed treatment areas, as compared to that which would have occurred had the proposal (7,509 tons/year) and the MFP alternative (6,892 tons/year) been implemented would be 3,221 and 3,838 tons/year more with the No Action Alternative.

Cummulative loss for the project area loss would be even higher. The mitigating measures would be effective in eliminating the adverse affect to vegetation; however, these would be unavoidable reduction to livestock use, bison numbers and regional income.

4. Relationship Between Short-Term Use of the Environment VS. Long-term productivity

In this alternative the short term over use of vegetation would cause long term losses of vegetation quality and quantity and additional soil loss. The losses of vegetation would also have a compounding loss to livestock and bison until adjustment to the numbers of those animals could occur.

5. Irreversible and Irretrievable Commitment of Resources

Loss of soil, grazing use, and income would be irreversible and irretrieveable.

IX. RECORD OF PERSONS, GROUPS AND GOVERNMENT AGENCIES CONSULTED

During the early scoping phase, 28 individuals or representatives were asked to participate in the preparation of the CRM plan (see Mailing List, Steering committees, Appendix 12). After the CRM plan was finished, 20 individuals and representatives signed the document agreeing to the proposal. These signatures represent private individuals, governmental representatives, and conservation groups (see Signature Page, Appendix 13).

X. STATEMENT OF PUBLIC INTEREST

In the summer of 1987, a CRM proposal was developed for the management of the Henry Mountain CRM area. The proposed plan was developed with help from UDWR, the Range Specialist from the Utah State University, livestock grazing permittees, Utah State legislators, Utah Wildlife Federation representatives, National Park Service representatives, Farm Bureau representatives, representatives of the Utah Wilderness Association, and BLM employees at the local, state and national levels. It was understood by those involved that BLM would follow the preparation of the CRM proposals with an EA of the proposed action and alternatives, and a decision. Involved individuals were to identify funding sources.

BLM received 46 letters opposing the proposal before it was even prepared. These letters were dated as early as January, 1988.

On March 10, 1988, a copy of the draft EA was sent to approximately 61 individuals or groups. Subsequently, 26 more copies were sent out as requests were received. BLM started receiving comments as early as March 21, 1988 on the EA. Subsequent to issuance of the draft, 169 letters were received in time to be evaluated and used in preparing this Final EA. Table 28 summarizes the letters received:

TABLE 28  
SUMMARY OF COMMENT LETTERS

AFFILIATION	NUMBER OF LETTERS	TYPE OF COMMENTS
State of Utah	4	P
Livestock Affiliation	1	P
Wildlife Groups	2	P
Wildlife Affiliated Individual	1	P
Local Government	1	P
Advisory Councils	2	P
Utah Legislators	3	P
Environmental Groups and Affiliated Individuals	136	O
Environmental Groups	4	A, O
Environmental Groups Affiliated Individuals	13	A,O

P Fully in favor of the proposals.  
O Against the proposals.  
A Dealt with the adequacy of the EA.

## IX. Public Comment and Response

Of the 169 letters received, 17 commented on the technical content of the EA. All 17 letters voiced opposition to the proposal. Comments in the other 136 letters voicing opposition to the proposal raised five different issues. These were responded to as general responses 1 through 5. No responses were prepared for those who favored the proposal. The remaining 17 letters were analyzed in detail and specific responses were prepared for specific comments. These specific comments have resulted in significant changes in the Final EA. Fourteen letters were received voicing complete support for the proposal. No responses were prepared for any of the supportive letters.

Those who made general comments didn't question the text of the EA, but questioned general management decisions and procedures. There are five general comments and responses. The general comments and responses follow:

### General Comment No. 1

The Utah Wilderness Coalition's (UWC) proposed wilderness areas must be managed in such a manner that its wilderness values be preserved for possible future designation by Congress as wilderness. (This is sometimes referred to as the Mt. Ellen-Blue Hill, Mt. Pennell, and/or Ragged Mountain UWC wilderness areas.)

### Response to General Comment No. 1

This issue has been raised in the past. It was a major point of comment in the Utah Statewide Wilderness EIS. Determination of Wilderness Study Area boundaries was made in Nov. 1980. A discussion of this process can be found in several other documents, particularly, the Utah Statewide Wilderness Draft EIS volume I, page 11.

After the decision on WSAs was made the boundaries on both the Mt. Ellen-Blue Hills and Mt. Pennell were appealed by environmental groups to the Interior Board of Land Appeals (IBLA). IBLA remanded the areas back to BLM for further study. BLM again made a decision that the original WSA determinations were valid. This was again appealed by the same environmental groups to IBLA. IBLA instructed BLM to add 47,000 acres to the Mt. Pennell WSA, and 20,000 acres to the Mt. Ellen-Blue Hills WSA. The Ragged Mountain area was never an area of appeal during this process.

The following is a policy statement from BLM Manual 8550.06:

The Department of the Interior's Management policy is, except in the cases stated below, to continue resource uses on land under wilderness review in a manner that maintains the area's suitability for preservation as wilderness. This Interim Management Policy will be in effect until the following occurs:

A. "In some cases, the BLM wilderness inventory process may have determined that a wilderness inventory unit does not meet the Wilderness Act's definition of wilderness. In such cases, as soon as the BLM State Director announces a final decision and any relevant administrative review process is exhausted, the Interim Management Policy no longer applies."

The UWC proposal (Ragged Mountain, Mt. Ellen-Blue Hills, and/or Mt. Pennell wilderness) is one of these cases. It has been determined that this area lacks the mandatory wilderness characteristics to qualify it as a WSA; therefore, the Interim Management Policy is not applicable. The area in question is outside of the BLM recognized WSAs and is managed according to provisions of the current BLM land use plan.

General Comment No. 2

We are opposed to the destruction of a "natural" pinyon-juniper forest.

Response to General Comment No. 2

There may be differences of opinion over what constitutes a "natural" pinyon-juniper forest. In the Henry Mountains there are stands of these trees with no tree being over 120 years of age to stands with trees 400 to 600 years of age. It is evident that the older trees are in the more rugged and barren sites containing very little understory or vegetative ground cover. The publication "Developing Strategies for Rangeland Management", National Academy of Science, 1984, page 1310 (National Research Council/National Academy of Science, 1984), contains an article by Dr. Niel West. This article states:

"Studies of size-age-form class structure of pinyon and juniper trees and associated understory in a number of areas (southwestern Utah, Cottom and Stewart 1940; Arizona, Arnold et.al. 1964; Texas, Smith and Echentin 1964, Ellis and Schuster 1968; Nevada, Blackburn and Tueller 1970; Idaho, Buckhardt and Tisdale 1973, 1976; Oregon), have all shown a predominance of small, young, bushy trees and lack of dead snags from older trees. For instance, Tausch et.al. (1981) found in a random sample of 133 stands on 18 Great Basin mountain ranges that only about 50% of the samples had any trees greater than 125 years old. This means that there was a great increase in tree reproduction after 1860 and that at least one-half of the area in the Great Basin now occupied by pinyon and/or juniper is of rather recent, historical derivation."

The same article explains that not only has the woodland belt expanded, but the density of trees within the central part of the belt has greatly increased.

"The general lack of tree snags, but abundant skeletons of shrubs, in tree-dominated stands indicate that these changes have been recent."

A change in climate could not have caused this to happen since relict areas have remained as savannah. The article continues:

"The triggering of vegetation changes closely corresponds to the regional introduction of livestock (Cottom and Stewart 1940, Blackburn and Tueller 1970). In addition to reductions of herbaceous competition by heavy livestock grazing, the domestic animal broke up microphytic crusts, and dispersed juniper seed in their feces. Excessive livestock grazing also reduces fine fuels which carry fires. These changes coincided with the advent of intensive fire prevention and suppression efforts on the part of ranchers and land management agencies. Fires have been shown to tip the competitive balance in favor of herbaceous species (Martin et.al. 1978, Wright et.al. 1979). In the absence of fire, the conifers appear to be the climatic climax dominants."

"Cottom (1971) has estimated that as much as 80 percent of the pinyon-juniper woodlands in the Great Basin have resulted from those causes cited by West. This indicates that only one-fifth of the area capable of supporting those woodlands would be expected to have mature tree stands at any given time, while the remaining 80 percent would support plant communities in various other stages of succession.

In an abstract of papers from "The Pinyon-Juniper Symposium" held at Utah State University (USU, 1975) in May 1975, Warren P. Clary reports on findings from Barney and Frischknecht that the increase in tree stand density and expansion into grassland is a result of overgrazing and fire control.

The tree removal projects contained within the CRM area are proposed on areas with a preponderance of young trees. They probably would not be there had man not intervened with livestock grazing and modern fire suppression techniques.

Since trees in the pinyon-juniper type are slow growing, a single natural dramatic event, such as fire, can substantially affect tree survival. It is a natural phenomenon that as trees become established their survival depends on depletion of the ground cover, which reduces fire-carrying opportunity. It is commonly observed that as tree canopy increases ground cover decreases.

Unless fire is allowed to enter and reduce the tree canopy occasionally the woody vegetation continues to increase. Stands fully stocked by trees have very sparse understories. The article by Dr. West states:

"If fire now occurs in dense stands, it often is a fire storm that destroys every living thing. These types of fire were not part of the history of the type."

The fires that occurred near the Little Sahara Recreation site in Juab County in 1986 are classic examples of this type of fire storm. Stands of trees in excess of 400 years of age were destroyed in this fire. Dr. West continues:

"If present trends continue, all but the more marginal sites for Great Basin pinyon-juniper woodland will have lost most of their understory productivity by the year 2000 (West et.al. 1979). Trends are probably similar in other regions (Johnson and Elson 1979, Shinn 1980). Control of grazing animals will not change the successional trajectory (Arnold et.al. 1964). Only the more drastic actions of tree harvests, prescribed burning, and mechanical or chemical treatment will allow return of forage producing conditions."

General Comment No. 3

Tax money should not be spent to subsidize the livestock industry. Too much of the forage is being allocated to livestock.

Response to General Comment No. 3

A good share of the funds earmarked for the treatment projects and structures proposed in the CRM project area are from the grazing fees collected from livestock use on the Federal ranges in the Richfield District. These are called "Range Improvement" funds and represent a 12.5 percent return of

grazing fees to be used in improving the Federal range. Therefore, these monies are not tax money. Appropriations of general funds are designated for specific activities on Federal land. BLM does have some discretion as to where they are spent locally, but not as to the specific kind of work to be done.

The statement that "too much forage is being allocated to livestock", is a matter of opinion. The EA states that an estimated 2,168 AUMs would be gained from the treatments, but would not be allocated at this time. This point is stated more clearly in the final EA under the section titled "Description of the Proposed Action and Alternatives", Part V.A.

It is noted, however, that some livestock permittees would be benefited by the proposal since current allocation now exceeds availability on the Nasty Flat Allotment by 75 AUMs, the Pennell Allotment by 34 AUMs, the Steele Butte Allotment by 1,407 AUMs, and the Crescent Creek Allotment by 98 AUMs. It is likely that these AUMs would be reduced from active preference should the proposal not be implemented. This point has been added to the discussion of impacts on livestock grazing for both the proposed action and the alternatives.

The Henry Mountain Grazing EIS also points out that the area lacks 100 AUMs to satisfy the allocation to using the range. As with livestock, if the proposal is not implemented, then bison would need to be reduced similarly.

#### General Comment No. 4

An EIS needs to be prepared to cover the items identified in the Coordinated Resource Management (CRM) proposals.

#### Response to General Comment No. 4

The EA is tiered to the Henry Mountain Grazing EIS. The relationship between the current land use plan (MFP), Henry Mountain Grazing EIS, and the Coordinated Resource Management (CRM) proposals is explained more clearly in Section II, "Background", of the final EA. This EA is not a plan amendment.

The CRM proposals were taken from the Henry Mountain MFP/EIS plus some new ideas from the CRM team.

Of the 17 discrete CRM proposals, five implement decisions in the MFP, twelve are in conformance with decisions and objectives of the MFP, and one is not in conformance with decisions and objectives of the MFP.

Except for a pipeline, and some fencing, all projects are identified by location or units (or both) in the Henry Mountain MFP and Grazing EIS (see Table 1 in the EA).

#### General Comment No. 5

Chaining should not take place in Wilderness Study Areas.

Response to General Comment No. 5

It is very clear in the EA (see environmental impact section Wilderness) that no surface disturbing activities will occur within a WSA or even within 1/8 mile of a WSA. The only project even proposed within a WSA is the overflight in Brown's Hole to aerially distribute seed of native species. Confusion may have come from some chaining proposed within the so-called UWC wilderness proposals. However, these are not WSAs. This point is covered in response to General Comment No. 1.

## Specific Comment Letters

The following detailed specific comments about the EA were received in letters from the public.

### LETTER 1

COMMENT 1: Livestock should be eliminated from the bison grazing area. This would eliminate the "need" to treat 12,600 acres.

RESPONSE: Elimination of livestock use and reallocation to bison would require, the preparation of a plan amendment. Though this seems like a simple process, it would take several months, a great deal of effort and funds.

The alternative of elimination of livestock grazing was discussed in the "Grazing EIS". It was dismissed since it was not a viable alternative. The following is a quote from page 13 of the EIS:

"The elimination of livestock grazing was dismissed as an alternative because it did not meet the test of a reasonable alternative as directed by the Council on Environmental Quality Regulations (1978)."

COMMENT 2: None of the 12,600 acres proposed for treatment should be chained, burned or treated in any other way. All this acreage should be left to grow naturally.

RESPONSE: Analysis in the EIS does show that on balance, the proposal has greater merit than "no action". Land managers understand that No Action is the worst possible alternative. Multiple-use land managing agencies are constantly walking the multi-bladed razor's edge trying to balance land use demands, environmental protection, and economic prudence.

Dr. Niel West in "Developing Strategies for Rangeland Management", National Research Council/National Academy of Sciences, page 132, states:

"In the case of pinyon-juniper woodlands, inaction is the worst choice for the land. Successional trajectories were started long ago and their consequences are undesirable from most points of view. Our most serious concern should be for the likely acceleration of soil erosion and threat of fire storms that tree dominance brings. If site potentials are degraded, our prospects for enhancing production in the future will be diminished in an essentially permanent way."

COMMENT 3 (3) No pipeline on Tarantula Mesa should be rebuilt or reconstructed.

RESPONSE: We can only provide you with a more detailed explanation of why the project was proposed and included in the Draft Environmental Analysis for the Henry Mountain Coordinated Resource Management Plan. This is the only source of water on this mesa and it provides water for cattle, bison, deer, birds and various small mammals. The mesa has some productive sites on it, some of

which have been seeded and other areas which are proposed to be seeded. Without water this area would not be grazed by livestock, and the use by bison and wildlife would be limited to periods when water is available or for use on snow. Without use on Tarantula Mesa, competition for forage between livestock and bison is increased in other areas on the Henry Mountains. By providing water on Tarantula Mesa, livestock distribution can be improved and utilization of forage can be controlled through regulating the flow of water into troughs along the pipeline.

This project is included in the Land Use Plan for Henry Mountain Resource Area. During the Henry Mountain Grazing Environmental Statement process, this project was included and presented for public review and comment. At that time there were no negative concerns submitted to BLM.

There is a substantial investment in the existing pipeline and with reconstruction it could be restored to use. The extension of this line would provide water to proposed treatment areas.

COMMENT 4: No new fencing should be constructed.

All 187,826 acres in the Wilderness Study Areas should be permanently designated as wilderness.

RESPONSE: The construction of fences is an integral part of the total Coordinated Resource Management Plan and is necessary to achieve the management objectives for the Henry Mountains. The need for fencing is made clear in the MFP/EIS and is compatible with goals and objectives of the overall Land-Use Plan.

The Mt. Ellen-Blue Hills, Mt. Pennell, Mt. Hillers, and Bull Mountain wilderness study areas are being studied for suitability as part of BLM's wilderness review program and are outside the scope of this environmental analysis. Only Congress can designate an area as wilderness. No impairment to any of the Henry Mountains wilderness study areas will take place due to the proposal or any alternative.

COMMENT 5: I would further state that the entire Henry Mountain Complex be permanently designated as a wilderness area and that the Little Rockies be also so designated.

RESPONSE: See General Comment 1.

COMMENT 6: Air Quality How much smoke would be produced, what are the wind currents and where would the smoke go. Causing smoke problems in Capitol Reef National Park is a violation of air quality standards and who wants to look at smoke anyway.

RESPONSE: Smoke from open range and forest fires does not contain the harmful constituents found in the burning of fossil fuels in high temperature furnaces. Though the smoke would be visible, it would be of very short duration. With prevailing winds from the west, the risk of smoke in Capitol Reef National Park is nearly zero. EPA has concluded that smoke from prescribed burns, though spectacular on occasion, is negligible in impact. Naturally blowing dust violates particulate standards many times over what

would be expected from smoke from prescribed burns. A discussion on air quality has been added to the EA.

COMMENT 7: Watershed You are saying the existing pinyon-juniper forest pollutes the Colorado River. This is absurd, absolutely no justification for removing natural vegetation and planting livestock forage.

RESPONSE: The Draft Environmental Analysis for the Henry Mountain Coordinated Resource Management Plan did not say the existing pinyon-juniper forest pollutes the Colorado River. The draft EA did state, "the proposed projects would decrease soil erosion and improve watershed conditions after two years. This would reduce salinity in the Colorado River System".

In this reference, what is meant is the proposed treatment projects would increase vegetative cover, which in turn would provide a more stable watershed condition (Jensen, 1972). This would be done by decreasing sediment yield from those sites which drain into the Colorado River System (Payne, 1980; USDI, BLM, 1981; Buchanan and Chappell, 1988).

However, we should point out some misconceptions relayed in the second statement you have made in your comment on watershed. You referred to pinyon-juniper as the natural vegetation. The Bureau of Land Management studies show that pinyon and juniper has increased and now dominates sites in the CRM treatment area, which, under natural conditions, it would not occupy or be a minor component of the community (Ecological Site Descriptions Henry Mountains.)

Since the arrival of the first settlers in the west, the pinyon-juniper type has extended its range and dominance by invading millions of contiguous grassland and shrub types. Once established, pinyon-juniper inexorably gains site dominance and eventually replaces most of the vegetation that formerly occupied the invaded site (Arnold, et al., 1964).

Past overgrazing and suppression of wildfires have resulted in reduced forage production, increased tree density and expansion of the pinyon-juniper type (Comb, 1958; West, et al. 1977). "The net result of these successional changes is that there has already been a sharp reduction in forage productivity and probably accelerated erosion throughout the type." (West, 1984)

As the density of the trees increases the management options decrease. If a site loses understory vegetation as a result of competition from pinyon-juniper trees, then fire is lost as a control option. This leaves chemical and/or mechanical methods of control as the only visible options available.

The other misconception is that BLM is removing natural vegetation and planting livestock forage. If BLM were considering livestock forage alone, the agency would not plant a mixture of grasses, forbs and shrubs. Only grasses and some forbs which are preferred by livestock during the season they are grazing would be planted in these treatment areas. This would provide for a more complete conversion which would be more suitable for livestock. However, the CRM projects are designed to be multiple use and by leaving the debris in place, watershed condition and wildlife habitat is enhanced (Gifford and Shaw, 1973; Gifford et al 1970; Gifford, 1973).

COMMENT 8: Vegetation Removing cattle from the Henrys is the solution to any personal problem. At the ridiculous prices \$1.35 per AUM which BLM charges the American Public is being robbed. Either get rid of the cows or charge fair market value.

RESPONSE: The grazing fee of \$1.54/AUM is set by mathematical formula.

For purpose of analysis in this EA, a value of \$5.65 per livestock AUM is used. Debate still continues on what the proper figure should be (Appendix 12 gives additional information).

COMMENT 9: Speaking of which, how much will all this cost the American taxpayer and how long will it take for the Treasury to get paid back for all this work?

RESPONSE: A summary of the benefit/cost (B/C) analysis is found in the impacts section of each alternative. Further information on economic analysis is found in Appendix 12.

COMMENT 10: Anyone who has ever seen chaining projects knows they do not have "the appearance of naturally occurring meadows".

RESPONSE: The lines around proposed treatment areas would not be straight, but would follow contours and other geographic features so the openings from a distance would appear natural. The slash would remain behind to improve cover for vegetation regrowth and erosion control. This slash would be visible when viewed by the nearby observer.

COMMENT 11: Drilling/Seeding A cultivated appearance? This makes no sense. All of the methods of clearing are unacceptable.

RESPONSE: Drilling does leave the appearance of a cultivated field, such as grain or any other crop. Nature's way of clearing pinyon-juniper is by fire. BLM also proposed to use fire as much as possible but, when fire will not carry through the vegetation, other methods must be applied. Accepted (conventional) methods are chaining, drilling, etc. to control pinyon-juniper. Contrary to the comment, the most unacceptable alternative from the standpoint of multiple-use wildland management is to do nothing. The response to Comment 2, Letter 1 makes the point very clear.

COMMENT 12: Riparian Areas Why is a riparian area desirable? What's wrong with the naturally occurring area?

RESPONSE: Riparian habitat is a natural vegetation that grows near streams, and provides water and living space for wildlife (permanent or intermittent). It is usually unique or limited in arid regions like the Henry Mountains and is, therefore, of great importance to a wide variety of wildlife. Furthermore, it is BLM policy to enhance or maintain riparian areas in a healthy vegetal condition.

COMMENT 13: Wildlife Elimination of livestock grazing is all that is needed to help the bison and other naturally occurring species. Grazing of livestock should not be done in the Henrys.

RESPONSE: See Letter 1, Comment 1.

COMMENT 14: Cultural Resources I am amazed that no inventory of cultural resources has been done. Surely this is critical as part of the preparation of any environmental assessment.

RESPONSE: Both of your assumptions are correct: No cultural resource inventory has been done for this project as yet, and the consideration of cultural resources on any project is critical. However, complete consideration of cultural resources during the EA process requires intensive (Class III) inventory of the entire area affected by project implementation, and the timing of these inventories is dependent on several factors. At this point in project planning, it is sufficient to make general EA statements about the affected environment based on a literature review and what we know of the area. See cultural resources portion of the EA. Once the project is firmly established, the intent of the National Historic Preservation Act as contained in its regulations in 36 CFR 800 is fulfilled.

The regulations of the Advisory Council on Historic Preservation contained in 36 CFR 800 govern the Section 106 review process established by the National Historic Preservation Act of 1966, as amended. The most recent version of these regulations published in the Federal Register on September 2, 1986, allows for flexibility in timing the implementation of these regulations.

In summary, cultural resource inventories must be done prior to any project implementation, but the timing of these inventories is flexible.

COMMENT 15: Visual Aspects The so-called "range improvements" will do nothing but destroy the visual beauty of the area. "Parks and meadows" are not necessary in the Henrys.

RESPONSE: The text has been changed. The proposed range treatments would change some visual aspects in the Henry Mountains. Some observers would say the chained land does look like parks and meadows. The change is from a closed pinyon-juniper forest to open space where wildlife and other scenic attractions may be seen. The impacts have been minimized by the proposed design of the projects (see description of the proposed actions and alternatives, Part B.)

The alternatives are acceptable and could be implemented. This is made clear in Response to Comment 2, Letter 1.

COMMENT 16: However, the third option, which is not mentioned, is to eliminate grazing in the Henry Mountains. This single action would do everything positive for the environment and area. Soil erosion would be reduced, grazing for bison and other wildlife improved, and the visual appearance protected.

RESPONSE: See Response to Comment 1, Letter 1.

Actually, the livestock use is under control, and "this single action" would not do very much to help the overgrazing problem. In the Pennell Allotment, actual use by livestock is down to about 40% of normal use and many large places are very heavily grazed. There is a clear need to provide more forage and the greatest need for bison is spring grazing.

