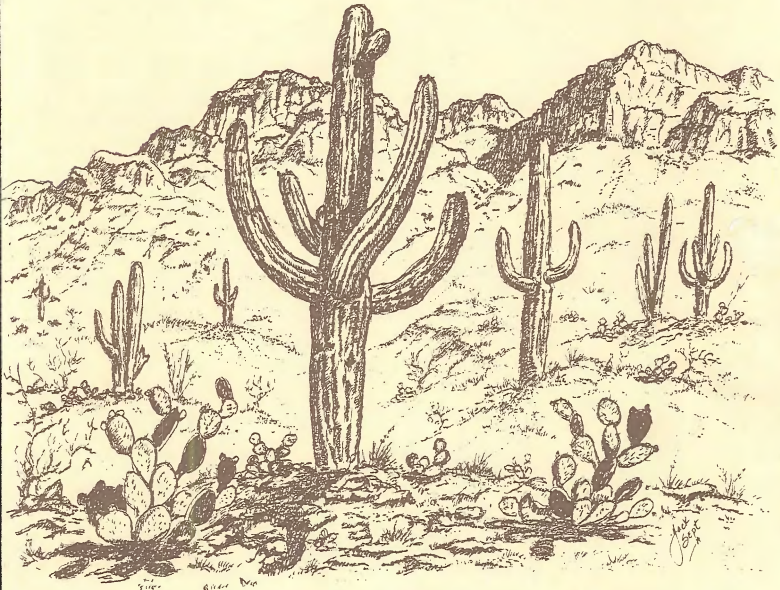
EASTERN ARIZONA GRAZING ENVIRONMENTAL IMPACT STATEMENT DRAFT



U. S. Department of the Interior
Bureau of Land Management
PHOENIX AND SAFFORD DISTRICTS ARIZONA
SEPTEMBER 1985

DRAFT
ENVIRONMENTAL IMPACT STATEMENT

PROPOSED GRAZING MANAGEMENT PROGRAM
for the
EASTERN ARIZONA EIS AREA

Apache, Cochise, Coconino, Gila, Graham, Maricopa, Navajo,
Pima, Pinal, Santa Cruz, Yavapai Counties, Arizona

Prepared by

THE DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
PHOENIX and SAFFORD DISTRICT

STATE DIRECTOR
ARIZONA STATE OFFICE

This draft environmental impact statement (EIS) addresses future grazing management options for approximately one million acres of public lands administered by the Bureau of Land Management (BLM) through its Phoenix and Safford District Offices. The EIS recommends levels of livestock grazing management, identifies needed range improvements, and outlines a schedule of implementation. Measures to protect or enhance environmental resources have been incorporated into the program. Alternatives considered in addition to the proposed action include Continuation of Present Management (No Action) Reduced Livestock Use and No Livestock Grazing. A concise description of the affected environment and an analysis of the environmental consequences resulting from implementation of the proposed action and each alternative is included in the document.