## LETTER 2

COMMENT 1: . . . the effects of chaining/reseeding pinyon-juniper woodland on vegetation and visual resources are downplayed to the point of being misleading and inaccurate.

RESPONSE: The environmental analysis is clear in identifying the impacts on vegetation and scenic quality. There is a thorough discussion of the impacts resulting from treatment methods in the Analysis of Proposed Action and Alternatives. Impacts on visual quality, while subjective in nature, are measured by the Visual Resource Management system. These impacts are also detailed in the Analysis of Proposed Action and Alternatives.

COMMENT 2: The EA proposes to totally destroy large areas of a native, natural plant community and replace it with an artificial community composed of exotic species.

RESPONSE: Response to General Comment 2 discusses the "natural" pinyon-juniper community.

Much of what is found in the Henry Mountains is exotic, including cattle, bison, chukars, and cheatgrass. Included are many others such as crested wheatgrass, orchard grass, smoothbrome, alfalfa, small burnet, etc. Some of these "exotics" have been there in excess of 100 years. Experience and scientific studies have shown that these exotics are more resilient than "native" species when used by large grazing ungulates. Naturalness does not exist in most of the areas proposed for treatment. An exception seems to be Brown's Hole where only seeds of native species are proposed to be broadcast by aircraft.

COMMENT 3: On pages 18 and 21, the resulting visual impact is presented in a positive, and very inaccurate, way ("naturally occurring meadows or openings", "parks and meadows"). I am familiar with every existing chaining/reseeding in the Henry Mountains, and they bear no resemblance whatsoever to a "naturally occurring meadow". On the contrary, they are unsightly scars that stand out clearly many miles distant. The negative visual impact does not decrease with time; some of the most visually offensive chainings are 20 years old. In short, chaining/reseeding has a very severe negative impact on the visual resource; the document must state this plainly.

RESPONSE: See Letter 1, Comment 16. Even recognizing the subjective nature of impacts on visual quality, the statement concerning parks and meadows is an opinion of some observers.

## LETTER 3

COMMENT 1: Although I enjoyed the beauty of the Henrys, I was disturbed by the broad areas that had been desolated by chaining: such as Coyote Benches and Head of Bullfrog. It is too late to undo the damage to those and other areas already chained, but it is not too late to stop future chaining. The Henrys provide us with a unique wild treasure; I urge that we keep it that way!

RESPONSE: There are 187,826 acres in the Henry Mountains (Mt. Ellen-Blue Hills, Bull Mountain, Mt. Pennell, and Mt. Hillers wilderness study areas) being studied for wilderness designation. No impairment of the Henry Mountains wilderness study areas will take place.

#### LETTER 4

COMMENT 1: The question needs to be addressed from a national, not a State or County level. Having authored a book "Natural regions of the United States and Canada" that has been used as a text book in about a hundred colleges and universities and another text book, "Surficial deposits of the United States" I can claim to qualify as expert witness on the national level in evaluating such activities as chaining in the arid and semiarid lands of the United States. I recommend that BLM show more understanding of those textbooks, of USGS Prof. Paper 228, and of Powell's monograph about the arid lands of the west. Chaining anywhere in the arid lands cannot possibly be justified on a cost-benefit basis.

RESPONSE: See Response to General Comment 2. The EA has been strengthened to show the result of the benefit-cost analysis. The analysis shows that there are some very definite benefits from the proposal, as well as the alternatives. Appendix 12 adds additional information to this subject.

COMMENT 2: Even if chaining did increase livestock's production three-fold, it would do so for very few years before the woodland again takes over. And the number of livestock that could be accommodated still would be a tiny fraction of the production that could be obtained from a few acres of this country's cornbelt. If livestock production is to be subsidized, it should be done so in America's cornbelt, not by chaining the arid and semiarid lands.

RESPONSE: A benefit-cost analysis has been completed for the proposals. This analysis shows a definite benefit from the proposals and alternatives. Appendix 12 gives more information on this subject.

The projects proposed do not represent a subsidy. Funds to be used are returns from grazing fees earmarked for this purpose (see General Comment 3).

#### LETTER 5

COMMENT 1: I believe that given the scope of the projects proposed, an environmental impact statement in conformance with the National Environmental Policy Act is warranted. A finding of no significant impact for a project of this magnitude would be inappropriate. The impacts on wildlife, cultural resources, vegetation, and water quality are significant according to the draft environmental assessment. I question how positive many of these significant impacts are and whether the benefits derived are worth the expense.

RESPONSE: See Response to General Comment 4. A finding of no significant impact would be premature at this time. An interdisciplinary team, along with public comments, will determine impacts. After analysis, the District Manager will declare a finding of significance. An economic analysis has been prepared to help determine whether the benefits are worth the expenses. The results of this economic analysis is shown in the environmental impacts section of the proposal and each alternative. Also see Appendix 12.

COMMENT 2: Whenever the forage available to wildlife and livestock is limited, BLM seems to never seriously consider the obvious alternative of reducing livestock numbers. In the draft EA this alternative is dismissed as "would not be in conformance with the MFP". The Management Framework Plan appears to be an unpublished local administrative document which is hardly legally binding and dates back to 1974. Perhaps it's time for a re-evaluation of all of the alternatives.

RESPONSE: We are not using a 1974 document, but we are using a current land use plan (MFP which dates 1982), which is a legally required document and is directed by FLPMA. See Response to Comment 1, Letter 1.

COMMENT 3: The major benefits of this project are to the 50-odd livestock producers with grazing permits in the area. This \$200,000 subsidy of the livestock industry on top of the already low grazing fees is not a wise investment. At the rate of return from grazing fees, how long does BLM expect it to take to pay off these temporary "range improvements"?

The draft environmental assessment lacks any supporting evidence documenting the likelihood of success of two of the stated purposes of the project. Not a single reference is cited which supports the claim that the projects will reduce soil erosion (which in that region is a natural geological process) and reduce salinity of the Colorado River. Reducing AUMs and keeping cattle out of riparian zones would probably have a far greater positive impacts on soil erosion, yet BLM seems unwilling to consider that alternative.

RESPONSE: See Response to General Comment 3.

Soil erosion is a natural process, however, the quantity of soil loss can be influenced by land management actions. Increased ground cover reduces overland water flow which can reduce erosion. "It is generally agreed that vegetation is the most important watershed management variable"(Colman, as cited in Smeins, 1975). Additional data and references regarding erosion and salinity are in this final EA. Refer to soils and watershed sections, and Appendix 11

COMMENT 4: It is stated that all cultural sites will be flagged and will be worked around. Is BLM concerned that these flagged areas or the small islands of trees left in the wake of chaining will be an obvious target for pothunters? Are the operators of the bulldozers doing the chaining qualified to recognize a cultural site after they run over it and will they call the archeologist? If the work is contracted are they likely to want to stop work and wait several days for the archeologist to evaluate the site?

RESPONSE: The archaeological profession has been concerned about these "islands"of trees for years, but there is really no suitable alternative. The only way to protect surface sites during chaining projects is to not chain them. And that leaves "islands". It has been suggested by some that perhaps the trees in site locations could be cut by hand, but that would just substitute islands of stumps for islands of whole trees, and the problem would remain. When a site is located reasonably near the edge of a project area, it is possible to relocate the project boundaries so as to exclude the site from the project area. This has been done in the past and is a very effective

means of avoiding sites. But, when the sites are located out in the middle of the project area, there is nothing that can be done other than to chain around them. It has also been suggested that "false islands" be left as decoys of sorts, but a simple process of elimination would reduce this ploy to a rather ineffective delaying tactic. It is true that these islands could serve as a signal to pothunters, but experience teaches that pothunters don't need BLM to mark sites for them. They always seem to arrive there on their own. BLM does leave islands for wildlife as well as for cultural values.

The answer to the next part of your comment depends on the situation. Bulldozer operators are by no means qualified archaeologists and, for that reason, it is sometimes required that an archaeologist be on-site during project implementation so that subsurface sites can be dealt with appropriately. But the determination to have an archaeologist "on-site" during surface disturbance is based solely on the quality and frequency of sites recorded during the pretreatment project inventories. If the archaeologist feels, based on professional judgment of the specific circumstances in the field, that on-site monitoring during project implementation is necessary, it will be done. Otherwise, observation by those in the field is the only alternative.

Project contractors are never delighted at the prospect of shutting down while the archaeologists evaluate new sites, but that is specified in standard project mitigation and is made part of all contract stipulations.

#### LETTER 6

COMMENT 1: This chaining project requires an Environmental Impact Statement because of its magnitude, cost, and potential for irreversible change.

RESPONSE: See Response to General Comment 4.

COMMENT 2: The need, or justification, for this project ought to be analyzed in some detail. Whom will it benefit? What is BLM's cost-benefit analysis? Will chaining in fact "improve" in the first place . . . e.g., what is wrong with these places now?

Insufficient data exists about how chaining affects vegetation and wildlife. The EIS process should allow BLM to come to an informed decision.

I have grave concerns that chaining in the Henrys would have significant, perhaps deleterious, impacts on watershed, soil erosion, scenic values, wilderness values such as solitude and recreation, and air quality.

RESPONSE: See Response to General Comment 4. The purpose of the EA is to answer concerns on environmental impact. The EA has been revised to answer the questions asked.

COMMENT 3: Cultural resources are especially at risk. The Statewide Wilderness Draft EIS says that these areas have "moderate to high potential for the discovery of additional sites." [Vol. IV, Mt. Ellen p. 19 and Mt. Pennell p. 18.] How thorough is current inventory of sites? How might man-caused changes in erosion affect these resources? Will there be vandalism

during the project? Will there be vandalism in non-chained islands left around known sites? Has BLM considered applying the concept of Limits of Acceptable Change to this matter? All these are serious questions which need the scrutiny of an EIS.

RESPONSE: Cultural resource inventories are done on a project-reactive basis. That is to say, when a project is proposed, inventories are done in those specific areas prior to project implementation. There is really no such thing as the "current inventory of sites" you mention. What we do have are many scattered inventories whose locations are necessarily tied to project work. The affected environment information contained in this (or any) EA is based on previous inventories conducted in the general area (this section of the EA has been enlarged somewhat). Prior to project implementation, Class III (intensive) inventories are done to locate and record all cultural resources in the project area and mitigate those warranting such treatment.

Erosion resulting from the project is discussed in the EA. It states that the soil would be temporarily exposed to increased erosion for one or two growing seasons. This is a rather insignificant impact that would probably not affect cultural resources appreciably.

Regardless of the body of legislation against it, there has always been and will probably always be vandalism. For a discussion of vandalism in the non-chained areas around sites, please refer to Response to Letter 5, Comment 4.

COMMENT 4: These areas have been proposed as wilderness by the Utah Wilderness Coalition. To chain these lands before Congress decided on a Utah Wilderness Bill would be to impair the public's trust in BLM.

RESPONSE: See Response to General Comment 1.

#### LETTER 7

COMMENT 1: The alternative of no action is dismissed by claiming that "vegetation resources will continue to deteriorate". No consideration seems to have been given to the obvious alternative of reducing the number of cows or bison, no value was assigned to the thousands of acres of pinyon-juniper that would be destroyed. The only use or resource that is given any serious consideration is more grazing.

RESPONSE: Several people have evaluated treatment of pinyon-juniper and have concluded that to do nothing would be the worst possible choice. See Response to Comment 2, Letter 1, and Response to General Comment 2. The EA points out that no commercially economic value exists for the pinyon-juniper trees on the planning area.

#### LETTER 8

COMMENT 1: I believe that their numbers can easily be controlled through hunting and maintaining healthy mountain lion and wolf populations. I also feel bison herds should be started on other suitable BLM land.

RESPONSE: It is the responsibility of the Utah Division of Wildlife Resources to regulate the numbers of big game animals. The current agreement between UDWR and BLM is for a population of 200 yearling and adult bison following the annual hunt. Implementation of the CRM proposal or the MFP Alternative is one way to increase the forage and the numbers of bison. Predators of big game animals like mountain lion are found in the Henry Mountains. It is not known if there is any significant predation on bison from the mountain lions. BLM does not have any information on their distribution and abundance. There are no known wolf populations in the Henrys.

COMMENT 2: I also oppose the plan on the grounds of visual resources. Extensive chainings, drill seeding, and fencerows will negatively impact the scenic qualities of the area.

RESPONSE: See Response to Letter 1, Comment 16, and Letter 2, Comment 1.

COMMENT 3: The MFP seems far too stringent and should be modified to allow for decreased cattle grazing.

RESPONSE: The MFP was approved in 1982. Several alternatives were evaluated including a decrease in livestock grazing. A cursory evaluation of the MFP and other planning documents shows reduction of livestock within the Henry Mountain Planning Area of from 10 percent to 100 percent of grazing preference. Present allocations for livestock use, shows there are 6 allotments, which have been removed from Sawmill Basin and Dry Lakes allotments and from South Caineville Mesa and Cave Flat. Table 9 shows that Steele Butte and Crescent Creek allotment in the project are being used below the preference levels.

COMMENT 4: The assessment states that cattle industry comprises 85% of the agricultural business for the 3 counties. What is the total business income of the 3 counties and what percent is the cattle industry in this total?

RESPONSE: The total non-agricultural income for the 3 counties in 1986 was \$97,034,000 and the total income for the same counties was \$211,591,000; thus, agriculture contributes 54 percent of the total income.

COMMENT 5: I am totally against any chemical methods of improving forage. We are dumping far too many poisons into the environment with unknown consequences and this trend needs to be reversed.

RESPONSE: This alternative has not been carried into the Final EA because we could not find many environmental advantages.

COMMENT 6: If it is decided to proceed with the plan, I favor burning with aerial seeding. This would result in the least amount of scenic impacts. I would also encourage monitoring plans prior to any treatments, as well as during and after. Many of the conclusions in the environmental assessment are based on theoretical data and may be totally wrong.

RESPONSE: The alternatives of burning and seeding are evaluated in the EA. The EA is based on data and professional judgement. There is scientific data to show advantages to vegetation treatment.

COMMENT 7: Specifically, I question the success rates of seeding and containing erosion. Total success rates in Appendix 1 seem to average 60%. Won't increased erosion on the other 40% offset any gains made on successful areas?

RESPONSE: Information on how seeding success rates are determined has been included in this final EA. See Affected Environment, soils section. Success rates are given in a range of probabilities. The 70% rating, as an example, indicates you could expect the first time seeding effort would result in a successful seeding for seven out of ten years. Even an unsuccessful seeding wouldn't equate to increased erosion, as litter would be left in place and other vegetation would reestablish. Refer to soils section in Environmental Impacts. Also, the methods used in calculating success rating seldom project above 70 percent.

COMMENT 8: Also there is no guarantee that bison are going to take advantage of treated areas, and I do not understand how big game is going to benefit from edge effects.

RESPONSE: Research on the Henry Mountain bison herd clearly documents the use of chaining/seedings by bison (Van Vurean, 1979). This edge effect refers to the place where two different habitats meet, like the border between a forest and meadow. This area is very important to wildlife species because it provides escape, thermal cover, hiding cover, travel lanes, food and resting areas. (Giles, 1971).

#### LETTER 9

COMMENT 1: The map of the Proposed Action shows existing chained areas on Tarantula Mesa. The schedule on p. 4 shows that all of the Tarantula Mesa project will be chained. Why won't the existing chained area be treated by roller-chopping or burning?

RESPONSE: Roller chopping is more expensive than chaining, and it is used on young vegetation which would not be killed by a chain. The vegetation on Tarantula Mesa is quite brittle and would break up as the chain passes through it. Most of the already chained area would not be treated.

COMMENT 2: p. 6 Chaining/Seeding: The statement that windrowing or piling of debris creates "diversity in the vegetation aspect" is absurd. Root balls and three carcasses create eyesores, not diversity.

RESPONSE: Even "eyesores" are diverse. Now, there is a closed stand of pinyon-juniper with very little grass growing under the trees. After seeding, several different species of grass, shrub and legumes would be growing in place of a monoculture. Bunching of brush and tree debris does, in fact, have some beneficial affects, such as escape and breeding cover for some birds and small mammals. It also creates a microclimate where seeded species can germinate and become established more easily. BLM does not intend to windrow, but sometimes the chain pulls the down material into piles. The pinyon-juniper would be scattered and killed by the chain.

COMMENT 3: p. 11 Soils: No chaining or other surface disturbing activities should take place on shallow soils. No statement is made in the EA concerning the minimum soil depth for chaining, etc.

RESPONSE: BLM uses a rating guide to determine suitability of soils for range-land seeding. The guide indicates soils less than 20 inches deep are generally unsuitable for seeding. Other factors are also considered such as soil texture, waterholding capacity, annual precipitation, etc.

COMMENT 4: p. 12 Vegetation: No chaining should be done in riparian areas. The EA does not address this point.

RESPONSE: The section on Riparian Areas under the Analysis of the Proposed Action discusses briefly the effects of the plan on riparian areas. No chaining is currently planned in any recognized riparian areas within the CRM area. The standard procedures section (Proposed Action) indicates that no treatment (land disturbance) would occur within 150 feet of any riparian area.

COMMENT 5: p. 14 Recreation: This section recognizes the outstanding recreation values in this area, but nothing is proposed to minimize the effect this plan would have on recreation.

RESPONSE: The major recreation activities of the area are hunting and wildlife viewing. Hunting and wildlife uses are being enhanced by the vegetation manipulations, since the action would provide wildlife forage (see proposed action).

COMMENT 6: p. 15 Visual Resources: The project areas should still meet the standards for existing VRM classifications after treatment. The proposed degradation of visual values will have an unacceptable impact on recreational users of the area.

RESPONSE: The text has been changed. The treatment would change the recreation use, sightseeing from one of closed pinyon-juniper forest by adding open vistas, in creating the open vistas there would be degradation of the forest views. The new open vistas would provide the observer more opportunities to see bison, wildlife, other Henry Mountain peaks, as well as other distant landmarks. This is clearly a change in sightseeing opportunities, but not an "unacceptable impact on recreation users".

COMMENT 7: p. 18 Vegetation: The statement "treated areas would have the appearance of naturally occurring meadows or openings in the pinyon-juniper forest" does not agree with the statement on p. 5 that all of each area will be cleared. There is no statement concerning the maximum size of the openings. The existing chained areas on the east side of the mountains do not look like natural openings because they are too large.

RESPONSE: BLM does not propose that "all of each area will be cleared". BLM proposed to manipulate and burn tracts ranging from 100 to 1900 acres. At no time would openings be larger than 200 yards from an untreated area or island of forest cover for wildlife.

COMMENT 8: p. 21 Cultural Resources: This section is not complete. Which sites would require avoidance? Only sites that would be eligible for National Register listing? or will all cultural resource sites be avoided? How much of a buffer would be required around each site? How will these "avoided"

areas be handled so that they are not obvious and thus a target for pothunters? I assume Class III cultural resource surveys will be made on the existing treated areas if they did not have a 100% survey done previously.

RESPONSE: The policy stated here is correct. Class III inventories will be done in all project areas prior to project authorization, and all sites requiring avoidance will be flagged. Buffers will be used for mitigation as determined necessary by the archaeologist recording the sites during the project field inventories. It is current BLM policy to avoid all sites if possible, and it is legally required to mitigate those listed on or eligible to the National Register. The statement concerning potential and resources at risk is found in the EA. Existing treatments not inventoried previously will be examined.

COMMENT 9: p. 21 Visual Resources: The existing chained areas do not "look like parks and meadows" when viewed as background. The treated areas are too large. If the projects won't meet the VRM objectives, what mitigation measures will be used to reduce the visual impacts?

RESPONSE: Even recognizing the subjective nature of impacts on visual quality, the statement concerning parks and meadows is the opinion of some observers. See Response to Letter 1, Comment 16.

COMMENT 10: p. 22 Mitigating Measures: This section is totally inadequate. What about mitigation for visual resources and recreation values? Also, an archaeologist should be on site during any surface disturbing activities to make sure cultural resource values are protected.

RESPONSE: Some adverse impacts can be minimized through project design which abrogates the need for identifying mitigation; see Response to Letter 9, Comment 5.

The determination to have an archaeologist "on-site" during surface disturbance will be based solely on the quality and frequency of sites recorded during the pre-treatment project inventories. If the archaeologist feels, based on professional judgment of the specific circumstances in the field, that on-site monitoring during project implementation is necessary, it will be done. But, such a determination cannot be made until project inventories are completed. A statement of cultural resources mitigation has been added to the proposal and alternatives in the EA.

COMMENT 11: The draft EA should be redone with additional information on the proposed projects including more mitigating measures. In addition, an alternative should be added that would just rejuvenate existing treated areas and treat additional areas without surface disturbing methods.

RESPONSE: More thorough analysis of impacts have resulted in meaningful mitigating measures being added to the final EA. Also, a section under the proposed action and alternatives has been added which explains the standard procedures that would be followed in all cases. Sometimes these SOPs are called "mitigating measures".

When decisions are finally made, the decision maker may pick and choose any/or all of the discrete items identified and analyzed in the proposal or any of the alternatives. Within the proposal is the option of selecting rejuvenation only. We are unable to identify important impacts from surface disturbance alone that would not also be caused by conversion of vegetation by non-surface disturbing methods. The surface disturbance is an important factor in establishing new vegetation.

#### LETTER 10

COMMENT 1: 2. pg 38 "Impact to Wilderness Values". I apologize for being picky but this Wilderness Impact evaluation looks highly judgmental (and lacks approval). On pg 38 #2 Conclusion How can you possibly say that this massive chaining and roller chopping would be temporary and can be reclaimed by September 30, 1990 when your previous chainings of several years ago are still highly visible scars on the landscape? Pg 39 "Increases Naturalness"? These areas will be very visible from the existing and proposed WSAs and from throughout the Henry Mountain range.

RESPONSE: The impact to wilderness values evaluation only deals with the proposed aerial overseeding of native vegetation in the Mt. Pennell WSA. None of the surface disturbing projects will take place in a WSA. Therefore, the September 30, 1990 date is irrelevant.

COMMENT 2: pg. 21 "Cultural Resources". You say no inventory has been done, but one will be performed before any work is performed. Based upon your limited budget for the entire project, what guarantees can you offer to comfort me that these "inventories" won't be cursory and merely perfunctory? What is your budget for this process and what are the qualifications of the inventory takers? Since chaining will forever destroy any cultural sites, I request that you give me comfort on the quality of this inventory.

Also, how do you propose to protect these sites? Assuming you find a site in the middle of a chaining area, are you going to chain everything around the site basically leaving a red flag for so-called "pothunters"?

RESPONSE: The requirements for a Class III Intensive Field Inventory are outlined in BLM Manual 8111 "Cultural Resource Inventory and Evaluation". The objective of a Class III inventory is to identify and record all cultural resource sites within a specified and defined area. All BLM in-house inventories have to meet certain agency criteria of adequacy before being accepted by the agency.

In addition, these BLM inventory reports are submitted to the State Historic Preservation Officer and, in some cases, the Advisory Council on Historic Preservation. The budget for the project has nothing to do with the quality of the inventory. Cultural resource inventory is required by law and will be done. Otherwise, the project is not done. All archaeologists employed by or contracted by BLM or any other Federal agency have to meet certain competency criteria before they are allowed in the field.

For a discussion of mitigated impacts to sites in chaining areas, see Response to Letter 5, Comment 4.

LETTER 11

COMMENT 1: 2. Chaining would diminish the visual qualities especially from the mountain peaks.

RESPONSE: See Response to Letter 1, Comment 16, and Letter 9, Comment 5.

COMMENT 2: 3. Chaining in general is costly to the American taxpayers. The permittees who would graze there would pay only \$27,434 out of the total project cost of \$321,000. BLM would pay \$198,000 and the State of Utah

RESPONSE: See Response to General Comment 3.

COMMENT 3: 4. Chaining and/or grazing contribute to erosion.

RESPONSE: The draft EA states that chaining can leave the soil susceptible to increased erosion (1-2 years) until vegetation is reestablished. Experience in the area indicates that erosion is further reduced from the pre-treatment stage after the seeding is established. See additional data in the soils section of this final EA. Severe overgrazing must generally occur before significant changes in erosion can be observed (Smeins, 1975). Overgrazing is occurring in spotted areas from uncontrolled grazing by the bison. This condition should be alleviated by additional forage from the proposed land treatments.

COMMENT 4: 5. I am opposed to grazing on public lands when the grazing destroys the natural vegetation and therefore disturbs the natural balance of the ecosystem. When other plant species are planted, whether chaining precedes this or not, the balance is changed and often wild animals do not benefit and are sometimes harmed by the new forage.

RESPONSE: The purpose of the proposal and alternatives include restoration of portions of the range to elements of the natural environment that has been lost. It is the intention of the planting to fill niches in the ecosystem that are currently unoccupied because of the existing imbalance. The purpose of the EA is to document the significant benefits and adverse impacts of the proposal to wild animals and other resources of the area.

COMMENT 5: 6. Although major archeological sites would be avoided, the islands of trees left around these sites would be a signal to pot hunters. As BLM well knows, this is a real problem in south-eastern Utah.

RESPONSE: For a discussion of mitigating impacts to sites in chaining areas, please refer to Response to Letter 5, Comment 4.

COMMENT 6: 1. The Henrys are a good economic investment left as they are because their beauty, remoteness and relatively unspoiled wilderness qualities make them popular to vacationing Americans, most of whom don't have near their homes the vast acreage or spectacular scenery that public lands in Utah have.

RESPONSE: See Response to Letter 3, Comment 1.

LETTER 12

COMMENT 1: Primarily, the pinyon-juniper clearing projects and other elements of the proposed action constitute a "major federal action significantly affecting the quality of the human environment" for which an environmental impact statement (EIS) must be prepared by the responsible "Federal agency" (BLM in this case) in accordance with the National Environmental Policy Act (NEPA, P.L. 91-190), 42 U.S.C. 4332(2)(C).

RESPONSE: See Response to General Comment 4. The NEPA requirements have been met by the Henry Mountain Grazing EIS and this is a tiering EA.

COMMENT 2: The proposed action meets CFR criteria defining "significantly affecting the quality of the human environment" as follows:

1. Significance varies with the setting of the proposed action . . . Both short and long-term effects are relevant: 40 CFR 1508.27(a). The climate, geology, altitude and other factors unique to the Henry Mountains heighten and intensify the significance of the proposed action. For example, the high altitude, high winds, potential drought, and desert precipitation levels, extreme high and low temperatures, pervasive exposed rock and bare soil, and diminutive topsoil are characteristics of the Henry Mountains that exasperate the difficulties, potential for failure, and probability of adverse effects upon the human environment.

RESPONSE: BLM follows the regulations promulgated by the Council on Environmental Quality, dated Nov. 29, 1978. These guidelines are explicit in identifying and discussing significant environmental issues. In evaluating a proposal, it is important that the proposal be evaluated in terms of its impacts to the environment. Those items identified in the comment potentially affect the proposal. An analysis of these items is important in determining feasibility. In no way could the proposal affect these components mentioned other than topsoil which is expected to be beneficially affected.

COMMENT 3: 2. 40 CFR 1508.27(b)(1) states that impacts "may be both beneficial and adverse." A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial." BLM's belief that the proposed action will have a beneficial result is subject to misuse in assessing the threshold potential environmental significance of the proposed action.

RESPONSE: See Response to General Comment 4.

COMMENT 4: 3. 40 CFR 1508.27(b)(3) mandates consideration of "unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, . . . wild and scenic rivers, or ecologically critical areas." The Henry Mountains are rich in historical, archeological, park, scenic and ecological significance. Critical habitat for threatened and endangered species may be provided by the environment of the proposed action. The proximate National Parks, wild and scenic quality rivers, wilderness study areas and Utah Wilderness Coalition proposed wilderness areas, and basin farmlands further heighten the significance of the proposed action.

RESPONSE: The significance of the items suggested have been addressed in the EA if a potential impact were anticipated. There are no prime farmlands, wild and scenic rivers, or ecologically critical areas in the project areas.

COMMENT 5: 4. 40 CFR 1508.27(b)(5) adds the consideration of uncertain, unique or unknown risks to a determination of significance. Many possible environmental consequences of the proposed action are uncertain especially in a long-term or cumulative impact perspective. For example, the environmental consequences of unearthing and devastating native foliage, shade and natural protection, exposing the land to wind, flashflood and drought and resulting impacts on the flora, fauna, erosion, aesthetic, salinity and other concerns in question are uncertain and deserving further consideration.

RESPONSE: An interdisciplinary team was organized to determine the significant issues as required by 40 CFR 1501.7(a)(1),(2), and (3). This team, along with consultation with the public, including well known and recognized experts determine the issues. Since the proposals fall well within the realm of standard practices performed many times in many places with a wealth of experience and scientific study; none of the uncertain, unknown, or unique risks exist as per the comment. Uncertainty does not exist in the collective mind of experts in the fields of land, water, vegetation, and wildlife management. These effects may not have been stated perfectly or clearly, but they are well-known and documented.

COMMENT 6: 5. "Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment." 40 CFR 1508.27(b)(7). Considering the extensive geological, climatological, biological, archeological, accelerated erosion and salinity potential, destruction of natural values and aesthetics and full scope of significant environmental issues makes the anticipation of a "cumulatively significant impact" of pinyonjuniper clearing and other proposed projects not only reasonable, but reasonably inevitable.

RESPONSE: The cumulative aspect of this proposal was discussed in the Henry Mountain Grazing EIS. Analysis in this EA and other documents clearly indicate the "cumulative impact" of this type of work is beneficial. Scientific studies and statements by recognized experts state that to do nothing is the worst possible option. See Response to General Comment 2 and Comment 2, Letter 1, which give further information.

COMMENT 7: 6. 40 CFR 1508.27(b)(4) adds the likelihood of controversial of the proposed action as an element in the threshold determination of significance. The nature of an number of public comments evidences that the controversial of the proposed action is not only likely but definite.

RESPONSE: Approximately 169 letters were received concerning the CRM/EA. These were categorized and summarized in the statement on Public Interest in the EA. The summary shows that six different groups or entities responded to the proposal. Of the six groups, only one major group was opposed. Though the number may seem significant, 136 of the 169 letters contain similar rhetoric. Though the exact number cannot be determined, it appears that most of them were responding to some kind of action alert and personal philosophy rather than voicing particular concern for the proposal and attendant environmental assessment.

COMMENT 8: 7. 40 CFR 1508.27(b)(9) makes the "degree to which the action may adversely affect an endangered or threatened species or its habitat" a factor in a significance determination. The endangered and threatened species in the Henry Mountains that could be adversely affected by the proposed action might not establish the significance of the proposed action as conclusively as the preceding considerations but when combined with other relevant criteria, the outcome is certain: the proposed action here in question constitutes a major federal action significantly affecting the quality of human environment within the meaning of NEPA 42 USC Sec. 4332(2)(C). An Environmental Impact Statement must be prepared for the proposed action.

RESPONSE: According to BLM surveys (Neese 1987) Sclerocactus wrightiae does not occur within the proposed treatment areas. Also, due to the geologic strata and habitat type, Jones cyladenia would not occur within the proposed treatment areas. Appendix 6 correctly states that these species do occur or could occur within the "larger" CRM area. However, on the specific sites proposed for treatments, these plants and other T & E species do no occur.

No federally-listed endangered species of wildlife are known to inhabit, or even utilize, the CRM project area.

COMMENT 9: BLM Claims in the Draft EA that the proposed project would improve watersheds:

Other benefits include improved ground cover, reduced erosion, and less sediment yield, all of which would have a positive effect on salinity levels of the Colorado River system. Draft EA, p. ii.

These claims are unsupported by scientific studies of pinyon-juniper clearing. A Utah study concluded:

Infiltration and sediment data collected with a Rocky Mountain infiltrometer on 14 sites in southern Utah indicate that areas cleared of pinyon-juniper trees and seeded to grass show no consistent decrease or increase in sediment yields or infiltration rates at a given point. Of the 14 sites studied, four (all with debris windrowed) indicated decreased infiltration rates during one or more time intervals at points on the treated portion. . . . As for sediment yields, one site had significantly less yield from points on the treated area and two sites had significantly higher sediment yields from points on the treated area.

These findings are similar to the results recently reported from study of 14 sites in central Utah (Williams et al., 1969). After study of 28 treated pinyon-juniper sites (of various age since treatment) throughout Utah (involving approximately 550 infiltrometer plots), it may be concluded that generally infiltration and erosion rates at a given point have not been particularly affected as a result of treatment practices. If there are treatment effects, they may be either positive or negative. Gifford et al., 1970.

Many other scientific studies in the West have reached the same conclusion that pinyon-juniper clearing does not provide clear and demonstrable watershed benefits:

Studies of infiltration in pinyon-juniper have received the greatest amount of attention from watershed scientists. Gifford (1976) provides a concise review of the current status of our knowledge. In general, he concluded that:

1. Little difference exists between undisturbed and chained plots.
2. Increased levels of mechanical surface disturbance associated with windrowing will possibly result in reduced infiltration.
3. Grazing impacts are cumulative, detectable for a single season and in one case protection of the site for four years was required to restore maximum infiltration capacity.
4. Burning appears to reduce infiltration rates (Bunkhouse 1975).
7. Cryptogamic soil crusts increase surface roughness, increase infiltration, reduce intrinsic permeability, provide a measure of soil protection, and are slow to recover from disturbance (Loope and Gifford 1972; Bunkhouse 1975). Schmidt in USDA-FS, Intermountain Research Station, 1987, p. 475-476.

Clary et al. (1974) studied the effects of pinyon-juniper removal on watershed values in the volcanic-derived soils along the Mogollon Rim. Their results and conclusions probably also apply to other southwestern pinyon-juniper as well. The researchers found overstory removal by herbicide (picloram) to be the only vegetation treatment likely to increase water yield from Utah juniper watersheds; conventional mechanical removal methods did not increase water yield from this vegetative subtype. . . . No meaningful change in sediment yields resulted from tree removal. From the combined standpoints of water and forage production, deer response, and economics, herbicide and fire control techniques appeared to be the most effective control methods to use on pinyon-juniper woodland." USDI-BLM, 1977, p. 46.

At best, the pinyon-juniper ecosystem produces no significant water yield and most attempts to manipulate the type for increased water yield have produced marginal results (Clary and others, 1974). Considering the limited precipitation available, few research efforts have pursued this question further. Many managers still cling to the hope that some positive water yield benefits will occur from manipulation, even if unmeasurable and unquantified." Schmidt in USDA-FS, Intermountain Research Station, 1987, p. 476.

What are the sources for the Draft EA's conclusions that pinyon-juniper clearing would improve watershed? If there are any sources, how reliable are they? Why do they disagree with the studies noted above? How applicable are they to each of the sites in the Henry Mountains?

The discussion of watersheds on page 11 of the Draft EA does not quantify existing conditions or compare ungrazed to grazed areas. This information needs to be considered and presented for proper analysis and public involvement. Unfortunately the draft EA states only that:

There is no existing watershed data that will provide a long-term estimate of the amount of water and soil that can be retained on-site for untreated and treated pinyon-juniper sites. However, there is a large volume of empirical data to document the difference in water loss and sedimentation that can be expected to result from changes in ground cover. Draft EA, p.18.

These two sentences appear contradictory unless the first sentence is referring to Henry Mountain data and the second to empirical data from elsewhere. Where are the empirical data? Do any data show that sediment from the Henry Mountains actually reaches the Colorado River or is it just deposited on alluvial fans and stream channels below the mountains? Without baseline data from the proposed clearing sites in the Henry Mountain how can BLM justify the projects on watershed grounds or even assure that they will not harm the watershed?

Baseline data should be a crucial consideration before pinyon-juniper clearing projects are considered:

Both wildlife and watershed impacts [from controlling pinyon-juniper] appear either minimal or hard to predict, leaving other items such as improved livestock grazing to absorb the majority of the costs. It seems reasonable to suggest that before large sums of money are expended to modify a plant community that baseline data be gathered to reflect existing conditions (which may or may not support a previous bias) and then, if change is initiated, that data be collected to substantiate whether or not any of the initial objectives were met. If baseline and post-treatment evaluation monies are not available, then the project should never be approved. This equates to professional accountability. Gifford in USDA-FS, Intermountain Research Station. 1987. p. 36.

RESPONSE: The draft EA's conclusion that chaining/seeding of pinyon-juniper areas improves watershed is based on the premise that an established seeding significantly increases ground cover. An analysis of 59 chaining projects in the Intermountain Region used data before treatment, two years after treatment (where vegetation was well established), and five years after treatment. Data showed an increase of ground cover (vegetation and litter) from 35 percent before treatment to 54 percent five years after treatment (Phillips, 1977). Refer to the soils and watershed sections in this EA for additional references. One reference is a study on infiltration rates and sediment yield in the CRM project area. The reference to Gifford et al., 1970, indicating decreased infiltration rates occurred where debris was windrowed (pushed into piles/rows by a bulldozer). This method of treatment is not in the CRM proposal, however, the windrowed area referenced later restored to pre-treatment infiltration rates:

"During 1973, no statistical differences were observed among the primary treatment means. Apparently, the significantly depressed infiltration rates in the chained with debris-windrowed location, observed following chaining by Gifford et al. (1970) and Gifford and Busby (unpublished data), had been restored to a pre-treatment condition in terms of infiltration rates. Six years of complete protection from livestock grazing had been provided on these sites following the initial chaining treatment; therefore, it is reasonable to expect a restoration of hydrologic conditions on the area (Buckhouse & Gifford, 1976)."

See Appendix 2 for erosion condition classes for the CRM project areas. Ecological condition is discussed in the vegetation section and Appendix 2.

The first sentence, "There is no existing watershed data. . ." refers to the CRM project area. There is much data available "empirical", and references have been added to the soil and watershed sections. Also, Utah State University has compiled an information packet "The Pinyon-Juniper Ecosystem and its Management Rangeland Types in Utah". This contains data from land treatment studies.

It is obvious that sediment and salts are being transported through the many deep canyons that come off the Henry Mountains, some flow directly into Lake Powell and others into tributaries of the Colorado River.

The CRM projects are not justified on watershed grounds alone, although watershed is expected to benefit from the increase in ground cover. Increased ground cover (vegetation and litter) helps stabilize the soil, protect soils from direct rainfall, slow overland flow, and protect soil from the force of wind. The successful seedings in the area are an indication of what can occur in the project area.

COMMENT 10: Ranchers have argued for the last thirty years (and BLM has agreed for the last eight) that more monitoring studies are needed before grazing cuts can be made. The argument for more monitoring before pinyonjuniper clearing can be approved is at least as strong. The scientific proofs of the need for grazing cuts are much stronger than the myths about the benefits of pinyon-juniper clearing.

RESPONSE: See Response to General Comment 2 and Response to Comment 2, Letter 1.

COMMENT 11: BLM argues in the Draft EA that the proposed projects will improve the watershed on surrounding lands, too:

The proposed action would create additional forage areas to reduce current demand on overused areas, thus improving soil and watershed conditions and balancing forage use in the CRM area. Once additional forage areas were established, efforts could be directed toward maintenance of existing seedings, which currently have greatly reduced forage productivity, Draft EA, p. 2.

Again, what studies support this conclusion? What are the current conditions on the lands surrounding the proposed project sites? What likelihood is there that their condition will change after implementation of the CRMP?

RESPONSE: An evaluation of 20 land treatments by Payne showed that established seedings had a large increase in forage production over the untreated site. He stated that this paralleled the findings of Arnold et al. (1964) and Jameson and Reid (1965) which reported significant increases in production after tree control and seeding (Payne, 1980).

Erosion condition is shown on Table 4 and in Appendix 2. The erosion condition is expected to improve toward the stable class. This is based on infiltrometer studies which were conducted in the project area (see affected

environment, soils section). According to this study, sediment yield should decrease and infiltration to precipitation ratio increase compared to the adjacent untreated pinyon-juniper area.

COMMENT 12: . . .that current average use by livestock is 5,432 AUMs, and total active preference is 8,434 AUMs. The proposed action would create an estimated 2,048 additional AUMs (Draft EA, p. 22). How many AUMs do the buffalo use? Would buffalo and livestock be limited to current levels after implementation of the proposed action? In summary, how much would the range be overallocated after implementation? The answers to these questions are central to any prediction of watershed impacts on lands surrounding the project areas. It needs to be considered in BLM's decision making and it needs to be open to public comment.

RESPONSE: Current forage use by the agreed herd size of 200 yearling and adult bison would be approximately 3000 AUMs annually. The primary purpose for the proposed projects is to correct existing forage imbalances in amount and distribution, and to provide a margin of surplus for drought years. If all projects are successful, the primary purpose would be accomplished, and the future range would support current numbers. Future numbers of bison and livestock permittees on the range depend on the success of the projects.

COMMENT 13: The same questions apply to the following statement in the Draft EA:

The proposed pipeline and vegetation treatments would provide additional forage away from existing riparian areas and would distribute big game and livestock to other areas receiving less use. This would allow soil, watershed, and vegetation in riparian areas to improve. New water developments could create a desirable riparian area.  
Draft EA, p. 20.

RESPONSE: Improved soil, vegetation and watershed conditions depend on establishing or maintaining a vigorous herbaceous plant cover in riparian and upland sites. Reducing use in over utilized areas is necessary to maintain adequate cover, and can be accomplished by attracting grazers to new areas where water and herbage are made available. Future forage allocations will be based on levels that will maintain or improve cover by herbaceous plant species.

COMMENT 14: BLM also notes in the Draft EA that:

Burning in wooded areas would scorch soils, eliminating nutrients required for plant growth for several years. However, in scorched areas, chaining would break up the soil, allowing revegetation to occur during the following season. Draft EA, p. 17.

Burning and vegetation manipulation would also temporarily expose the soil to increased erosion. . . . In one or two growing seasons, ground cover would increase, stabilizing the soil and reducing erosion to acceptable levels.  
Draft EA, p. 17.

The tree-conversion projects were selected because of their relative lack of understory and their potential to respond to treatment. The proposed vegetation treatments would increase ground cover and reduce runoff and soil loss. . . . The proposed projects would decrease soil erosion and improve watershed conditions after 2 years. This would reduce salinity in the Colorado River system. Draft EA, p. 18.

What were the sources for these statements? Are there other ways to increase understory? What kind of monitoring has been done?

The Draft EA does not provide sufficient site specific information on the watershed or other characteristics of the following statement about Tarantula Mesa illustrates:

Erosion potential is low [on Tarantula Mesa]. mostly susceptible to wind caused losses. Draft EA, p. 31.

RESPONSE: While chaining would prepare a seedbed for revegetation, loss of nutrients (if it occurred) could have a detrimental effect on the reestablishing vegetation. Refer to soils and watershed sections for corrections and additions concerning your comments on soil nutrients and erosion, land treatments, and salinity. The only way to significantly increase understory in P-J is to remove the canopy. The methods to accomplish this are analyzed under the alternatives.

Soil and watershed monitoring that has occurred in the project area is discussed in the soils section of this final EA. The only ongoing monitoring is of range condition and trend (refer to the range section of this final EA).

The erosion potential on Tarantula Mesa is mostly rated moderate as shown in Appendix 1. The low potential reported on the Draft EA, p. 31, was derived from a 1977 soils report that was later revised. The sandy loam surface texture is in wind erosion group (WEG) 3 and is mostly susceptible to wind forces.

COMMENT 15: Pinyon-juniper clearing thus will not give a benefit of improving the watershed here and studies show that removal of trees will increase wind speed near ground level so that wind erosion will only increase on this site. A researcher in southwestern Utah found that:

Roughly 3 miles of wind (as measured at approximately mid-canopy height) occurred on the chained treatments for ever 1 mile measured in the woodland." Gifford, 1973, p. 130.

RESPONSE: Areas producing an average of more than 1000 pounds of air-dry vegetation per acre will generally not have a wind erosion problem if they are properly managed (SCS, 1984). Proposed land treatments in the project area are expected to produce 1000 pounds per acre with an estimated range of 500-1500 pounds per acre (refer to range section). A short-term increase in wind erosion could occur until vegetation became established. However, because of increased ground cover (vegetation and litter), no detrimental impacts to watershed are expected, as discussed in watershed, environmental impacts section of this EA.

COMMENT 16: What are the site specific watershed conditions on each of the project areas and what are the likely site-specific impacts on watersheds under the proposed action?

RESPONSE: Erosion condition classes for the project areas are shown in Appendix 2. A study in the project area showed an increase in infiltration rates and a decrease in sediment yield in treated areas as compared to adjacent untreated areas (refer to watershed, environmental impacts). A decrease in sediment yield would improve the erosion condition toward the stable erosion condition class. Changes would vary in relation to the increase in ground cover (vegetation and litter).

COMMENT 17:

The Draft EA fails entirely in comparing grazed and ungrazed pinyon-juniper sites. It thus ignores a critical questions about the watershed potential of these sites and alternatives for management:

Relict and protected areas provide indications that some areas can support substantially more ground cover than commonly observed in actively used pinyon-juniper. Schmidt in USDA-FS, Intermountain Region, 1987, p. 477.

Could waters be better protected in the Henry Mountains by closing sensitive pinyon-juniper areas to grazing and allowing the cryptogams to recover while we save the taxpayers money from uneconomic subsidies of livestock and bison grazing?

RESPONSE: According to West (1984), nearly all of the pinyon-juniper ecosystem has been heavily used for livestock grazing, and the vegetation structure of relict areas corroborates the view that pre-Columbian woodlands were more open and savanna like than today's common expression of the pinyon-juniper type. Like most pinyon-juniper in the west, the Henry Mountains are entirely open to grazing by one class of animal or another, however, sparse forage areas are visited infrequently. Consequently, there is no site-specific basis for comparing grazed and ungrazed pinyon-juniper stands for watershed value. However, the literature sites numerous impacts of grazing on watershed quality of various other community types. In studies of the ponderosa pine type (Dunford 1949 and 1954), shortgrass and midgrass prairies (Hanson et. al., 1970), salt desert shrub (Lusby 1970), and chaparral type (Rich and Reynolds, 1963), there is general agreement that light or moderate grazing will not increase runoff significantly, but that heavy grazing will.

Indeed, it is the ability of relict areas to support ground cover that provides impetus for woodland conversion. The sites evaluated for conversion in the Henry Mountains support very little understory and currently provide little watershed value. Because of competition for soil, space, available water, growth inhibitors found in pinyon-juniper litter, or other ecosystem condition, rest or protection from grazing has not proven to reverse the trend once initiated. Dr. Neil West (National Research Council/National Academy of Science, 1984) states that with dramatic interference by man, the trajectory away from desirable ecological condition is such that these areas may never recover. While there are no specific evidences for microphytes impacting watershed protection, it is intuitive that any crusting by cryptogams would help hold the soil in place. However, intense thunderstorms will completely remove large areas of non vascular plant life (Dobrewlski, unpublished data), leaving rooted grasses and dicots to impede surface water flow.

COMMENT 18: The Draft EA presents more unsupported conclusions in its analysis of impacts to wildlife:

The increased edge effect provided by chaining would greatly benefit all big game species, as well as smaller non-game animals. Draft EA, P.14

B. The impact of pinyon-juniper woodland conversion on wildlife remains very poorly documented; published literature discusses implications only to mule deer, rodents and rabbits. Virtually nothing is known of the impacts of woodland conversion on the hundreds of other vertebrate species associated with this ecosystem (Terrel and Spillett 1975). USDI-BLM, 1977, pg. 47.

Many conversion projects attempted in the past have not influenced deer use of the converted areas one way or another . . . USDI-BLM, 1977, p. 47.

RESPONSE: A. See Letter 8, Comment 8.

B. Since Terrel and Spillett's report in 1975, several studies have reported on non-game wildlife responses to vegetative treatments in pinyon-juniper woodlands. A few studies are summarized. O'Meara et al. (1981) reported that manipulations of pinyon-juniper woodlands have both a positive and negative effect on non-game wildlife. Small mammal populations were 200 to 300% greater on chained than on unchained areas; due principally to the increase of deer mice, plains pocket mice, and the least chipmunks. But species diversity decreased on the chained area. Rodent species that use tree cover like pinyon mice and woodrats decreased in abundance. Also, there was a reduction in breeding-bird densities like the mountain chickadee, whitebreasted nuthatch, solitary vireo and blackthroated gray warbler. Short and McCulloch (1977), Short et al., 1977 recommended between 100 and 600 feet wide that were small and well dispersed throughout the forest to reduce impacts to wildlife.

The clearing should be long, narrow strips that conform to the landscape. Slash piles left unburned yield higher numbers of woodrats, brush, pinyon and rock mice responded favorable to slash piles (Severson 1986). Since the Henry Mountain bison occupy both the large expansive old seedings as well as the pinyon-juniper woodland, these recommendations have been incorporated into the EA.

COMMENT 19: Studies do note many ways to enhance clearing projects for deer and rabbit use but these would generally increase costs and reduce livestock forage benefits:

Measurements in Utah indicated that the sharpest decline in deer use of chained areas had declined by 0.1 mile into them (Terrel 1973, Terrel and Spillett 1975). McCulloch (1966) recommended that treatment areas be confined to less than 120-acre blocks. . . In Arizona, McCulloch (1968) concluded that broadly speaking, little difference in deer use existed between cleared and uncleared pinyon-juniper ranges." USDI-BLM, 1977, p. 46-47.

Uprooting, piling, and burning of all pinyon-juniper trees depressed cottontail rabbit use. . . however, pinyon-juniper control can enhance habitat conditions for cottontails, if sufficient down trees are retained to total 70-90 per acre in combination with living shrubs." Kundaieli and Reynolds, 1972.

. . . research has identified a few methods which may increase deer utilization of woodland conversions: 1) small projects near escape cover, 2) restriction of treatments to areas with prior histories of heavy deer use, 3) creation of mid-successional vegetation community having a high species diversity, and 4) location of the treated plots on sites protected from the brunt of severe weather (Terrel and Spillett 1975)." USDI-BLM, 1977, p. 47.

These mitigation measures for deer and rabbit habitat should be considered in BLM's analysis and presented for public comment in a site specific way with an analysis of costs and benefits (reduced livestock forage, increased project costs, etc.).

RESPONSE: See response to Letter 8, Comment 8. Mitigating measures limiting the size of the chainings have been developed. Also, BLM does not propose to pile or burn the uprooted trees and brush. The slash will be left behind to provide cover for animals and emerging vegetation. The 70 to 90 trees per acre would be more than satisfied.

COMMENT 20: Another unsupported conclusion in the Draft EA is its dismissal of impacts to several species of wildlife:

Other animal species present either seasonally or yearlong include cougar, bobcat, coyote, rodents, birds, lizards, insects, etc. However, these species have not been evaluated because the proposed action is expected to have negligible impacts to their environment.

Is there any reasonable basis for this conclusion? BLM states there has been no evaluation and then says negligible impacts are expected. An evaluation should be made and impacts thoroughly analyzed.

RESPONSE: The text has been changed to reflect your comments. See wildlife under affected environment.

COMMENT 21: Several other statements about wildlife are equally problematic for BLM's proper analysis and decision-making and for public comment:

There are no known threatened, endangered, or sensitive plant species in the areas proposed for treatment or improvement (see Appendix 5). Draft EA, p. 12.

Appendix 6 notes one threatened plant species and one endangered plant species known to occur in the CRMP area and states that "Site specific clearances will be required for all proposed projects covered by this assessment." The inventories should be done as part of an EIS not as a clean up project after the decisions on the projects have already been made.

RESPONSE: See Letter 12, Comment 8.

COMMENT 22: Riparian zones occupy a relatively small but important part of the area. Draft EA, p. 12.

What is the relationship to the chainings to riparian areas? Are the impacts direct or indirect.

RESPONSE: The proposed action would not have a direct impact to riparian habitat. This section on the affected environment in the EA has been stated more clearly.

COMMENT 23: The proposed action would significantly affect visual resources as evidenced by the failure of several projects to meet visual resource management (VRM) class objectives.

All or portions of 10 proposed land treatments are located in VRM Class II and III areas. Five proposed projects in new areas would create contrasts exceeding VRM Class II or III objectives (Sage Flat, State Creek/Garden Basin, Apple Brush Bench, Pete Steele/Apple Brush and northeast of Kings)..... Three maintenance projects would create contrasts exceeding VRM Class II or III objectives (Airplane, Dark Canyon, and Crescent Creek). Draft EA, p.21

RESPONSE: See Response to Letter 1, Comment 16.

COMMENT 24. BLM minimizes visual impacts without substantiations:

Treated areas would have the appearance of naturally occurring meadows or openings in the pinyon-juniper forest. Draft EA p. 18. [This is contradicted later: "Drill/Seeding "Introduced species would appear in even rows and thus, these areas would have a cultivated appearance." Draft EA, p. 19.

Visual impacts would result from range improvements, land treatments (chaining, burning and seeding), or grazing use. . . . Impacts would be most noticeable when the activity occurred in the foreground-middleground viewing zone (visible and less than 5 miles from travel routes/viewpoints). Generally, the contrast with the existing landscape created by an activity would vary over the life of the project. The visual impacts of construction and land treatment projects would be most noticeable during the first 5 years after the action and diminish over time. The opening in large expanses of pinyon-juniper areas caused by land treatments would tend to look like parks and meadows when viewed as background at a distance beyond 5 miles. Draft EA, p. 21.

BLM fails to state what the projects will look like within 5 miles: manage. It also fails to document its claim that chainings look like natural park and meadows when viewed beyond 5 miles. It still looks like manage. What sources does BLM have on visual impacts of pinyon-juniper clearing? How do they apply to the proposed action.

RESPONSE: Visual resource management uses contrast to determine a project's compatibility with existing scenic quality. It can be assumed that the closer the viewer is to a chaining, the higher will be the contrast and, therefore, the more impacting. Even recognizing the subjective nature of impacts on visual quality, the statement concerning parks and meadows is the best analogy we could use to describe the openings. The projects discussed in the environmental analysis are also evaluated in the Final Henry Mountains Grazing Environmental Impact Statement. The EIS and evaluation of existing chainings are the sources for assessing the impacts of pinyon-juniper clearing on visual resources.

COMMENT 25: D. The Draft EA fails to analyze economic impacts adequately.

David Tidwell, Assistant to the Director of BLM, addressed the Pinyon-Juniper Conference sponsored by BLM and others in 1986. He made the following statements about economic and other aspects of pinyon-juniper clearing:

In 1982, a policy statement was developed for management of Bureau woodlands. The statement says:

It is the policy of the Bureau of Land Management to optimize benefits from the management of woodlands under its jurisdiction by incorporating principles of multiple use and environmental quality in a program which accomplishes the following:

Recognizes woodlands as distinct ecosystems to be managed and perpetuated for the production of multiple-resource values. These values include wood products, forage, wildlife habitat, recreation uses, watershed protection and minerals. . . .

Strives for a program that achieves a positive benefit/cost ratio and obtains a fair market value for the woodland products.

Facilitates the management of other resources and public use through sound management principles. . . .

It is the Bureau's policy to manage the available woodlands under principles of sustained yield, maintaining an allowable harvest to provide a permanent source of woodland products for future generations. It is additionally the Bureau's policy to encourage the public to salvage wood and other forest products that have historically been lost through such actions as chaining, rights-of-way clearing and burning. . . .

I have examined three areas which include BLM lands that are each being managed under a somewhat different philosophy, but to varying degrees reflect a drift from traditional, wasteful, exploitive techniques to strategies that recognize existing multiple-use and attempt, with some degree of creativity, to manage within the pinyon-juniper ecosystem for an optimum of values. Tidwell in USDA-FS, Intermountain Research Station, p. 6.

The Draft EA does not mention the policy described by Tidwell.

RESPONSE: The draft does not mention this policy as it is not applicable to pinyon-juniper stands in the CRM area. Demand for pinyon-juniper products is virtually non-existent in the area. Preservation of this type is not an issue in the Henry Mountains as it currently occupies in excess of 50% of the acreage in the Henry Mountains. Response to General Comment 2 adds to this discussion.

COMMENT 26: How well does the proposed action conform to Bureau policy? Doesn't the proposed action continue "traditional, wasteful, exploitive techniques?" What are the benefit/cost ratios of the proposed projects? While BLM is being criticized for minimal restrictions on wood gathering in the nearby San Juan Resource Area, BLM is proposing to waste wood in the Henry Mountains.

But instead of preparing the needed economic analysis and presenting it for public comment in the Draft EA as required by NEPA and the regulations, BLM says it will be prepared separately with no assurance of opportunities for public comment:

An economic analysis (a separate document) of proposed projects will be prepared. Draft EA, p. 22.

This procedure of delaying economic analysis (as well as archeological and threatened/endangered species inventories) until after the environmental assessment has been prepared makes no sense and frustrates the purposes of NEPA: thorough analysis for decision-making and public comment. Will BLM present its economic analysis, cultural resource inventory, and threatened/endangered species inventory for public comment before it makes a decision on the Draft EA's alternatives?

The Draft EA fails to analyze the economic impacts of several reasonable alternatives and the economic impacts of past seeding projects. For example, the economic consequences of overuse of existing seedings should be analyzed. The Draft EA states:

Once additional forage areas were established, efforts could be directed toward maintenance of existing seedings, which currently have greatly reduced forage productivity. Draft EA, p. 2.

What are the benefit/cost ratios of the existing seedings which have been overused?

RESPONSE: The proposals evaluated in the EA conform with agency standards. However, the EA is not a document of decision. The Agency is ultimately responsible to ensure compliance with policy and efficient expenditures of resources for securing economic, social and environmental benefits.

The economic analyses have been included in the final EA (Appendix 12).

COMMENT 27: The Draft EA also notes that:

The Henry Mountains proper is used by eight permittees during the summer. Draft EA, p.15.

What are the benefits of past chainings and the proposed projects to each of the permittees? What is the fair market value of their permits? How much would it cost to buy out their AUMs either as a direct subsidy by BLM (since BLM could simply cancel the over-allocated AUMs) or as a purchase by UDWR for support of the bison?

RESPONSE: At this time the UDWR is not buying livestock grazing permits. In the past UDWR has bought livestock privileges, and they may in the future. BLM does not buy grazing permits, nor does BLM cancel privileges without very strong justification. BLM has, at this time no legal reason to consider cancelling grazing privileges on the Henry Mountains.

The benefits of past chaining in the Henry Mountains is high if the change in ground cover, and forage production and use compared to unchained areas is an important measure.

COMMENT 28: Total active preference for livestock is 8,434 AUMs, average use by livestock is 5,432 AUMs. Draft EA, p.16. How many AUMs do the bison use in the 4 affected allotments? The proposed action would produce an estimated gain of 2,048 AUMs. Draft EA, p.22. The Final Henry Mountain Coordinated Resource Management Plan states that current available forage is over-allocated by 40 percent. How much would the available forage be over-allocated after implementation of the proposed action? Would this over-allocation decrease the productivity and longevity of the proposed sensitive and expensive projects? If so, by how much? What assurances are there that the new seedings would not be overgrazed, too? What was the loss in benefit from existing chainings due to overgrazing? How many AUMs does the 1984 Grazing EIS say are needed to support its proposed stocking rates? Would the proposed action give the needed extra AUMs or would we still have overgrazing on even more expensive, sensitive seedings?

RESPONSE: This information is in the text, see Tables 9 and 10.

COMMENT 29: BLM makes many statements about the benefits of the proposed projects which are unsubstantiated. What are the sources for these conditions:

Vegetation production in drill/seeded areas would markedly improve in the long run. Production would go from an estimated 20 acres per AUM to 7 acres per AUM. Draft EA, p. 19.

Forage production [on burn/chain/seed areas] would be expected to change from an estimated 30 acres per AUM to an estimated 7 acres per AUM in areas treated with fire. . . . Areas that could not be burned would be two-way chained. This would cause more disturbance than oneway chaining, and resulting litter and slash piles would be readily visible. However, the litter of downed trees and brush would act as an erosion control measure and the microclimate would enhance new plant survival and provide wildlife habitat. The resulting production increases from a dense stand of pinyon-juniper to grasses and shrubs would be substantial. Carrying capacities could go from about 50 acres per AUM to an estimated 5 acres per AUM. Draft EA, p. 19.

[With aerial seeding only] the density of existing vegetation would not be reduced and forage would increase from an estimated 30 acres per AUM to 15 acres per AUM. Draft EA, p. 19

The proposed roller-chop projects [on existing seedings] would improve production from an estimated 12 acres per AUM to 5 acres per AUM. Draft EA, p. 20.

Total AUMs Gained from Vegetation Treatment in Proposed Action (Estimated): Steele Butte Allotment--556, Crescent Creek Allotment--45, Nasty Flat Allotment--1447, Slate Creek/Garden Basin project--160, Tarantula Mesa project--300, North of Coyote Bench project--400. Draft EA, p. 22.

The current productivity on these sites [Tarantula Mesa] averages about 40 pounds of usable forage per acre (45 acres/AUM). After conversion, production will be about 400 pounds per acre (4.5 acres/ AUM). Draft EA, p. 32.

After seeding [at Slate Creek/Garden Basin] to the high-elevation mixture, the basin will be as productive as any site on the mountain (over 1,000 pounds/acre). This project will increase carrying capacity by at least 160 AUMs, annually. Draft EA, p. 32.

Any studies which support these conclusions should be cited and discussed in plain language.

RESPONSE: The anticipated increases in forage/vegetation productivity are based on site-specific range inventory and monitoring studies, and on local experience. Data for site specific productivity and potential are available at the Henry Mountain Resource Area office. The final EA has been strengthened to document the concerns of this comment.

COMMENT 30: One study does support the Draft EA's estimated gains in AUMs per acre:

Clary et al. (1974) gave the potential increase in livestock carrying capacity on many Utah juniper areas as nearly .5 AUM per acre after tree removal, but stated that increases of 0.21 to 0.32 AUM per acre are more realistic. Much lower increases are achieved when pinyon-juniper conversions are undertaken on low potential sites or when poor seeding techniques are used." USDI-BLM, 1977, p. 46.

The data in the Draft EA (pages 3-4 and 22) indicate an estimated gain of .25 AUM/acre for the Slate Creek/Garden Basin project, .20 AUM/acre for the Tarantula Mesa project, and .21 AUMs/acre for the North of Coyote Benches project. More information is needed on whether past projects in the Henry Mountains have actually met these estimates.

RESPONSE: The gains cited in the draft EA are conservative estimates of the average increase over the life of the project. Actual results from the Coyote Bench projects (seeded during the 1960s) indicate that after four years the projects provided up to 2000 lb./acre (1 ac./AUM) and about 150 to 400 lb./ac. in 1987 (4 to 12 ac./AUM). Although the exact shape of the curve relating

production to time is unknown, if we assume a linear response for 20 years, average productivity is about 1000 lb./acre or 2 ac./AUM. Compared to untreated P-J (30 to 60 ac./AUM), actual response for similar sites may be as high as 0.49 AUM/acre.

COMMENT 31: The Draft EA should give costs for each of the individual projects.

The Forest Service's Programmatic EIS for chaining in Utah (1973) found project costs for chainings to be \$18.00 per acre and project benefits to be \$19.58 per acre based on \$9.01/acre from usable forage for livestock, \$7.36/acre from forage available available for deer, and \$3.22/acre from reductions in soil loss. USDA-FS, Intermountain Region, 1973. "1.08" is a very marginal return--not a very good investment of scarce taxpayer dollars in tight budget times.

Furthermore, the Forest Service analysis greatly exaggerated benefits since deer don't use forage unless projects are properly designed increasing costs, and the value of livestock forage was based on \$4.88 as the fair market value of one AUM while the Forest Service collected only XXX per AUM. Claimed watershed benefits are contradicted by Gifford and other scientists. Also costs were underestimated by not including costs of the lost scenery, archeology and recreation.

RESPONSE: Actually, 8% return is comparable to a certificate of deposit, and is two to three times more than the average return to capital investment for American agriculture! Values used by the Forest Service include costs paid by users in addition to the fee such as the interest on permit investment, costs of maintenance of improvements, etc. In our analysis, we used \$5.65 per AUM for livestock forage value, an admittedly conservative figure. Similarly, values are estimated for big game according to what hunters are willing to pay based on UDWR data. On the Henrys, one AUM of forage for deer is valued at \$39.00, based solely on expenditures by deer hunters. Granted, not all of the value for livestock AUMs goes into the national treasury, and the State doesn't receive all of the value for big game harvest. Still, valuation is based on all costs willingly paid to the provider directly or indirectly. In the case of livestock production, all costs paid by the producer average about \$27.00 per AUM, and all costs enter the national economy with an estimated multiplier factor of 3.5 to 4.0 attributed to primary agriculture providing \$100 to \$110 per AUM to the gross national product.

Gifford's work, and that of other scientists are often contradictory, largely because nearly all watershed studies in recent years have been conducted on small plots, not on watersheds. While most studies show no significant impacts in runoff because of chaining P-J (Collings and Myrick 1966, Wilm 1966, Clary 1975), there is near unanimous agreement in the literature that runoff is most closely correlated with percentage vegetation or bare soil (given similar slope and storm intensity) (see Branson and Owen 1970, Schreiber and Kincaid 1967, Shown 1971).

COMMENT 32: Essential questions about the economics of pinyon-juniper clearing have been raised by range scientists but the Draft EA fails to address them entirely:

Both wildlife and watershed impacts [from controlling pinyon and juniper] appear either minimal or hard to predict, leaving other items such as improved livestock grazing to absorb the majority of the costs. It seems reasonable to suggest that before large sums of money are expended to modify a plant community that baseline data be gathered to reinit existing conditions (which may or may not support a previous bias) and then, if change is initiated, that data be collected to substantiate whether or not any of the initial objectives were met. If baseline and post-treatment evaluation monies are not available, then the project should never be approved. This equates to professional accountability." Gifford in USDA-FS, Intermountain Research Station, 1987, p. 36.

We are convinced that a resource of this extent and complexity holds many values, some of which we are only vaguely aware of now. It is likely to be shortsighted to manage for maximization of a single or a few selected resources. Rather, stewardship--conservation of all renewable and nonrenewable resources and protection of inherent site productivity--is more likely the appropriate management objective on pinyon-juniper lands, as on most of the Nation's wildlands." Buckman and Wolters in USDA-FS, Intermountain Research Station, p. 2. Authors: Deputy Chief-Research (retired) and Range Scientist, Forest Environment Research, Forest Service.

The increased value of livestock grazing did not provide sufficient economic justification for using the aerial seeding-chaining technique. Application of such a revegetation technique may have to be justified to a substantial degree by noncommodity considerations." Clary and Wagstaff in USDA-FS, Intermountain Research Station, p. 311 [from report on a technique used to revegetate major portions of two wildlife burns in central Utah].

Lanner (1977) has questioned the need for large-scale control projects in the Intermountain Region. He believes that adequate documentation for invasion of pinyon-juniper stands is often lacking." Schott and Pieper in USDA-FS, Intermountain Research Station, 1987, p. 462. [Lanner, R.M. The eradication of Pinyon-juniper woodland. Western Wildlands. pp. 13-17; 1977].

RESPONSE: Refer to the economic analyses in this document for reference to wildlife benefits. As a part of the CRM proposal, and to conform with BLM policy, all projects will be monitored, before and after treatment. Baseline data collected prior to the Henry Mountain EIS (circa 1980) is among the best wildland inventories available, and was used to provide unbiased information prior to preservation of the CRM proposal and this environmental assessment.

The primary purpose of the Henry Mountain proposal is to maintain and enhance the basic soil-water-vegetation resource. With only about 10% of the existing pinyon-juniper resource proposed for treatment, it is unlikely that any resource values will be maximized, rather there should be greater optimization of multiple-resource values. According to Walter Cotton (1976) pinyon-juniper expansion in the Great Basin is readily verified on sites where trees are young (less than 100 years old). In 1945, Cotton estimated that only one-sixth of the pinyon-juniper stands in the region were mature or climax stands; the rest were invasions. Thus, the proposed treatment of trees on the Henrys is not likely to cause eradication of the vegetation type.

As with Clary and Wagstaff's study, livestock alone will not justify the forage projects proposed. Unlike Clary and Wagstaff's report, commodity wildlife production alone will justify the costs of the proposed projects (see economic analyses in this document). However, if it were possible to value non-commodity resource benefits, the analyses would be even more favorable.

COMMENT 33: The Draft EA fails to describe how each of the proposed projects would impact recreation in a site-specific way preventing thorough consideration of alternatives by the agency and the public. The Draft EA only notes that:

Vegetation treatments and rangeland improvements could adversely impact general sightseeing and reduce the feeling of remoteness. Draft EA, p. 20.

RESPONSE: The EA has been expanded to provide further information about recreation.

COMMENT 34: The Draft EA fails to analyze cultural resource impacts adequately.

The Draft EA notes only the general cultural resources of the area:

Cultures represented in the area include Archaic groups and the Formative Fremont and Anasazi. Site types include villages, rock shelters, camps, open sites and rock art. Draft EA, pg. 15.

Then it fails to present site-specific data:

No cultural inventory has been done in the areas proposed for range improvements or vegetation treatments; however, before any work was authorized, an inventory would be completed and all sites requiring avoidance would be flagged. Draft EA pg. 21.

(Flagging would only help pothunters find the sites.)

Cultural values would be inventoried before work began. Any sites flagged during inventory would be avoided during project work. . . . If any sub-surface archeological values were discovered, all work would stop and the District archaeologist would be notified.

An inventory should be completed for environmental analysis and EIS analysis in order to meet the requirements of NEPA and Federal regulation for the early consideration of impacts. What impacts would the proposed action have on cultural resources even with the proposed mitigation? Increased vandalism? Breakage of artifacts from the heat of burning trees? Losses to future study? Other impacts?

RESPONSE: The Cultural Resources section of the Affected Environment portion of this EA has been enlarged.

The regulations of the Advisory Council on Historic Preservation contained in 36 CFR 800 govern the Section 106 review process established by the National Historic Preservation Act of 1966, as amended. The most recent version of these regulations published in the Federal Register on September 2, 1986, contains the following (these portions are excerpted from rather lengthy text):

### 800.3 General

(a) Scope. The procedure in this subpart guides Agency Officials, State Historic Preservation Officers, and the Council in the conduct of the Section 106 process.

(b) Flexible application. The Council recognizes that the procedures for the Agency Official set forth in these regulations may be implemented by the Agency Official in a flexible manner reflecting different program requirements, as long as the purposes of Section 106 of the Act and these regulations are met.

(c) Timing. Section 106 requires the Agency Official to complete the Section 106 process prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license or permit. The Council does not interpret this language to bar an Agency Official from expending funds on or authorizing nondestructive planning activities preparatory to an undertaking before complying with Section 106, or to prohibit phased compliance at different stages in planning.

In summary, there is nothing in the National Historic Preservation Act requiring cultural resource inventories prior to the preparation of an EA. However, these inventories must be done prior to any project authorization and, in fact, any such authorization is totally dependent on the results of those inventories.

For a discussion of mitigating impacts to cultural resources in chaining areas, see Letter 5, Comment Response 4.

It is current BLM policy to avoid all sites, if possible, and it is legally required to mitigate those listed on or eligible to the National Register. The additional impacts you mention would not occur, assuming the successful application of law and policy.

COMMENT 35: The Draft EA fails to analyze paleontological impacts adequately.

What are the paleontological resources of the sites and what impacts would the proposed action have?

RESPONSE: A paleontology section has been added to the EA.

COMMENT 36: BLM also analyzed a no action alternative. With this alternative, vegetative resources would continue to deteriorate, until most of the desirable forage was further diminished or grazing animals (both big game and livestock) were reduced. Draft EA, p. ii.

Why is there no alternative with just burning and if the area does not burn then leave it?

RESPONSE: The CRM Committee proposed burning and seeding on two areas. This has been corrected by adding it back into the proposal. Burning and seeding has several technical and environmental points that indicate it is not a very viable approach. These points are made clear in the final EA.

COMMENT 37: The need for action as described in the EA should guide the formulation of alternatives for analysis:

Over the years, there has been a gradual build-up of the bison herd in the Henry Mountain area. There was no real concern raised by the livestock permittees until the 1976-77 drought years. Permittees reduced their livestock numbers in affected allotments. However, the bison herd continued to graze, damaging forage productivity and reducing range potential. Current forage productivity is less than range potential. As the bison herd continues to grow, the potential for problems also grows. Draft EA, p. 1.

RESPONSE: Estimates vary from 400 to 800. The MFP proposal outlines a plan for management of 200 yearling and adult bison. Since the bison are so very mobile, it is difficult to predict which areas will be used next. The proposal is to not allocate any forage at this time to either bison or cattle, but to monitor the situation and see if a pattern can be identified. It is anticipated that sufficient additional forage will be developed to satisfy the needs.

COMMENT 38: There are many alternatives for addressing these problems other than those addressed in the EA including grazing reductions, buy out of grazing privileges, and grazing reductions with direct subsidies to the ranchers.

RESPONSE: See Response to Comment 3, Letter 8 for a discussion on grazing reductions. The other two alternatives mentioned would require a source of funding. The CRM proposal is intended to be a vehicle for such coordination and cooperation. This is why representatives from a diverse base of user groups were invited to participate on the team.

Also see Response to Comment 32 of this letter.

COMMENT 39: As another alternative action, would BLM allow increases in actual use or active preference for livestock? The Draft EA indicates that it may:

. . . the allocation of any additional forage would be a management decision. That decision would be made through the planning process after the analysis showed increases in forage production occurred. Draft EA, p. 21.

This alternative should be analyzed in the Draft EA and if BLM intends to implement it, that should be stated in any decision document.

RESPONSE: This point seems clear in the EA. BLM is not proposing to allocate additional forage at this point in time. When additional forage becomes available, the EA states, it will be allocated through subsequent plan modification and NEPA compliance.

COMMENT 40: Permittees in three allotments have agreed to rest treated areas for two or three years following project completion. Draft EA, p. 7.

Why haven't other permittees agreed to resting? What affect will continued use have on the project's success?

RESPONSE: Only four allotments are involved in the project area and these permittees have agreed.

COMMENT 41: The Utah Division of Wildlife Resources (UDWR) under cooperative agreement with BLM, would manage the bison herd at a post-season population of 200 adult animals.

How likely is it that this agreement will be implemented?

The implementation of a monitoring plan is essential to determine if management actions meet management objectives. Close coordination between UDWR and BLM monitoring programs would maximize efforts to reduce overall costs and avoid duplication. Draft EA, p. 7.

RESPONSE: BLM intends to honor the agreement. Monitoring and interagency coordination are critical to the future of the Henry Mountain region.

COMMENT 42: Have baseline data been gathered? If there are existing data, what do they show about forage trend and utilization in detail?

RESPONSE: Baseline data has been gathered and is presented in the EA.

COMMENT 43: Draft EA, p. 8 indicates only studies for trend and utilization studies for big game and livestock will be performed. Watershed, wildlife, visual, and cultural resource studies should also be performed.

RESPONSE: Collecting data is an ongoing process. Land managers are interested in monitoring the effects of the proposal on the environment. The proposal consists of land treatments, facilities, and big game and wildlife use. Effects on the environment from the first two will be handled through proper procedures and mitigation. The effects from the latter can only be determined through monitoring. Vegetation trend and levels of use seem to be the best way to monitor these effects. The text has been strengthened to show other important monitoring.

COMMENT 44: The environmental consequences of the no action alternative are described as:

Vegetation resources would continue to deteriorate, until most of the desirable forage was eliminated and much of the big game and livestock use was curtailed. Soil loss from the increased soil erosion would increase solids and salinity in the Colorado River system. Draft EA, p. 25.

What evidence is there that overgrazing will not still cause the same problems after the CRMP were implemented? Is there any evidence that solids and salinity from the Henry Mountains are reaching the Colorado River or are they being deposited on alluvial fans and stream banks?

RESPONSE: A proposal common to all alternatives as described in the EA, states there would be no increase in grazing intensity. New treatments would be rested two years and maintenance areas would be rested one year. This is to allow for vegetation establishment and the resulting increase in ground cover. Sediment is often dissipated on alluvial fans and stream banks short distances from its previous site. This occurs repetitiously, depending on the intensity of the storm. However, intense storms do occur in the area and streams show evidence of high sediment loads. Refer to watershed sections for further discussion on salinity and sediment yield impacts to the Colorado River.

COMMENT 45: [Burn/chain/seed] This treatment requires initial attempt to burn the stands of mature pinyon-juniper, followed by a chain to remove target trees not consumed by fire, and then broadcast seeding followed by a drag chain to cover the seed. The recommendations include only 550 acres of chain-seed treatment, 250 acres of which already have been completed. The remaining 3,370 acres of chaining recommended in the CRM plan have been changed to burn-chain-seed treatments. Draft EA, p. 30.

Nowhere in the Draft EA does BLM compare the environmental effects of burn/chain/seed to chain/seed? Why use one or the other and what are the different impacts of the two?

RESPONSE: When an area is burn/seed/chain treated, most of the trees and brush are consumed in the fire. The seed is applied and it is worked into the soil with the chain. There is very little surface litter, and the soil would be tilled. When an area is two-way chained, the first pass with a chain tips the trees over, but they are not killed; they must be back-chained (chained a second time) to kill them. Using burning in connection with chaining and seeding is much more efficient in killing undesirable vegetation.

COMMENT 46: J. The Draft EA fails to analyze the relationship between short-term use of the environment vs. long-term productivity adequately.

What would the nutrient losses be under the proposed action and how long would it take to recover them?

Several scientists have noted the slow growing and sensitive nature of pinyon-juniper ecosystems:

Our present management strategy of chaining followed by piling and burning has a high potential for substantial redistribution and loss of nutrients from pinyon-juniper ecosystems. Fuelwood management strategies could also cause large losses of nutrients, depending on the type of residue treatment. . . . Considering the greater aboveground accumulations of [nitrogen] in the pinyon-juniper ecosystem relative to the other two ecosystems, and the apparent limited solid capital of [nitrogen], it seems prudent to suggest caution in the manner these stands are managed." Tiedemann in USDA-FS, Intermountain Research Station, 1987, pp. 357-358.

The pinyon pines probably grow more slowly than any other group of species in the genus Pinus. The Colorado pinyon reaches maturity between 75 and 200 years, and may grow to an age of 400 years. The singleleaf pinyon normally reaches ages of from 100 to 200 years. Specimens only 4 to 6 inches in diameter growing in thin, dry soil may be 80 to 100 years old. Those pinyons in deeper soils grow more rapidly, attaining diameters from 10 to 12 inches in 150 to 160 years (Graves 1917, Tueller and Clark 1975)." USDI-BLM, 1977, p.24.

Junipers characteristically grow quite slowly. Herman (1953) studied J. osteosperma in Utah for 10 years and reported a growth rate for the species of 0.6 percent per year. The Rocky Mountain juniper, a species of the upper edges of the woodland of the Colorado Plateau, takes 300 years to grow to 30 feet (Tueller and Clark 1975). The average age of stands of J. osteosperma in Wyoming has been reported as 150 years (Wight and Fisser 1968)." USDI-BLM, p. 27.

We are convinced that a resource of this extent and complexity holds many values, some of which we are only vaguely aware of now. It is likely to be shortsighted to manage for maximization of a single or a few selected resources. Rather, stewardship conservation of all renewable and nonrenewable resources and protection of inherent site productivity is more likely the appropriate management objective on pinyon-juniper lands, as on most of the Nation's wildlands." Buckman and Wolters in USDA-FS, Intermountain Research Station, p. 2. Authors: Deputy Chief-Research (retired ) and Range Scientist, Forest Environment Research, Forest Service.

RESPONSE: The use, ecology, and importance of the pinyon-juniper type is discussed in detail in Response to General Comment No.1; Response to Letter 2, Comment 2; Letter 12, Comments 10 and 41.

COMMENT 47: K. The Draft EA fails to analyze cumulative impacts adequately.

What are the cumulative impacts of the past chainings and the proposed action on all resources?

RESPONSE: It is not the purpose of this document to analyze the impacts of past activities. Nonetheless, past chainings are providing a significant portion of the forage for those allotments. As much as 60% of the livestock and bison use in those allotments is concentrated on chained areas. Cumulative impacts were analyzed in the Henry Mountain Grazing EIS published in 1983 and are shown throughout the EA.

COMMENT 48: IV.A resource management plan must be prepared before new pinyon-juniper clearing projects can be considered in the Henry Mountain Resource Area.

BLM's last planning document for the area, the Henry Mountain Grazing EIS/MFP Amendment (1984), recommended large areas of the Henry Mountains as suitable for pinyon-juniper clearing projects. This document does not analyze alternatives to these projects except a no action alternative and alternative siting in the most general ways, yet BLM claims it does not need to consider a full range of alternatives in the Draft EA because:

Concepts of range developments and improvements were identified and evaluated in the Henry Mountain Grazing Final Environmental Impact Statement (EIS). Site-specific examination of the methods of implementation and alternatives must be addressed. BLM is, therefore, preparing this draft Environmental Assessment (EA). BLM District/Area Manager could choose any mix of the projects identified in the proposed action and alternatives when making final decisions for the CRM area. Draft EA, p. 2.

BLM should not claim that a proper range of alternatives does not need to be considered now because it successfully got away with it before. FLPMA was passed 12 years ago and BLM should have a resource management plan implementing that act before it undertakes major projects like the Henry Mountain Coordinated Resource Management Plan.

A resource management plan should be prepared which thoroughly analyzes alternative range practices and their environmental consequences, and then selects the most appropriate practices for the Henry Mountains. New public involvement and ACEC regulations since 1984 make it especially important to prepare an RMP before considering the Draft EA's proposed action.

RESPONSE: The Henry Mountain MFP and the Henry Mountain Grazing EIS are the documents of record. They were prepared consistently with applicable criteria and standards, and they are the basis for multiple-use management in the area addressed in the CRM project EA. Proper alternatives were considered and opportunities for public input were afforded. The fact that planning guidance is adjusted and improved over time does not necessarily make all previous plans invalid. BLM believes that the MFP and EIS documents for the Henry Mountains contain useful information and acceptable management direction. BLM will continue to use these plans until they are superceded by an RMP as identified in the statewide planning schedule. Management activities specified in the current plans will not be postponed or cancelled, just because a 1988 RMP does not exist. It is intended that plans (MFP or RMP) provide consistent and systematic direction to be used for a reasonable period of time (generally 10 years or more), and not redone frequently merely for the sake of updating. Selected portions of land use plans may be amended from time to time as may be appropriate to respond to substantial and unforeseen circumstances.

BLM does have a long range goal for preparation of RMPs for all public lands in Utah. As part of this goal, an RMP for the Henry Mountains Resource Area is scheduled to be completed in 1993 (about 10 years from the date of the MFP). That effort will include public participation and consideration of ACECs. In the meantime, continuing actions to implement the current plan, such as the CRM project EA, include public comment opportunity.

COMMENT 49: For example, the Draft EA's description makes it a prime candidate for designation as an ACEC for ecological research:

Because of the isolation of [Tarantula] Mesa, neither overgrazing nor fire have been important factors in these ecosystems. However, numerous open, parklike stands of needle-and-thread, Indian ricegrass and sand dropseed,

attest to the occasional occurrence of lightning strikes. The areas flagged for treatment currently support mature pinyon-juniper and bigelow sagebrush, with remnants of galleta grass and needle-and-thread. Draft EA, p. 32.

This area on Tarantula Mesa should be protected and used to provide the baseline data on watersheds and wildlife for comparison to the chained areas which cover most of the rest of the mesa.

We nominate Tarantula Mesa as a research ACEC based on the relevance established by the above quote from the EA and its importance as a comparison area.

Tarantula Mesa and the other project areas should be given thorough consideration under BLM's new ACEC regulations for designation as ACECs to protect scenery, wildlife habitat, watershed, research opportunities, archaeology, and other natural and cultural values.

RESPONSE: A follow up letter has been written to the Southern Utah Wilderness Alliance pursuant to this nomination. A copy of this letter is attached to the EA as Appendix 7.

COMMENT 50: IV. If a new resource management plan is not prepared, at least a plan amendment must be prepared for proposed projects not included in the existing management framework plan.

The proposed action includes projects in areas which are designated unsuitable for vegetative treatments in the 1984 Henry Mountain Grazing Final EIS and plan amendment. Examples of such projects include the Slate Creek/Garden Basin and Tarantula Mesa projects.

RESPONSE: BLM's proposed action (Implementation of MFP Alternative) does not include any actions not covered by the current MFP/EIS. The analysis of the CRM proposal notes that a plan amendment would be needed.

COMMENT 51: The Draft EA fails to meet the requirements of the National Historic Preservation Act for the protection of cultural resources.

Inventories should be completed before an EA or EIS is prepared in order to allow full consideration of cultural resource impacts.

RESPONSE: For a discussion of the timing of the consideration of cultural resources during the EA, refer to Response to Letter 12, Comment 39.

COMMENT 52: VI. The Draft EA fails to meet the requirements of the Endangered Species Act for the protection of threatened and endangered species.

Inventories should be completed before an EA or EIS is prepared in order to allow full consideration of environmental impacts.

RESPONSE: See Response to Letter 12, Comment 26.

COMMENT 53: VII. Does the Draft EA meet the requirements of statute and regulation for the control of salinity in the Colorado River Basin.

RESPONSE: Yes. Refer to additional information in the watershed sections and to Appendix 11.

COMMENT 54: VIII. Does the Draft EA and proposed action meet the requirements of the Clean Water Act as amended for the control of non-point source water pollution and protection of riparian areas?

RESPONSE: Yes. Additional information has been included in this final EA. Refer to the watershed, affected environment section.

### LETTER 13

COMMENT 1: Chaining is an indefensible land management practice which simultaneously clearcuts pinon and juniper forests (leaving the trees in slash piles to be burned or to rot), loses money, devastates land and archeological sites, introduces non-native grasses, and obligates BLM to a costly, long-term addition to land treatments and circular logic in defense of its grazing policies. The practice represents the supreme example of BLM bias against non-commodity values. While burning is to precede any chaining activities in the CRM area, much of the land proposed for treatment is already in such poor condition, due to current grazing practices, that it cannot sustain a fire.

RESPONSE: See Response to General Comment 3; Response to Comment 2, Letter 1; and Response to Comment 2, Letter 2.

The purpose and need for the proposed projects has been stated clearly in the EIS and subsequent documents including this one. Standard procedures to be followed are also stated. Economic analyses are favorable for all projects, even without inclusion of values for improved watershed and non-commodity recreation. The poor condition of areas that will not carry a fire is caused by crowding-out of the fine fuel plants by trees, a symptom that will be corrected by the proposed actions.

COMMENT 2: Better than proceeding with any range manipulations whatsoever would be for BLM to recognize that native carrying capacity of this land for grazing or browsing animals is quite limited and that management with respect to those limits is entirely appropriate. (Keep in mind that the land we are speaking of here is hard pressed to supply a living for 3 cows on one hundred acres, yet we heatedly debate grazing policy). Pinon and juniper forests evolved over many millions of years to the Henry Mountain region due to the area's elevation, climate, soil types, biological interactions, and other factors, and it is naive to think that range "improvements" will successfully compete with natural selection in the long run. Even in the short run, BLM puts itself in the unenviable position of maintaining artificial clearings while land productivity declines and money is thrown at the dirt in an effort to support uneconomic livestock grazing. Ironically, the process of reinvasion of pinon and juniper to land once treated to limit these species is accelerated by the heavy grazing pressure which artificially cleared areas will receive from livestock (to justify the investment in clearing the area) and wild animals.

RESPONSE: The potential for forage production on the Henry Mountains is many times greater than current productivity. Those pinyon-juniper sites that support the fewest number of grazing animals are young stands (not thousand-year-old relicts) and are only one phase of a naturally occurring successional cycle that requires periodic fire to be sustained. Because of man's interruption of the natural cycle, the area has lost its diversity and is largely dominated by the pinyon-juniper trees to the exclusion of herb or shrub-dominated stages. The proposed action will return about 10% of the woodland type to herb shrub communities, restoring lost aspects of the natural cycle. There is no documentation that moderate grazing will accelerate tree reinvasion, however, it is recognized that trees will recur within the 25-year life expectancy of the treatments. Maintenance of the natural landscape diversity will require reintroduction of fire into the system, as is proposed for the mature seedings by these alternatives.

Also see Response to General Comment 2, and Letter 1, Comment 2.

COMMENT 3: The EA states that "Permittees in three allotments have agreed to rest treated areas for two or three years following project completion" (p. 7). We point out that it is not the permittees who manage the public land on which their livestock graze, but the Bureau of Land Management. If the agency requires that land be rested for a time before, after, and during a land treatment project is undertaken, it is well within its discretion to do so. All that is needed is for BLM to take a courageous stand in managing the land to maintain its productivity based on utilization and range condition studies. The agency may also rest the land to protect its productivity, even if no range treatments are planned.

RESPONSE: BLM is aware of the authority of law and regulation, however, BLM also is charged to consider multiple use and cooperative approaches, appropriate areas will be rested.

COMMENT 4: As an additional alternative in the final EA, we request that BLM consider decreasing cattle allotments to maintain land productivity. We also request that the final EA look at burning as an alternative to any and all burn/chain/seed projects. This, of course, would require retiring the land from livestock grazing long enough to build up burnable understory. We recognize that the presence of bison in the Resource Area presents a unique problem for land managers. However, if the bison are limited in number to 200 animals or less and the number of hunting permits allowed is linked to range conditions, the difficulty would be much diminished.

RESPONSE: See Response to Comment 3, Letter 8 and Comment 42, Letter 12.

COMMENT 5: The EA states some remarkable advantages for the proposed alternative which are unsubstantiated. Some of these include the following: that the proposed actions would actually decrease salinity in the Colorado River basin (EA p. 18), that all adverse impacts are unavoidable (EA p. 22), that riparian areas will improve as a result of the treatments (EA p. 20), that treated areas would have the appearance of naturally occurring meadows (EA p. 18), and that the treatments will most likely be successful (EA p. 17). Speculation should not play a part in a document of this type, or if it does, it should not be called fact and be relied upon for decision-making.

RESPONSE: See Response to Comment 1, Letter 15.

COMMENT 6: We ask that in the final EA BLM substantiate its statements with quantitative data. We also request that thorough economic analysis of the proposal be part of the final EA.

RESPONSE: The economic and quantitative data have been added to the EA.

COMMENT 7: The proposed burn/chain/seed projects at Garden Basin and Tarantula Mesa and the drill/seed project on Pete Steele Bench threaten to disqualify our Mount Pennell, Ragged Mountain, and Mount Ellen proposed wilderness areas from Congressional designation. We request that the final EA consider an alternative which eliminates those range development projects entirely, in order to allow Congress time to consider wilderness designation for the land. We request that these parcels of land be protected for their scenic, recreational, archeological, watershed, wildlife, and inherent values, rather than be exploited for their meager grazing potential. What we seek to protect is more scarce and more vulnerable than just another mediocre piece of cattle land; once developed, wilderness is gone for good.

RESPONSE: Since it has been determined by decision and subsequent rulings from litigation that the mandatory wilderness values do not exist outside the WSA in the areas mentioned in the comment, the preservation of wilderness values is a moot subject. Tarantula Mesa is already supporting numerous seeded stands, and that the interseeding proposed for Pete Steele Bench is designed to leave trees in place, as well as most of the existing understory.

Also see Response to General Comment 1.

COMMENT 8: Finally, we believe that the proposal is of sufficient scope to require an amendment to the Henry Mountain Management Framework Plan. Several projects proposed by the EA are in areas designated as unsuitable in the Henry Mountain Grazing EIS. These should be eliminated from the proposal.

RESPONSE: See Response to General Comment 4 and Letter 12, Comment 50.

#### LETTER 14

COMMENT 1: First, we have a serious problem with one proposed project in the EA. North of Coyote Bench is listed as burn/seed project in the CRMP document. It was listed as a burn/seed/chain project in the EA. This needs to be changed as we did not agree to a burn/seed/chain on this project. Our continued support is contingent upon following CRMP document.

RESPONSE: This has been corrected in the Final EA for the CRM Alternative.

COMMENT 2: Second, we found an error on the EA project map that needs to be rectified. The proposal for the western portion of the Tarantula Mesa project is much larger than shown in the CRMP document map and includes steep terrain on the mesa slopes. Tarantula Mesa itself more closely coincides with the project map in the HM CRMP and the existing treatment shown on the EA project map. We called Glenn Patterson on April 4 about this problem and he confirmed that the project is scheduled only for Tarantula Mesa and the error was due to the small scale of the map.

RESPONSE: The configuration of the treatment area, has been changed to delete steep slopes the overall size remains the same to indicate the proposed 1500 acres (1000 acres of new treatment 500 acres of a previous chaining to be maintained).

COMMENT 3: Today, we talked with Stan Adams, Acting Area Manager, to clarify a couple of allegations found in the enclosed newspaper article. Two of these allegations first, that BLM has plans to chain in WSAs once they are released by Congress and second, that BLM plans to double cattle numbers in Henrys--are contrary to the CRMP. Stan informed us there were no future treatments planned, other than those in the CRMP, regardless of whether the area was in WSA status or not. There is no future projects list, all the proposed projects are included in the CRMP. Stan also told us there were no plans to double cattle numbers in the Henrys. In fact, active preference has been decreased as a result of the range condition. If actual use numbers were to increase it would be after 5 years, only slight increases could occur and it would be done on a case by case basis only where the forage would allow for an increase. During implementation of the projects, cuts in actual use of about 25% would occur. Stan indicated to us he would clarify those allegations in a written letter to our office.

RESPONSE: The 2,189 estimated new AUMs which the CRM proposal would provide have not been allocated, nor is there any plan to allot the new forage. The new forage would be used to supplement existing use and therefore rest or improve the already overused vegetation. At this time there are no plans to treat any land except as described in this EA.

#### LETTER 15

COMMENT 1: I have seen the mess where Tarantula Mesa has been chain -with what I consider wanton disregard for Ancient Indian sites.

RESPONSE: The chaining project on public land on Tarantula Mesa was done in 1965. The Historic Preservation Act was passed in October of 1966 and marked the first complete attempt at getting all Federal projects inventoried for their cultural resource potential. However, it was not until May of 1971 when Executive Order 11593, full attention was given for all Federal lands to be inventoried for cultural resources because there was no requirement to do so at that time. Any sites present in the old projects were probably destroyed. With new laws, regulations, and policies, such loss is not expected to happen again.

COMMENT 2: I enjoy at least one hiking trip per year in this area. I feel that your (our) money would be much better spent with assistance to the private landowners wishing to improve his range, and always last, but certainly not least, on the Mormon Cricket infestations in north-eastern Utah.

RESPONSE: Both insect control and vegetation treatments are intended to improve forage conditions, and both are important to livestock operators whether it is south central Utah or north eastern Utah.

## LETTER 16

COMMENT 1: Several factors make the HMCRM proposal a significant federal action. The proposed action will significantly impact the visual resources of the Henry Mountains. In considering the Henry Mountains area for designation as a Area of Critical Environmental Concern, BLM found the visual resources in the Henry Mountains rated very high in the scarcity element. BLM categorizes the Henry Mountains, Class II visual resource, the highest possible designation.

RESPONSE: Impacts to visual resources are addressed.

COMMENT 2: Range scientists generally agree that the proposed range projects coupled with the continued grazing practices will increase soil erosion and increase salinity in surface water. BLM claims otherwise without offering any evidence supporting their claim.

RESPONSE: Most range scientists support the grazing management practices implemented by BLM and do not support the premise that range land chainings and seedings, burning and seeding, interseeding, roller chopping, fencing and pipeline construction increase soil erosion and increase salinity in surface water, except in some cases, for a short period immediately following treatment.

In fact, all of the rangeland treatments outlined in the draft EA for the CRM project and recognized range improvement practices are outlined in the basic texts for Range Science listed below:

Range Management (Stoddart, Smith, and Box) Third Edition 1975

Rangeland Management (Harold F. Heady 1975)

Range Development and Improvements (John F. Vallentine 1980)

Current research shows chaining of pinyon-juniper with debris left in place increases soil moisture storage (Gifford and Shaw, 1973), and did not increase either runoff or sediment (Gifford et al, 1970; Gifford, 1973).

When care is taken to use the techniques properly, mechanical brush control procedures increased erosion hazard temporarily, if at all (Heady, 1975). Infiltration tests on chained sites in Utah showed that soil bulk density, on which chaining has little effect, was the most important factor determining erosion (Williams et al, 1972). Runoff was correlated with soil cover more than mechanical treatment of pinyon and juniper chainings (Kincaid and Williams, 1966).

A review of fifty nine Forest Service pinyon-juniper chaining projects in Utah indicates the following: (1) Chaining reduced tree overstory by nearly 100 percent and shrub overstory by 50 percent. (2) Soil protection afforded by the overstory which was lost was compensated for by an increase in vegetation and litter, from 35 percent before chaining to 54 percent five years after treatment (Phillips, 1977).

A U.S.U. master thesis entitled, "A Multi-Site Evaluation of Pinyon Juniper Chaining in Utah" provides pertinent information. This project evaluated 20 pinyon and juniper chained and seeded areas ranging in age from one to twenty-five years, and adjacent unchained areas. The wide range of age and geographic distribution of the treated sites allowed comparison of the effects of chaining and seeding on forage production, mule deer usage and watershed conditions (Payne, 1980).

The abstract of this thesis states, "Watershed conditions were separated into distinct problem areas evaluated individually and then combined for overall evaluation. Most treated sites were either significantly improved or the trend was toward improvement as a result of chaining and seeding." The text explains that every site chosen had debris left in place. It also states, "Eight of the chained sites show significantly less soil movement on the chained areas. Even though no significant difference exists on the remaining 12 sites, soil movement values show a trend toward less soil loss on the treated areas. Soil movement was not correlated with the age of the treatment. However, Two Mile and Dry Mesa which were chained in 1978 had high rates of soil movement both on the treated and adjacent untreated areas. Since protective cover has not become established, this would be an expected finding."

The Bureau of Land Management has conducted the following studies:

In the years 1977 through 1981, extensive watershed and soil erosion evaluations were conducted in the Henry Mountain Resource Area. During this period, a third order soil survey was also completed. During this soil survey, ecological sites were identified for the Henry Mountains. This data shows an increase percent of ground cover (vegetation and litter) and a more stable erosion condition on areas chained and seeded in the 1960's verses the same ecological site with the existing pinyon and juniper vegetative cover (Buchanan and Chappell, 1988).

Controlling salinity in surface runoff from public lands is closely related to controlling surface runoff and sediment yield. Vegetation cover is usually the most important management variable influencing runoff and erosion rates on rangelands (Salinity Control on BLM Administered Public Lands in the Colorado River Basin Report to Congress July 1987).

A study conducted in the CRM project area by hydrologist, Dave McWhirter, is reported as follows:

Infiltration studies were conducted on the Airplane, South Creek, and Eagle Bench seedings and on adjacent unchained pinyon-juniper vegetative subtypes in July, 1979. Studies generally showed that there was a much greater infiltration to precipitation ratio in the seeded areas and that a much greater sediment yield occurred from the adjacent P-J areas. Sediment yield ranged from 0.18 to 0.30 acre feet/square mile on the seeded areas. The unchained pinyon-juniper areas had sediment yields ranging from 0.48 to 0.66 acre feet/square mile. Infiltration to precipitation ratios ranged from 0.71 to 0.77 on seeded areas and 0.53 to 0.58 on the P-J areas. Slope on all plots were consistently between 4 to

8 percent and bare ground ranged from 13 to 46 percent in seeded areas to 40 to 61 percent in P-J areas. These studies have shown that vegetative type manipulation has been highly effective in the Henry Mountains in terms of decreasing sediment yield and runoff and increasing infiltration (Henry Mountain URA 3 and 4, 1981).

The results of present grazing practices in general, are addressed in the following excerpt from a paper entitled "Role of Land Treatment on Public and Private Lands" by Thadis W. Box which was prepared for the National Academy of Sciences in 1984.

"There is a myth among many that the rangelands today are in the worst condition ever and are deteriorating. In my opinion, the ranges of North America are in the best condition of this century. Analysis of past range surveys (Box, Dwyer and Wagner 1977) showed that range conditions were very low at the time of the first official completion of the status of the range in 1936 (U.S. Senate 1936). They had improved somewhat between 1936 and the evaluation for the Public Land Law Commission report in 1968 (Pacific Consultants 1968). They improved again between the Public Land Law Review Commission report and the first annual evaluation required by the Resources Planning Act (USDA 1976, b, c). The most current RPA data show some additional improvement.

COMMENT 3: Without any inventory, BLM plans destruction of numerous archaeological sites.

BLM has failed to conduct class 2 archaeological surveys of the resource area.

RESPONSE: For a discussion of the timing of the consideration of cultural resources inventories, please refer to Letter 12, Comment 39. Inventory of these kinds of projects at the Class II level is not nearly sufficient, and BLM requires Class III intensive field inventories in these cases.

COMMENT 4: The Utah Division of Wildlife Resources has not accepted BLM's request to limit the buffalo herd to 200 animals. This year they will issue about the same number of permits, 44, as last year. Based upon buffalo reproduction, this is forecast to increase the buffalo herd to more than 400 animals before the end of 1989. UDWR has no indication of taking actions to reduce the buffalo herd to the size described in the EA. Any documentation and physical evidence substantiating BLM's position is required. Current information shows BLM's conclusion to be false.

RESPONSE: The UDWR participated in BLM planning process during the preparation of the Henry Mountains Grazing Environmental Impact Statement (HMGEIS). In 1982, the Division stated that they would help maintain the bison herd at the agreed population size of 200 post season animals (yearlings, cows and bulls). Also, UDWR indicated that they were willing to work cooperatively to increase vegetative productivity of the Henry Mountain rangelands for the benefit of both livestock and bison.

Since 1977, the Board of Big Game Control has nearly quintupled the annual number of buffalo hunting permits (10 in 1977 to 56 in 1987) due to recommendation of BLM and UDWR. This year, both agencies are recommending a

total harvest of 67 animals. The number of postseason animals has remained fairly close to 200. Notice that the 5-year average population trend for postseason animals is 192. (See Table 6 in the text.)

COMMENT 5: The HMCRM EA proposes actions that are in conflict with the existing land-use plan. The actions prevent BLM from meeting visual resource management objective on 17 of the grazing allotments. The proposed actions are in conflict with the range projects (vegetation manipulation) described in the Henry Mountain Management Framework Plan. Those projects allowed under the plan are shown on page 84 of the final EIS.

The proposals that are in conflict with the existing land use plan include the following:

Pete Steel Bench Drill/seed

Apple Brush Bench Chaining

Dugout burning

Tarantula Mesa Chaining

Airplane Spring roller chopping

Slate Creek/Garden Basin chaining

None of these projects are approved or described in the approved plan. Missing from the EA are BLM current planning decisions on the related resources. A complete copy of the MFP decisions as currently updated is requested to be included with the response to these comments. The resources for which MFP decisions are requested include: grazing, watershed, visual resources, archaeology, recreation, wildlife, and soils in the Henry Mountain Resource Area.

Execution of any one of these activities would violate 43 CFR 1710.5-3 which requires all BLM actions to "conform to the approved plan." In order to conform with the plan, BLM will need to follow the planning, programming, budgeting regulations for amending the management framework plan. The EA does not propose amending the plan.

RESPONSE: Not all projects are in conflict with the existing MFP and/or EIS. See Response to General Comment 4.

COMMENT 6: BLM policy mandated by FLPMA and the Taylor Grazing Act as amended require BLM to practice sustained yield. When grazing use exceeds forage availability, BLM is required to reduce the number of grazing animals on the range. The regulations are clear on this:

43 CFR 4110.3-2 Decrease in Forage

(b) when authorized grazing use exceeds the amount of forage availability and allocated for livestock grazing within an allotment or where reduced grazing is necessary to facilitate achieving the objectives in the land use plans, grazing permits or grazing leases and grazing preferences shall be cancelled in whole or in part.

We request that BLM estimate the report the current forage availability and its relationship with the same area in good condition in the EA. We further ask that BLM estimate grazing reductions that will lead to recovery of the areas where forage production is declining. This information is requested for each allotment.

RESPONSE: See Response to Comment 3, Letter 8. Also, answers to the questions asked, are now stated clearly in the Final EA.

COMMENT 7: BLM also states that buffalo will be managed for a herd size of 200 animals. The Utah Division of Wildlife Resources plans otherwise. They are managing the herd for continued herd growth. The number of permits to offered for next year is approximately the same as the past few in which the herd increased by nearly 75%. BLM needs to state how they plan to manage the buffalo and keep the herd to the size shown in the EA and in the MFP. Is the state's action a violation involving actions similar to overgrazing. If the state continues to ignore BLM's decision, what action will BLM take?

RESPONSE: See Response to Letter 16, Comment 4.

BLM does not manage wildlife numbers, only habitat. Utah Division of Wildlife Resources (UDWR) manages the wildlife numbers and BLM recommends changes in those numbers. If there are more than the agreed 200 yearling and adult bison, then overgrazing would occur, but the only BLM recourse to bison overgrazing, in this case, would be to increase forage or reduce other forage use.

COMMENT 8: BLM incorrectly concludes in the EA that it cannot reduce current grazing use to level found in 1980. Decreasing cattle use was reported in the EA as being in conflict with MFP decisions. The MFP requires management for sustained yield under the multiple use requirement. Reduction of grazing use to achieve this is clearly not in conflict with the MFP. We request that BLM consider this alternative and adopt it as the preferred alternative.

RESPONSE: See Response to Comment 3, Letter 8.

COMMENT 9: BLM has failed to carry out the provisions of the National Historic Preservation Act in the Henry Mountain. This requires producing an inventory of cultural resources. We request that BLM report which portions of the resource area are inventoried to the inventory levels described in BLM manuals. We request that BLM identify specific areas requiring an intensive cultural resource inventory. We further request that BLM provide for the evaluation and identification of appropriate sites for inclusion in the National Register of Historic Places. This provision needs to consider the number, quality, and significance of the cultural resource sites.

BLM defers cultural protection to those doing the chaining. Leaving cultural resource management to bulldozer operators is inadequate.

Absent from the EA is the establishment of measure to protect significant cultural resources from vandalism, human depredation, and natural destruction. The EA fails to establish such measures. The EA and the MFP fails to provide maintenance of historic sites on, or eligible for inclusion on the National Register of Historic Places. BLM is further required to identify opportunities for interpretation of cultural resources. No specific plan exists for these requirements.

The EA fails to examine the interactions among cultural resources and other multiple uses. The EA fails to consider activities and their impacts on cultural resource management for the specific vegetation projects and for the resource area.

In the Henry Mountains, BLM has no plan to locate, inventory, and nominate to the Secretary of the Interior all properties that appear to qualify for inclusion on the National Register.

RESPONSE: BLM has not failed to comply with the National Historic Preservation Act. The affected environment information contained in this (or any) EA is based on previous inventories conducted in the general area. Prior to project implementation, Class III (intensive) inventories are done to locate and record all cultural resources in the project area and mitigate those warranting such treatment. Providing for the identification and evaluation of sites eligible for inclusion in the National Register is a matter of policy and law, is carried out jointly by the agency responsible for the field inventory (BLM in this case), the State Historic Preservation Officer, and the Advisory Council on Historic Preservation. This process is covered in minute detail in 36 CFR 800 (the implementing regulations of the Section 106 review process of the National Historic Preservation Act).

Sites needing to be avoided during the chaining process are flagged by the archaeologist during the inventory so the bulldozers can see them and avoid them. The responsibility for site protection is the archaeologist's not the bulldozer operator's.

Vandalism and "human depredation" have been illegal since 1906 --a myriad of laws cover this. The EIS and EA do not replace, circumvent, or re-establish the law. Natural destruction has been occurring since the time of original habitations and, while it can be mitigated to a certain extent, it cannot be controlled completely. The specific plan, made in the comment, dealing with National Register properties and the interpretation of cultural resources is general cultural resource program policy and not something that is recreated for a specific EA. These items are found in BLM 8100 series manuals. If qualifying sites are found as a result of the inventories undertaken for this EA, they will be nominated to the National Register or interpreted according to program policy.

COMMENT 10: Visual Resources The MFP gives the Henry Mountains, specifically the areas where chainings are proposed, the highest possible visual resource rating, Class II. Visual resource management requires BLM to manage areas in this class to prevent changes in the visual resources. BLM record shows that the chainings will cause significant change in the visual resource and that this is a conflict that will not be mitigated.

BLM's current practice of chaining major portions of entire drainages clearly conflicts with the management requirements for visual resource protection.

The EA fails to address management that would correct visual resource loss due to past chaining projects. BLM needs to offer an alternative which will revegetate existing chainings in a manner that emulates natural forest and clearings.

RESPONSE: Class II is not the highest VRM rating. Visual impacts are to be minimized through the use of mitigation provisions listed in the EA. See Letter 9, Comment 5.

COMMENT 11: Several of the allotments have times of use which overlap critical spring growing seasons. 40 of the allotments allow grazing use to continue through May through and past the critical spring growing season. This practice leaves cattle grazing during the most sensitive period of the year, leading to maximum impact to the forage for a grazing animal. Plants are harvested before they mature and seed. We request that no grazing be allowed in the critical spring growing season on any allotment where the range is declining or stable.

Unlike game, cattle are left in one area for months at a time. Forage near water is heavily grazed and riparian habitat exhausted. One alternative is to leave the cattle in one area for a period of time and then move them before any portion of the allotment becomes over used. Increased rest periods need to be practiced allowing areas several years to recover between visits.

We request that BLM consider with the existing alternatives, changes in grazing management that reduced grazing impacts during the critical spring period, decreased the stay of cattle in one place, and increase the length of rest for areas.

RESPONSE: Both the Nasty Flat and Pennell Allotments are summer livestock grazing areas with season of use being 6/1 to 9/30 and 6/10 to 10/31, respectively. The Steel Butte is from 10/16 to 5/31. In order to relieve the grazing during the spring growing season on this allotment, a livestock grazing plan has been developed. The EA has been rewritten to reflect this plan in the Steele Butte Allotment.

COMMENT 12: Throughout the EA BLM makes claims to the benefits of chainings and other vegetation manipulation. During the visits to BLM offices in Richfield and Hanksville, we requested copies of studies which have been performed on range projects in the Henry Mountains validating these claims. BLM claims that erosion is reduced, that wildlife habitat improved, and specific amounts of vegetation (and AUMs) produced from these projects.

RESPONSE: The EA has been more clearly and thoroughly written in an effort to better portray the benefits and adverse impacts from the proposal and alternatives. Various studies are listed in the bibliography of the EA.

## LETTER 17

COMMENT 1: Pg. 10, para. under D. I have seen suggestions, following recent vegetation surveys, indicating that grazing should be reduced 40 to 60% of active preference on some heavily used allotments. Why were reductions in livestock numbers not accepted? How was this decision arrived at and why has it been so forthrightly eliminated as an alternative when over-grazing in some areas is obvious?

RESPONSE: See Response to Comment 3, Letter 8. Though overgrazing is evident in certain locations within the CRM area, the cause of this problem and its solution is not so easily evident. At the time of original allocation there was sufficient forage for the number of livestock permitted. Conditions have obviously changed since then. A major problem is the free roaming nature of the bison, their migration to the area, and their increase in population.

By law and regulation, livestock permittees have preference for grazing use based on historic need and dependency. Bison do not have preference, but BLM has no authority over their numbers or area of use. This authority lies directly with the Utah Board of Big Game Control. BLM has limited input in big game management through the interagency field committee on big game management which makes recommendation to the Board of Big Game Control. Since action taken on grazing privileges often result in litigation and BLM has no veto power over the Board of Big Game Control, BLM often concentrates on habitat management.

COMMENT 2: Pg. 13, last para. Do you have any supporting evidence to back the expectation that upland game and other species listed will not be impacted by the proposed impacts?

RESPONSE: The text has been strengthened in the EA to reflect the concerns in the comment. See the affected environment sections in the various wildlife sections in the EA.

COMMENT 3: Pg. 18, 2nd para. under Watershed I disagree with the statement that foliage drip is as destructive as direct rainfall particularly the high intensity rainfall events that frequently occur in this area.

RESPONSE: This was a misstatement in the draft EA. Please notice this statement has been withdrawn from the final EA and the paragraph cited has been rewritten.

COMMENT 4: Pg. 18, 4th para. under Watershed I know of no direct evidence to support the claim that watershed conditions and soil erosion will improve after 2 years following such treatments. Does this assume a 30, 70, or 100% level of successful establishment?

RESPONSE: There is disagreement among some researchers as to the extent of improvement of soil erosion and to watershed condition from treatments such as pinyon-juniper chaining. However, there is a substantial base of research and study information which supports such treatment to improve watershed and reduce soil erosion.

Vegetation cover is usually the most important variable influencing runoff and erosion rates on rangelands (Salinity Control on BLM Administered Public Lands. In The Colorado River Basin, July 1987 A Report to Congress.) This general statement is supported by West, 1982; Jensen, 1972; Kincaid and Williams, 1966; Vallentine, 1980 and others. (see Letter 16, Comment 2.)

Extensive research has been done in Utah using a Rocky Mountain Infiltrimeter. The report states, "In essence these studies have shown that infiltration and erosion rates at a given point on chained sites have not been particularly affected by treatment practices." This same article explains the results of the studies indicate increased soil moisture on chained areas with scattered debris, (as outlined in Henry Mtn. CRM draft EA). "Given a runoff event due to high intensity rainfall, least runoff may be expected from sites chained

with debris left in place, followed very closely by natural woodland and also sites which have simply been sprayed to kill the trees. Greatest runoff will occur on sites chained with debris windrowed." (Gifford, 1973).

In 1977 through 1981, extensive watershed and soil erosion evaluations were conducted in the Henry Mountain Resource Area. During this period a third order soil survey was also completed. During this soil survey, ecological sites were identified for the Henry Mountains. This data indicated an increased percent of ground cover and a more stable erosion condition on areas chained and seeded in the 1960's verses the same ecological site with the existing pinyon-juniper vegetative cover (Buchanan and Chappell, 1988).

Also, see response to Letter 16, Comment 2.

The reference in the EA to watershed conditions and soil erosion improving after two years following treatment was a general statement based on the following; typically it takes two growing seasons for seeded species to become established. This may take more or less time depending on climatic conditions. Before seedling establishment, there is a slight acceleration or at least no improvement in erosion condition. Erosion acceleration is kept to a minimum by the scattering of debris over the surface during the treatment process. The level of success of these seeded areas will be determined by the density of seeded species, homogeneity of seeded plants, vigor of seeded species and percent vegetative cover. Level of success will be weighed against existing seedings on the same soil and ecological site.

To answer the question, what level of successful establishment does this assume, BLM ordinarily does not calculate pure live seed applied versus seedling emergence first growing season versus seedling survival through the second growing season. However, studies on foothill ranges in Utah have shown that approximately a 5 percent establishment rate can be expected (Vallentine, 1980).

COMMENT 5: Further, I question whether there would be any detectable reduction in salinity of the Colorado River. In the absence of any attempts to measure such a reduction the assertion in this context is without basis.

RESPONSE: Refer to soils and watershed sections for additional data concerning salinity that has been included in this final EA. A detectable reduction in salinity at Imperial Dam from the proposed projects may be questionable. It is known, however, that a large amount of sediment has and

continues to come off the Henry Mountains into the Colorado River System (see watershed section, affected environment). The proposed project is in harmony with BLM's current actions to minimize salinity in the Colorado River (see Appendix 1). This is accomplished by increasing ground cover (vegetation and litter) to stabilize the soil and reduce runoff and sediment yield.

COMMENT 6: Pg. 20, 3rd para. under Wildlife What evidence can you offer that chaining would "greatly benefit all big game species"? I can point to the results of a study indicating that chaining of pinion-juniper stands provided no detectable benefit to deer. Additionally, it was reported in Skousen, et al. (1985; pg. 511) that big game activity was two to three times heavier in bulldozed sites compared to two-way chained areas. [Skousen, J., J.N. Davis, and J.D. Brotherson. 1986. Comparison of vegetative patterns resulting from bulldozing two-way chaining on a Utah pinyon-juniper big game range. Great Basin Naturalist 46:508-512].

RESPONSE: Short, et al. (1977) concluded that when pinyon-juniper woodlands canopy was dense, the production of midstory browse and understory herbage was reduced, deer and elk use diminished. Small clearings within pinyon-juniper woodlands do increase usefulness for deer and elk, however, large clearings that isolated undisturbed woodland from contiguous protective cover were unacceptable wildlife habitat. Because of the rough terrain, islands and stringers, the width of the treatments would be about 600 feet. Because of the expected intermixed patterns, the projects would benefit wildlife habitat.

COMMENT 7: Pg. 20, 1st para. under Recreation Vegetation treatment would indeed impact the visual aspect of the area.

RESPONSE: See Response to Letter 1, Comment 16, and Letter 9, Comment 5.

COMMENT 8: Pg. 21, para. under Cultural Resources How would the inventory for cultural resources be conducted and how much time would be allowed for the inventory? Further, would any kind of buffer zone be enforced around a site that was to be avoided and would any attempt be made to make the edges relatively natural in appearance?

RESPONSE: Cultural resource inventories are conducted by one or more qualified archaeologists examining the project area in detail. This is otherwise known as a Class III Intensive Field Inventory, the objective of which is to locate and record all cultural resources within a specified area. Time limits are not imposed on field inventory. Project design and implementation is dependent on the results of that inventory. Buffer zones would only be used if the field archaeologist felt they were necessary to adequately mitigate impacts, based on the professional judgment of the field archaeologist.

COMMENT 9: Pg. 21, 2nd para. under Livestock Following analyses of forage production, the planning process should include provisions to prevent further overgrazing of newly created allotments.

RESPONSE: The EA is clear on the point that both livestock and wildlife use will continue to be monitored to provide a warning of pending problems with the environment. The data gathered on monitoring will also assist managers in making decisions on future management actions.

Also, see Response to Comment 44, Letter 12.

COMMENT 10: (2) I found the Environmental Assessment made several statements (e.g., regarding benefits of chaining to "all big game") to be somewhat out of line with findings of published studies. While no evidence is presented here regarding the potential benefits of chaining to bison, it has been suggested in the literature (Skousen, et al. 1986) that selective bulldozing of trees, while leaving shrubs such as cliffrose (Cowania stansburiana), is more beneficial to deer than is chaining. I found none of the treatments proposed in the EA to include the use of selective bulldozing.

RESPONSE: Selective bulldozing was considered as a treatment method, but was rejected due to high costs.

COMMENT 11: (3) With regard to cultural resources, I feel that plans for survey work in the proposed treatment areas need to be presented in more detail as do the criteria that will be used in determining those areas that will be avoided. Further, I feel that a defined buffer zone needs to be established around such areas where edges are left with a natural appearance. Without such a buffer these areas would be showcased for anyone who was looking for ruins, including those who might alter or destroy cultural artifacts.

RESPONSE: All areas proposed for treatments that have the potential to impact cultural resources will be inventoried at the Class III intensive level before any project authorization is granted. The criteria used to determine which sites will be avoided are twofold. First, it is legally required to mitigate all those sites listed on or eligible for listing on the National Register of Historic Places. Second, it is current BLM policy to avoid all sites if possible. As mentioned in Letter 17, Comment Response 8, buffer zones would be used if the field archaeologist determined the necessity. For further discussion of this, please refer to Response to Letter 5, Comment 4.

COMMENT 12: (4) I specifically oppose the proposed treatments in Garden Basin (640 acres of burning, chaining, and seeding). As a visitor to the area I am concerned about the effects the treatments would have on the view from Ragged Mountain.

RESPONSE: The Garden Basin seeding would be visible from Ragged Mountain, but many other existing seedings are now visible from there. According to normal daily walk-in traffic at the Hanksville Area Office, it is estimated that the top of Ragged Mountain is the destination for very few hikers; most seem to be interested in climbing Mt. Ellen and some rock climbing on The Horn. Mt. Ellen has a developed hiking trail and there is no developed hiking trail to other mountain peaks. The tops of other peaks are used very seldom. It is estimated that over 90% of the recreation use in the Henry Mountains is activities other than hiking. The visual impact of the seeding would be reduced by contouring and blending the edges of the treated land (see standard operating procedures for more detail).

COMMENT 13: (7) The project cost (\$321,350.00) is substantial, with the bulk of the funding coming from BLM and the justification framed in terms of

increasing AUMs. I would be interested in seeing some sort of economic analysis that discusses project costs in terms of cost benefit of range improvement, relative to livestock and the bison herd.

RESPONSE: An economic summary has been placed in the impact section of each alternative. Detail of the economic analysis is shown in Appendix 12. Benefits to livestock, bison, and deer habitat are specifically estimated.

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APPENDIX 1  
SOIL CHARACTERISTICS

PROJECT	SOIL MAP SYM.	SOIL TYPE - SURFACE TEXTURE	% OF AREA	AVERAGE ANNUAL PRECIP.	% SLOPE	EFFECTIVE ROOTING DEPTH	ERODIBILITY		% PROBABILITY FOR RESEEDING SUCCESS (1)
							WATER	WIND	
Airplane Spring Existing Seeding	HnE	HM-Jm Complex Cb Loam, Vcb Loam	92%	14-16"	8-30	-	Slight	Slight	Hm - 50-70 Jm - 30-50
	MnF	Mm-Rock Outcrop Lm Complex, Vcb Sandy Loam, Loam	8%	14-16"	30-50	17"	Mod.	Mod.	Mm - 30 Lm - 50-70
Applebrush Bench	KmC	Km-Cb Fine Sandy Loam	25%	12-14"	4-8	-	Slight	Slight	50-70
	MaB	Ma-Vcb Fine Sandy Loam	75%	8-10"	2-4	-	Slight	Slight	30-50
Browns Hole	AnG	Am-Bm Complex Gr. Loam, Gr. Clay	15%	22-30"	50-70	-	-	-	30-50
	BnG	Bm-Dm-Cm Complex Cb. Loam	75%	22-30"	50-70	-	-	-	70
	NnF	Em High Rainfall - Pm Pm Complex. Cb. Loam, Loam	10%	20-22:	30-50	-	-	-	50-70
Crescent Creek Existing Seeding	KmC	Km-Cb Fine Sandy Loam	95%	12-14"	4-8	-	Slight	Slight	50-70
	PaD	Pa-gr Clay Loam	5%	8-12"	2-15	60"	Mod.	Slight	30-50

PROJECT	SOIL MAP SYM.	SOIL TYPE - SURFACE TEXTURE	% OF AREA	AVERAGE ANNUAL PRECIP.	% SLOPE	EFFECTIVE ROOTING DEPTH	ERODIBILITY		% PROBABILITY FOR RESEEDING SUCCESS (1)
							WATER	WIND	
Coyote Benches Existing Seeding	HnE	Hm-Jm Complex Cb Loam, V Cb Loam	100%	14-16"	8-30	-	Slight	Slight	Hm - 50-70 Jm - 30-50
Dark Canyon Existing Seeding	HnE	Hm-Jm Complex Cb Loam, V Cb Loam	100%	14-16"	8-30	-	Slight	Slight	Hm - 50-70 Jm - 30-50
Dugout	HnE	Hm-Jm Complex Cb Loam, V Cb Loam	100%	14-16"	8-30	-	Slight	Slight	Hm - 50-70 Jm - 30-50
East of Coyote Bnch	KmC	Km-Cb Fine Sandy Loam	100%	12-14"	4-8	-	Slight	Slight	50-70
Jack King Existing Seeding	HnE	Hm-Jm Complex Cb Loam V Cb Loam	100%	14-16"	8-30	-	Slight	Slight	Hm - 50-70 Jm - 30-50
Nasty Flat	AnG	Am-Bm Complex gr Loam, gr Clay	25%	22-30"	50-70	-	-	-	30-50
	DnG	Dm-Cm Complex Loam	65%	25-30"	50-70	-	-	-	50-70
	NnG	Mm-Rock Outcrop Lm Complex VCb Fine Sandy Loam, Loam	10%	14-16"	50-70	17"	Mod.	Mod.	Mm - 30 Lm - 50-70
North of Coyote	EnF	Em-Rm Complex Cb Loam	15%	16-18"	30-50	-	Slight	Slight	50-70
	HnE	Hm-Jm Complex Cb Loam, VCb Loam	60%	14-16"	8-30	-	Slight	Slight	Hm - 50-70 Jm - 30-50
	KmC	Km-Cb Fine Sandy Loam	25%	12-14"	4-8	-	Slight	Slight	50-70

PROJECT	SOIL MAP SYM.	SOIL TYPE - SURFACE TEXTURE	% OF AREA	AVERAGE ANNUAL PRECIP.	% SLOPE	EFFECTIVE ROOTING DEPTH	ERODIBILITY		% PROBABILITY FOR RESEEDING SUCCESS (1)
							WATER	WIND	
Northeast of Kings Chaining	HnE	Hm-Jm Complex Cb Loam, VCb Loam	100%	14-16"	8-30	-	Slight	Slight	Hm - 50-70 Jm - 30-50
Pete Steel Bench	NaB	Na-Pa Complex Fine Sandy Loam	100%	8-10"	2-4	-	Slight	Slight	30-50
Sage Flat	KmC	Km - Cb Fine Sandy Loam	100%	12-14"	4-8	-	Slight	Slight	50-70
Slate Creek/ Garden Basin	EnF	Em-Rm Complex Cb Loam	80%	16-18"	30-50	-	Slight	Slight	50-70
	MnF	Mm- Rock Outcrop Lm Complex V Cb Loam, Loam	15%	14-16"	30-50	17"	Mod.	Mod.	Mm - 30 Lm - 50-70
	NnF	Em High Rainfall - Pm Complex Cb Loam, Loam	5%	20-22"	30-50	-	-	-	50-70
Tarantula Mesa	BaD	Travessilla - Rock Outcrop Complex Fine Sandy Loam Includes Aa-Deep Sandy Loam	63%	10-12"	4-15	10-18"	Mod.	Mod.	30-70
	FnC	Fm-Gm Complex Fine Sandy Loam	25%	12-15"	2-8	-	-	-	Fm - 50-70 Gm - 30-50
	AaB	Aa-Very Fine Sandy Loam	10%	10-12"	2-4	-	Mod.	Mod.	50-70
	CaC	Ca-Rock Outcrop Complex	2%	8-12"	2-8	28"	High	High	30-50

PROJECT	SOIL MAP SYM.	SOIL TYPE - SURFACE TEXTURE	% OF AREA	AVERAGE ANNUAL PRECIP.	% SLOPE	EFFECTIVE ROOTING DEPTH	ERODIBILITY		% PROBABILITY FOR RESEEDING SUCCESS (1)
							WATER	WIND	
West of Cat Ranch	HnE	Hm-Jm Complex Cb Loam, V Cb Loam	70	14-16"	8-30	-	Slight	Slight	Hm - 50-70 Jm - 30-50
	KmC	Km-Cb Fine Sandy Loam	30	12-14"	4-8	-	Slight	Slight	50-70

(1) The rating system used in the probability for reseeding success seldom produces ratings above 70%.

APPENDIX 2  
EROSION DATA

Project	SWA # Site Write up Area	Soil Mapping Unit	Vegetative Type	EROSION		
				Erosion Class	Condition SSF	Soil Loss (tons/acre)
Airplane	A909	HnE	seeding	slight	22	.52
Spring	A912	HnE	seeding	slight	39	.97
Existing seeding	A555	MnF	P-J	slight	33	.78
Apple Brush	A759	KmC	P-J	slight	38	.93
Bench	A012	MaB	P-J	slight	39	.97
Brown's Hole	A460	AnG	Doug Fir	slight	31	.74
	A453	BnG	Oak	slight	32	.75
	A461	NnF	Oak	moderate	45	1.16
Crescent	A122	KmC	P-J	slight	30	.69
Creek	A731	KmC	P-J	moderate		1.04 <sup>a</sup>
Existing	A832	KmC	P-J			.69 <sup>a</sup>
seeding	A905	KmC	seeding	stable	20	.48
	A907	KmC	seeding	stable	20	.49
	A146	PaD		moderate	57	1.82
Coyote Bench	A901	HnE	seeding	slight	22	.52
Existing seeding						
Dark Canyon	A500	HnE	P-J	moderate	58	1.88
Existing seeding			(transect outside of seeding)			
Dugout	A910	HnE	seeding	slight	23	.54
Existing seeding						
East of Coyote Bench	A505	KmC	P-J	moderate	57	1.82
Nasty Flat	A257	AnG	Doug Fir	moderate	45	1.16
	A260	DnG	Fringe Sage	stable	17	.43
	A259	NnF	P-J	slight	35	.84
North of Coyote	A502	EnF	P-J	slight		.69 <sup>a</sup>
	A900	EnF				.69 <sup>a</sup>
	A500	HnE	P-J	moderate	58	1.88
	A506	KmC	P-J			1.88
Northeast of Kings Chaining	A500	HnE	P-J	moderate	58	1.88

Project	SWA # Site Write up Area	Soil Mapping Unit	Vegetative Type	EROSION		
				Erosion Condition Class	SSF	Soil Loss (tons/acre)
Pete Steele Bench	A001	NaB	shadscale	slight	25	.58
Slate Creek/ Garden Basin	A529	EnF	P-J	slight/ moderate		1.01
	A555	MnF	P-J	slight	33	.78
	A530	NnF	P-J	slight	30	.69
Tarantula Mesa	A059	BaD	seeding	slight	33	.78
	A070	BaD	P-J	moderate	58	1.88
	A568	FnC	P-J	slight	22	.52
	A057	AaB	Big Sage	slight	33	.78
	A060	AaB	Big Sage	slight	37	.90
	A021	CaC	seeding	stable	17	.43
	A058	CaC	seeding	slight	40	1.01
West of Cat Ranch	A500	HnE	P-J	moderate	58	1.88
	A503	KmC	P-J	moderate	56	1.74

<sup>a</sup> Soil loss estimates made where the SSF was not available.

### APPENDIX 3

By Dr. Paul McCawley  
Department of Range Science  
Utah State University

#### NEW PROJECT ASSESSMENT:

New projects recommended in proposed action include three kinds of land treatments. The first kind involves chaining of trees, followed by broadcast seeding, then backchaining to uproot the remaining trees and to cover the seed. In the CRM proposal, 3,920 acres of chain-seed were recommended. During the development of this environmental assessment, the BLM was instructed by the CRM chairman to evaluate the impacts of a different kind of tree removal treatment that will be recommended in place of the chain-seed treatment wherever possible. This treatment requires initial attempt to burn the stands of mature pinyon-juniper, followed by a chain to remove target trees not consumed by fire, and then broadcast seeding followed by a drag chain to cover the seed. The recommendations include only 550 acres of chain-seed treatment, 250 acres of which already have been completed. The remaining 3,370 acres of chaining recommended in the CRM plan have been changed to burn-chain-seed treatments.

The other new vegetation treatments include drill-seed (1,150 acres), aerial broadcast seeding (1,100 acres). Treatments recommended for rejuvenating existing vegetation improvements include prescription burning and roller-chopping. The justification and expected impacts of these treatments are discussed by allotment in the following section.

STEELE BUTTE ALLOTMENT: This allotment is used primarily during winter by deer and bison and during fall through spring by cattle. Most of the allotment is accessible yearlong, however, Tarantula Mesa is not used by livestock until snows melt off in the spring. The projects on Tarantula Mesa will provide important late spring-early summer forage for cattle, by reducing the demand made on other areas where competition with bison is keen. Applebrush and Pete Steele benches receive considerable use by both livestock and big game during the winter. The scattered juniper trees over much of the area may provide important thermal and escape cover for mule deer. Projects on these benches are intended to improve winter-spring range for livestock and bison, without detracting from habitat value for mule deer. Steele Butte has over 35,000 acres of pinyon-juniper and 23,000 acres of semi-desert shrub vegetation (42% and 28% of the allotment, respectively). The projects will convert 1,800 acres of pinyon-juniper and 1,150 acres of shrub-dominated vegetation (5% of each type in the allotment).

Pete Steele/Applebrush: The 1,150 acre seeding treatment occurs on a semi-desert stoney loam range site with about 12 inches of precipitation per year, and a 10 to 20% slope. The site supports scattered juniper trees with a significant understory of spiny hopsage, broom snakeweed, big sagebrush, gallettgrass and three-awn. Current productivity of the site is somewhat

below potential. However, the composition of the vegetation is low-value, caused by selective winter and spring use of the native cool-season grasses (principally Indian ricegrass) and the desirable shrubs (black sagebrush and 4-wing saltbush), now nearly absent from the area. Probability for a successful seeding is 30 to 70%.

Current forage production on the site is about 90 pounds per acre (18 acres/AUM) or about 16% of the total air-dry production. The interseeding treatment is targeted for those locations where snakeweed is the biggest problem. Tractors with single seed drills will be used in the interspaces between existing juniper trees, without significant tree removal (for the benefit of the deer). Actual drill passes will be flagged to assure treatment of only the worst degraded and highest potential sites. Nine pounds of seed will be drilled per acre, including grasses, shrubs and forbs (low-elevation seed mix). Following treatment, approximately 250 pounds per acre (45% of the total production) will be available for livestock and wildlife, increasing the carrying capacity of the site of 106 AUMs (7 acres/AUM).

Applebrush Bench: The 300 acre chain-seed treatment area is found principally on an upland stoney loam, pinyon-juniper range site in the 12 to 14 inch precipitation zone. The site has relatively gently relief (less than 20% slopes) and moderately rapid infiltration characteristics. The existing vegetation is composed of mature pinyon and juniper trees and a modest understory of Wyoming big sagebrush and spiny hopsage. Very few herbaceous plants are found on this site. The current productivity of the site is about 250 pounds per acre. However, less than 20% are desirable forage plants (30 acres/AUM).

Because of the competitive dominance by the trees, and because of the absence of desirable understory vegetation, there is no opportunity to improve the site through livestock or wildlife management, nor is there likelihood of successfully burning the site. Following the chain-seed treatment, this site will produce 600 pounds per acre in average years, one-third of which will be available for livestock and wildlife (5 acres/AUM). This will increase the carrying capacity of the treatment area by 50 AUMs.

Tarantula Mesa: The 1,500 acre burn-chain-seed treatment on Tarantula Mesa will be conducted on upland and semi-desert shallow sand, pinyon-juniper ranges sites. Precipitation ranges from about 11 inches in the west (semi-desert) to 13 inches in the east (upland). The mesa top is relatively flat (3 to 25% slopes) and the sandy soils are well drained. Erosion potential is low, mostly susceptible to wind-caused losses. Low water holding capacity of the shallow, sandy soils magnifies the importance of summer thunderstorms in these ecosystems. Past conversion projects on Tarantula Mesa indicate a high probability for successful conversion.

Because of the isolation of the mesa, neither overgrazing nor fire have been important factors in these ecosystems. However, numerous open, parklike stands of needle-and-thread, Indian ricegrass and sand dropseed, attest to the

occasional occurrence of lightning strikes. The areas flagged for treatment currently support mature pinyon-juniper and bigelow sagebrush, with remnants of galleta grass and needle and thread. The current productivity on these sites averages about 40 pounds of usable forage per acre (45 acres/AUM). After conversion, production will be about 400 pounds per acre (4.5 acres/AUM).

PENNELL ALLOTMENT: This allotment is used during summer by livestock, and during spring, summer and fall by wildlife. The Henry Mountain Grazing EIS identified the Pennell allotment as one of the most unbalanced, in terms of forage supply and demand. Because 15% (9,350 acres) of the allotment is barren, and 48% (30,600 acres) is dominated by pinyon-juniper, nearly all of the available forage in the allotment is provided by the existing seedings. The Dark Canyon and Airplane Springs seedings have been crucial to bison and deer, and the Coyote seeding has been heavily grazed by cattle. In recent year, the bison have been migrating across to the east slope to take advantage of the Coyote seedings, as well. New vegetation projects will convert 3,770 acres of pinyon-juniper, or 12% of that type in the allotment.

Slate Creek/Garden Basin: The project area includes both mountain gravelly loam, pinyon-juniper and mountain stony loam, summer precipitation range sites. The basin position of the site is responsible for relatively deep, fertile soils and a high probability for project success. Current conditions on the pinyon-juniper sites are quite degraded, and now produce only about 40 pounds of forage per acre (45 acres/AUM). The summer precipitation sites are more productive, but dominance by Gamble oak suppresses production by useful browse and herbs, and restricts access by livestock and big game. After seeding to the high-elevation mixture, the basin will be as productive as any site on the mountain (over 1,000 pounds/acre). This project will increase carrying capacity by at least 160 AUMs, annually.

Coyote Benches: North and east of the existing Coyote bench chainings, 3,130 acres of upland gravelly loam, pinyon-juniper and upland shallow sandstone, pinyon-juniper range sites will be burned and seeded (first year project #2, second year projects #1, 2, 3). Beneath the existing canopy of mature pinyon-juniper, the understory is dominated by sagebrush. The only regularly-occurring grass species is squirreltail, and there is little or no forage available for livestock or big game.

These sites occur on slopes from 25 to about 50%, and the current watershed conditions are poor, because of the absence of an effective ground cover. Conversion of these sites will reduce runoff and sediment discharge into Slate Creek and Trachyte Creek. Previous projects in the area indicate a high probability of success, increasing carrying capacity for livestock and big game by about 500 AUMs.

Brown's Hole: This area, within the Pennell WSA, is in a 16 to 18 inch precipitation zone and is characterized by Gamble oak-dominated mountain stony loam range sites. Slopes are moderately steep (to 60%) and erosion hazard is moderate to high, depending on the vegetation understory. Most of the understory is relatively low-producing, especially where dense thickets of oak

prohibit herbaceous plants from successfully competing. Understory production on these sites may be only 200 to 300 pounds/acre. As the oaks mature into more tree-like forms, competition becomes less severe but, the seed supply is not adequate to provide re-establishment by herbaceous plants. Similar to the Brown's Hole oak stands, aspen communities in the mountain precipitation zone support less than desirable understory communities.

The 1,000 acre overseeding treatment will broadcast native grass seed (wilderness mix) over the mature oak or aspen stands, prior to leaf-drop in the fall. The deciduous trees will cover the seed during germination and establishment, assuring a fair level of success with no soil disturbance. The increase in understory cover and production provided by this treatment will depend on the existing local conditions and the degree of success. Similar treatments on favorable sites in southern Utah have generated understory communities that produced as much as 1,500 pounds of forage per acre (1.2 acres/AUM).

Nasty Flat: This small allotment provides important summer range for bison, primarily, and also for cattle and mule deer. Heavy utilization and poor forage conditions cause this allotment to be one of the most unbalanced on the mountain. The principal CRM project for Nasty Flat was the 250 acre sage flat chain-seeding on State-owned rangeland. This project was funded and completed by UDWR in fall, 1987, and is expected to provide an additional 50 AUMs of forage per year. A second project on Nasty Flat includes about 100 acres of overseeding within the WSA, and will have the same impacts as the Brown's Hole project described above.

#### REJUVINATION PROJECTS:

Maintenance of existing seedings will be conducted on three allotments: Pennell, Nasty Flat and Crescent Creek. The current status of these seedings is variable, in terms of tree re-invasion and forage production. Four of the existing seedings have considerable numbers of desirable shrubby species in the plant communities. The other two established seedings are nearly devoid of desirable shrubs. Prescriptions for retreatment of the seedings have been based largely on the presence or absence of desirable woody plants.

Controlled burning will be conducted on the Dugout seeding (Nasty Flat) and the Jack King section (Pennell allotment). These two areas exhibit rapid tree invasion and low shrub densities. Burning prescriptions for these areas will be designated for hot, consuming fires that will readily carry into the tree crowns (low relative humidity, high air temperatures and moderately high wind velocities).

The environmental impacts of prescribed burning are well documented. Following a prescribed burn, there is increased potential for erosion for a short period of time (from 3 to 24 months). However, research has been unable to measure any significant expression of increased erosion following experimental fires. The key to minimizing erosion hazard is the rapid

re-establishment of ground-protecting vegetation. Because the burns prescribed for re-treatment will not require seeding after the burn, regrowth by established plants should form a protective cover within a few months following treatment, minimizing any runoff and soil loss.

For retreatment of Airplane, Coyote and Dark Canyon seedings (Pennell allotment) and the crescent Creek seeding (Crescent Creek allotment) even a low intensity burn would kill an unacceptable percentage of the desirable browse plants. Consequently, roller-chopping is the recommended treatment for these areas. Roller-chopping is effective for killing invading pinyon-pine. However, juniper mortality will be less than with the other methods of juniper control. The advantage of roller-chopping is that the treatment protects desirable, fire-sensitive species, and causes a very low-level of soil disturbance. Erosion hazard is minimized by this treatment, but the longevity of the treatment will be less than with prescribed burning.



4120  
(UT05780)

STAFF REPORT

APPENDIX 4

TITLE: Threatened and Endangered and Sensitive Plants Species

DATE: February 10, 1988

AUTHOR: Vearl Christiansen

Wright's Fishhook cactus (Sclercactus wrightiae) which is listed as endangered is known to occur within the CRMP area, and Jones cycladenia (Cycladenia humilis jonesii) which is listed as threatened may also occur in the study area. However, the proposed treatment areas are outside of the known ranges of these plants. But because of the possible presence of these species, and plant species considered to be sensitive, but which are not listed, site specific clearances will be required for all proposed projects covered by this assessment.

Signed  
Vearl Christiansen  
Range Conservationist

Authenticated July 5, 1988  
Sue Fivecoat  
Clerk-Typist







UTAH STATE UNIVERSITY

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 (801) 750-2200  
 APPENDIX 5

tidy Carl,

Here's the bison stockcount chart based on 365 head in Sept. You'll notice that the chart predicts declining herd size (therefore, about 2% underestimate in AUMs required!) because of DWR coefficients for harvest & mortality -- when the herd is actually increasing in size. To adjust just take the ratio of

$$\frac{\text{Total Bison (in Sept)}}{\text{Total Ann. Forage Req}} = \frac{\text{Estimated Bison Future}}{\text{Future Annual AUM req}} \\
 \text{so if } \frac{365 \text{ head}}{3202 \text{ AUM}} \text{ then } 390 \text{ head (1987 count)} * \left(\frac{3202}{365}\right) = 3421 \text{ AUM requirement}$$

See Ya soon  
 Carl

	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
Bulls (1.3 AU)	74	42	42	42	38	38	38	70	70	70	70	70
Cows (1.0 AU)	148	127	127	127	114	114	114	146	146	146	146	146
Calves (0.4 AU after weaning)	75	75	75	75	68	68	68	75	75	75	75	75
Yearlings (0.7 AU)	68	68	68	68	64	64	64	68	68	68	68	68
Total no. Adults	290	237	237	237	214	214	214	284	284	284	284	284
Total no. Bison	365	312	312	312	282	282	282	359	359	359	359	359
Total AUM reqmt.	292	260	260	260	235	235	235	285	285	285	285	285
TOTAL ANNUAL FORAGE REQUIREMENT (AUMs) : <u>3202</u>												

Table 3. Stockflow chart modeled after 1985 and 1986 bison herd counts. Values within the table are numbers of animals, except bottom row designated as AUM requirements. Animal Unit equivalents used for each class of animal are indicated in parentheses.



# United States Department of the Interior

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RICHFIELD DISTRICT OFFICE  
150 EAST 900 NORTH  
RICHFIELD, UTAH 84701



IN REPLY REFER TO:

5840  
(U-052)

Administrative routing stamp with a grid of boxes and a date stamp 'MAY 19 1988'. A checkmark is visible in the top right box.

## Appendix 6

TITLE: Henry Mountain Cooperative Resource Management (CRM) Area -  
Threatened and Endangered Animal Species

DATE: May 11, 1988

AUTHOR: David Young

There are two federally listed endangered species present within the CRM area, the bald eagle (Haliaeetus leucocephalus) and peregrine falcon (Falco peregrinus). However, these species do not occur within the proposed treatment areas. The bald eagle is a winter resident and is generally seen only adjacent to Lake Powell. The peregrine falcon has been classified as a yearlong resident. This species prefers canyons and high cliff habitats adjacent to riparian and wetland areas. UDWR has identified an active peregrine nest site in the southeastern edge of the CRM area. Within Utah there are no officially designated bald eagle or peregrine falcon critical habitats as identified by the Endangered Species Act. However, those areas identified by UDWR as high-priority bald eagle winter habitat and crucial peregrine falcon nesting habitat are considered essential for maintenance of these species. Known areas utilized by both these species are 10 to 20 miles away from any proposed vegetation treatment or range improvement sites within the CRM area.

Therefore, I have concluded that the proposed planned actions, or any of the alternatives, would not adversely affect these two species.

*David Young*  
SRP



APPENDIX 7

Impact to Wilderness Values  
Evaluation Under the Non-Impairment Standard

Evaluation was prepared by:

William Booker 2-9-1988  
Name(s) Date

Evaluation was concurred with:

\_\_\_\_\_  
Area Manager Date

1. Background

- a.) This action is Proposal  Alternative # \_\_\_\_\_
- b.) The area(s) under wilderness review that are affected include: List or appealed inventory unit, names and numbers. Also reference and attach applicable maps.  
Mt. Pennell UT-050-248
- c.) The lease(s) or mining claim(s) in question are Pre-FLPMA \_\_\_\_\_  
Post-FLPMA \_\_\_\_\_  
Both Pre and Post-FLPMA \_\_\_\_\_
- d.) This action involves Valid existing rights \_\_\_\_\_  
Grandfathered uses \_\_\_\_\_  
Neither of the above

Conclusion

action would satisfy / would not satisfy the non-impairment standard because it would meet / would not meet the non-impairment criteria as follows:

- a.) It would be temporary (i.e., it could be terminated in time to meet the reclamation requirements of paragraphs b.) and c.) below). Yes No  
see below
- b.) Any temporary impacts caused by the activity would be capable of being reclaimed to a condition of being substantially unnoticeable in the WSA as a whole by the time the Secretary sends his recommendation on that area to the President ( September 30, 1990). see below
- c.) After reclamation is complete the area's wilderness values would not be degraded as to constrain the Secretary's recommendation with respect to the area's suitability or non-suitability for preservation as wilderness.

These conclusions were reached based on the following evaluation made under the Non-Impairment Standard as directed in the BLM Interim Management Policy.

The only project affecting a WSA is the Browns Hole aerial overseeding. This project involves aerial application of native ~~plant~~ vegetation. The project is essentially reclamation in nature.

valuation

Note: Before the evaluation can be made, a description of the action must be written and available. The description should include the reclamation plan if one exists, committed mitigative measures, and, among other things, location, required access, miles of road, design elements, support facilities, constructed methods, development, maintenance and reclamation procedures and schedules, and acreage of disturbance.

- a.) Discuss the impact the action would have on the wilderness characteristics of the area identified for the WSA. Impacts must be quantified in terms of what, how, where, when, how much (e.g., what is the extent of the disturbance? What is the time frame of the disturbance, etc.).

Impacts to:Naturalness -

*Increases naturalness by seeding native vegetation. No disturbances to surface in the WSA.*

Outstanding Opportunities for Solitude -

*No impacts*

Outstanding Opportunities for Primitive and Unconfined Recreation -

*No impacts*

Supplemental Values (e.g., ecological, geological, other scientific, educational, scenic or historical) -

*No impacts*

- b.) Ability of the disturbed areas to be reclaimed effectively. What is the probability of successful reclamation to the point where impacts would appear substantially unnoticeable in the area as a whole by the time the Secretary reports to the President. Consider among other things the area's soil type, erosion potential, vegetation type, topography, and climate, including precipitation rates. If a reclamation plan is not available or is inadequate, what additional measures would be needed to return the area to the required reclamation period? *Action is reclamation*
- c.) Cumulative impacts to the wilderness suitability of the WSA when considered in conjunction with impacts from other actions (past or current) in the area. Will the addition of this action produce an aggregate effect upon the WSA's wilderness characteristics that would constrain the Secretary's recommendation with respect to the area's suitability for preservation as wilderness. *No*
- d.) In areas that are pristine in character, will the addition of this proposal significantly reduce the overall wilderness quality of the area? *No*

Attachment 1



## H-8431-1 - VISUAL RESOURCE CONTRAST RATING

## APPENDIX 8

VRM Class Objectives

Class I Objective. The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.

Class II Objective. The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Class III Objective. The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

Class IV Objective. The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.





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REFER TO:

7000  
(U-050)

## STAFF REPORT

### APPENDIX 9

TITLE : Evaluation of Vegetation and Soil Data in the CRM  
Proposed Projects Area

DATE : June 15, 1988

AUTHORS: Jim Buchanan and LaRell Chappell

During the first part of June, 1988 the authors reviewed existing inventory data for the Henry Mountain Resource Area. This data was from SVIM inventory conducted in the years 1978 - 1981. The purpose of this review was to determine what the existing data within the proposed CRM project area indicated for current erosion condition. We also wanted to compare like soils types (ecological sites) to determine the difference in erosion condition and vegetative cover on treated (seeded) verses untreated sites.

The process followed was to locate data for site write-up areas within the proposed CRM project area. Then review the data by soil type and ecological site and determine the existing vegetative community. We then reviewed like sites for current erosion condition as determined by soil surface factor (SSF). We then compared the same soil types and ecological sites treated verses untreated for current erosion condition and basal vegetative cover. Data for current erosion condition are shown on the attached table. Basal vegetative cover by site was not summarized in this tabular form.

### Summary

This comparison shows that for the same soil type (ecological site) there is significantly less current erosion on treated (seeded) verses untreated sites. Treated (seeded) sites had a range of SSFS 19 to 27 lower than adjacent non-seeded sites of the same soil type and ecological site. Basal vegetative cover was significantly increased by treatment.

*Jim Buchanan*  
*LaRell Chappell*

TABLE I

Site Write up Area No.	Soil Mapping Unit	Current Vegetation	Erosion Class	Condition SSF	Sites Compared
A057	AaB	ARTR	Slight	33	
A060	AaB	ARTR	Slight	37	
A257	AnG	PSME	Moderate	45	
A070	BaD	P-J	Moderate	58	} (Seeding is 25 SSF lower)
A059	BaD	Seeding	Slight	33	
A021	CaC	Seeding	Stable	17	
A059	CaC	Seeding	Slight	33	
A260	DnG	ARFR4	Stable	17	
A502	EnF	P-J	Slight	-	
A529	EnF	P-J	Slight/Moderate	-	
A568	FnC	P-J	Slight	22	
A518	HnE	P-J	Slight	35	} Average 52
A500	HnE	P-J	Moderate	58	
A270	HnE	P-J	Critical	62	
A909	HnE	Seeding	Slight	22	} Average 25 (Seedings are 27 SSF Lower)
A901	HnE	Seeding	Slight	22	
A902	HnE	Seeding	Slight	22	
A910	HnE	Seeding	Slight	23	
A911	HnE	Seeding	Slight	23	
A912	HnE	Seeding	Slight	39	
A505	KmC	P-J	Moderate	57	} Average 45
A503	KmC	P-J	Moderate	56	
A759	KmC	P-J	Slight	38	
A731	KmC	P-J	Moderate	-	
A122	KmC	P-J	Slight	30	
A905	KmC	Seeding	Slight	20	} (Seedings 25 SSF Lower)
A907	KmC	Seeding	Slight	20	
A012	MaB	P-J	Slight	39	
A555	MnF	P-J	Slight	33	
A001	NaB	At Co	Slight	25	
A530	NnF	P-J	Slight	30	} Average 33
A259	NnF	P-J	Slight	35	
A906	NnF	Seeding	Stable	14	} (Seeding 19 SSF Lower)
A146	PaD	-	Moderate	57	

- \* ARTR - Artemisia tridentata (Big sagebrush)  
ARFR4 - Artemisia frigida (Fringed sagebrush)  
ATCO - Atriplex confertifolia (Shadscale)  
PSME - Pseudotsuga menziesii (Douglas fir)  
P-J - Pinyon-Juniper trees

## CURRENT BLM ACTIONS TO MINIMIZE SALINITY

Controlling salinity in surface runoff from public lands is closely related to controlling surface runoff and sediment yield. Vegetation cover is usually the most important management variable influencing runoff and erosion rates on rangelands.

Therefore, vegetation management, either indirectly through the design and implementation of activity plans or directly through vegetation manipulation, is an important erosion and salinity control technique. However, on the most highly saline public lands, maximum potential cover is often too low to provide meaningful control of surface runoff and erosion. In these areas, stipulating surface occupancy is the best salinity control technique, and thus, maintains natural watershed processes.

Proper land use, with objectives for increasing ground cover, stabilizing stream banks, controlling accelerated gully erosion, and minimizing surface disturbing activities, is the BLM's preferred method of achieving salinity control. Rangeland management, energy and minerals management, and recreation management have the greatest potential for effective salinity control on public lands.

---

## FUTURE ACTIONS

### BLM Salinity Control Implementation Actions

Salinity control activities on public lands in the Colorado River basin are mandated by the Colorado River Basin Salinity Control Act of 1974, as amended (P.L. 98-569). The Bureau of Land Management recommends the following implementation actions be directed through its Soil, Water, and Air Management programs. The objective is to minimize salinity contributions to the Colorado River from public lands while recognizing multiple-use objectives and authorized uses. Proper land use is the BLM-preferred method of achieving salinity control while structural techniques for control will be limited. The planning process is the principal mechanism for the implementation of salinity control actions.

1. All BLM resource areas within the Colorado River basin that contain saline soils will identify and evaluate salinity control activities through the resource management planning process.
2. Plans will address salinity control objectives in a way that enhances and benefits other resource values, including soil stability, riparian resources, wildlife habitat, water quality and supply, and flood control in the management of saline soils.
3. BLM will incorporate salinity control objectives or mitigation into all activity plans involving saline soils. Environmental Assessments will analyze resource impacts to determine salinity increases or decreases resulting from proposed actions where saline soils are included.
4. The BLM's planning process will evaluate salinity control benefits, effectiveness, and costs associated with land management alternatives on all saline soils.
5. Where watershed conditions are unsatisfactory or severely degraded by past management actions and the areas have good recovery potential which cannot be efficiently achieved by modifying land uses that contribute to salt loading, BLM will consider other alternatives such as mechanical land treatments or minor structural methods to reduce salt loading. Whenever possible, these alternatives will be designed to achieve self-sustaining resource conditions requiring little or no future investment in mechanical treatments or structure maintenance.
6. Point-source salinity issues will be identified in the planning process and controlled or managed through resource improvement objectives or mitigative measures. Major sources requiring extensive engineering will be brought to the attention of the Bureau of Reclamation.
7. Continue to develop quantifiable values for sediment and salinity deliveries to the Colorado River from public lands.



## APPENDIX 11

### ECONOMIC ANALYSIS

Results from the economic analyses are summarized by alternative in Table 12.1. Individual project analyses are on file in the BLM Richfield District Office.

The analyses in this section have been calculated based on probable costs and forage benefits of the various projects. The major cost for many projects is associated with seed purchase. In 1988, seed prices are artificially high because of the demand for planting conservation reserve program (CRP) lands. However, sign-up for CRP is nearly complete and all lands will be seeded by fall of 1988. As a result of the seed demand by CRP since 1986, numerous new seed companies have been started to help meet the demand. By 1989-90, seed prices should drop significantly. Estimated costs for seeding projects have been based on 1989 projections. Non-forage benefits (such as more visitor days to view bison, deer, etc. and potential soil and water conservation) were not valued for inclusion in this analysis. Table 12.2 shows the costs of seed mixtures for both periods, as well as other costs used for these analyses.

The future forage made available by these projects is primarily intended to offset an existing deficit. Consequently, no attempt is made in this document to allocate forage to new uses. The values of new forage will vary depending on the class of animal that uses it. For these analyses, the value of each project was calculated based on exclusive use of the forage by each of the three major classes of forage using animals: livestock, bison and mule deer. The methods used to value forage for each user are describe in the following section.

For these analyses, livestock forage was valued at \$5.65 per market AUM. This value is the average private lease rate for the Colorado Plateau region (1985 Grazing Fees Report) and approximates all forage-related expenses incurred by stockmen (what they willingly pay) including: grazing fees, interest on purchase of permit, maintenance of developments, and costs associated with tending animals on remote ranges. Workman estimated up to \$8.00 actual cost for public land grazing in Utah (personal communication) and Bartlett estimated up to \$110 value to society for each AUM of livestock grazing on public lands.

Forage values for bison and mule deer were valued according to the amount that hunters willingly to pay (Tables 12.3 and 12.4). All non-hunting values of wildlife may be additive with the results of these calculations.

For projects that will require removal of animals during establishments, costs of deferment are applied to livestock only, because wildlife are largely uncontrollable. For projects requiring 2 years of deferment, the present value of that cost is \$10.22, based on a 7% discount rate (4% inflation plus 3% opportunity cost).

Present values of future returns were calculated based on the life expectancy of the project, at a 7% discount rate (4% inflation plus 3% risk). The analyses assume an equal distribution of benefits annually for the life of the project, beginning after scheduled completion and any necessary deferment.

This analysis was prepared by Dr. Paul McCawley, Utah State University Range Extension Specialist. (8-4-88).

Project costs and returns for alternative IV (no action) are estimated based on a 10 year implementation schedule, returned to present value at a discount rate of 7%. Costs of delayed implementation (compared to the proposed action) include loss of forage productivity (10 % per year) on existing seedings with comparable AUM production as the new project. Maintenance projects scheduled for years 8, 9 and 10 of the no action plan include prescribed burning of existing seedings. It is probable that burning of those sites will be impossible by 1995, due to the gradual reduction in fine rules necessary to carry a fire.

TABLE 12.1  
Economic Summary by Alternative.

Alternative	COST COST 1989-90		Present Value	Benefit: Cost 1989-90
I CRM Proposal	352,495	Livestock	164,450	0.47
		Bison	623,157	1.77
		Mule Deer	1,130,909	2.68
		Average	577,451	1.64
IV Implementation of MFP	326,907	Livestock	152,139	0.47
		Bison	588,568	1.89
		Mule Deer	891,360	2.73
		Average	544,022	1.66

TABLE 12.2

Costs (Dollars per acre) used for the Economic Analyses

Seed Mixtures	1988	1989-90
Low elevation	32.75	21.00
High elevation	31.50	20.00
Wilderness	43.00	32.00
Burning	4.00	
Aerial seeding	2.00	
1-way chaining (follow-up)	9.00	
2-way chaining	18.00	
Interseeding	6.00	
Rollerchop	25.00	
Fence Materials & Construction (\$/mile)		
4-strand barbed	1,500.00	
3-strand barbed	1,350.00	
electric	600.00	
Pipeline Materials & Construction	1,500.00	

TABLE 12.3

Calculations of AUM's Valued for Mule Deer.

Given 1 :	Value per Deer Hunter Day	=	\$89.00
	Average No. Days per Hunter	=	3.7
	Average Hunter Success	=	31%
	Average Number of Bucks in Herd	=	18%
	Average Number of Bucks Harvested	=	50%
	Average Number of Deer per AUM	=	5

1 AUM per 5 deer \* 12 months = 12 AUMs per 5 deer.  
= 2.4 AUMs per deer.

100 deer \* .18 bucks \* .50 harvest = 9 bucks/100 deer.

$\frac{9 \text{ bucks harvested}}{.31 \text{ success}}$  = 29 hunters

29 hunters \* \$89 per day \* 3.7 days per hunter = \$9560/100 deer

$\frac{100 \text{ deer} * 2.4 \text{ AUMs per deer} = 240 \text{ AUMs}}{\$9560} = \$39.83/\text{AUM}$

1 ) Values provided by Utah Division of Wildlife Resources - specific for Henry Mountains where available. Other estimates of deer hunter day values range from \$35 to \$120 (BLM, UDWR).

TABLE 12.4

Calculations of AUM's Valued for Bison.

Given 1 :	Number of Hunters (1988) <sup>1</sup>	=	68
	Average No. Days per Hunter (1988) <sup>1</sup>	=	4
	Number of Harvested Animals (1988) <sup>1</sup>	=	68
	Total Herd Size (1987) <sup>1</sup>	=	385
	Average Harvest per Total Herd <sup>1</sup>	=	18%
	Total Herd AUM requirement <sup>2</sup>	=	3,200
	Value per Bison Hunter day <sup>3</sup>	=	\$ 110

3200 AUMs/68 harvested bison = 47 AUMs per harvested bison.

47 AUMs per 4 hunter days \* \$110.00 per hunter day.

\$440 per 47 AUMs = \$9.36 per AUM from hunter

Most bison hunting parties include three to five non-hunters per permitted hunter. Non-hunter value is estimated to be \$49.75 per day; or \$796.00 per hunter.

\$796.00 per 47 AUMs = 16.94 per AUM

9.36/hunter per AUM
<u>16.94/non hunter per AUM</u>
\$26.30 per AUM

<sup>1</sup>Values provided by Utah Division of Wildlife resources.

<sup>2</sup>See table, Appendix 5,

<sup>3</sup>Value per bison hunter day estimated from Forest Service pub RM-10 based on bighorn sheep.

Because of the non-competitive system for drawing a permit for a once in a lifetime hunt, this source is the most appropriate for this analysis. This value (796 per bison hunter) compares favorably with \$206 per hunter day (824.00 per day trip) reported in the HMEIS.

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APPENDIX 12

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APPENDIX 13

HENRY MOUNTAIN COORDINATED RESOURCE MANAGEMENT PLAN

The undersigned participants have agreed on the projects, priorities and procedures outlined in this CRM proposal. However, compliance with this agreement must depend on capitol availability of each participant.

Paul McCawley 11 March 87  
Date  
Chairman, Steering Committee  
Utah State Extension Service

Glenn T. Patterson 3-11-87  
Date  
Chairman, Technical Team  
Bureau of Land Management

Bliss Brinkerhoff 16 Mar 87  
Date  
Livestock Permittee

Jim Karpowitz 4/2/87  
Date  
Utah Division of Wildlife

Lou Brown 3/14/87  
Date  
Utah State Lands and Forestry

David Pace 3-16-87  
Date  
Utah Assoc. Conservation Dist.

Keith Durfey 3-16-87  
Date  
Livestock Permittee

Jack King 3/16/87  
Date  
Livestock Permittee

Larry Sip 4/21/87  
Date  
Livestock Permittee (Tercero Corp.)

Ward Roylance 4/17/87  
Date  
Enchanted Wilderness

Gary MacFarlane 3-19-87  
Date  
Utah Wilderness Assoc.

Kyle Stephens 3-19-87  
Date  
Utah State Dept. of Agriculture

James F. Yardley 4-28-87  
Date  
Rep. Utah State Legislature

Paul Niemeyer 3/16/87  
Date  
Sevier Wildlife Federation

Thomas V. Hatch 3/16/87  
Date  
Garfield County Commission

Verl Matthews  
Date  
Garfield County Extension

Wayne Horreft 4-14-87  
Date  
Wayne County Commission

Verl Bagley 3/16/87  
Date  
Wayne County Extension

Robert Reynolds 4/2/87  
Date  
Capitol Reef National Park

Guy Pace 4-18-87  
Date  
Utah Farm Bureau Federation



APPENDIX 14

1791  
UT-050-83-022  
(U-050)

May 13, 1988

Mr. Rodney Greeno  
Southern Utah Wilderness Alliance  
Box 518  
Cedar City, Utah 84720

Dear Mr. Greeno:

We notice on page 29 of your letter dated April 14, 1988 concerning the comments on the Henry Mountain Coordinated Resource Management Plan Draft Environmental Assessment that you have nominated the Tarantula Mesa as a research ACEC.

The RLH is committed to give priority to the ACEC program and would like to proceed with evaluation of the area which you have nominated. Since you have nominated the area, we are requesting you provide the following material:

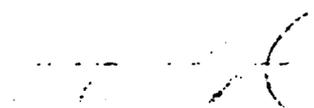
1. A map, using a USGS quad for a base, of the nominated area showing boundaries and locations of special features or resources of particular concern.
2. A narrative stating what the features and resources are that have particular concern or interest and why they deserve recognition and management under the principles of ACEC.
3. Include in the narrative a clear and concise statement pertaining to the "relevance" of the area.
4. Include in the narrative a clear and concise statement on "importance".
5. A statement on resources at risk and how designation could minimize the risks.
6. Since the area is being nominated as a research/ACEC, we need to know what type of research would be done, by whom, and for what reasons.
7. Include in the narrative a summary of research that has been conducted on the area. Also state which institutions or individuals would actually be

interested in conducting future research. An endorsement by the scientific research community favoring this nomination would be important.

8. Include a proposed plan for management of the area with clarification of current uses or practices that would need to be curtailed or modified.
9. Include an analysis of affects of designation on current uses and resources in the area.

As soon as the above information is prepared and submitted, we would like to make arrangements for a field trip to look over the area with you. We could then observe and discuss pertinent items of interest and concern.

Sincerely,



Larry R. Oldroyd  
District Manager

CJThurgood:ebk:05/13/80  
05006

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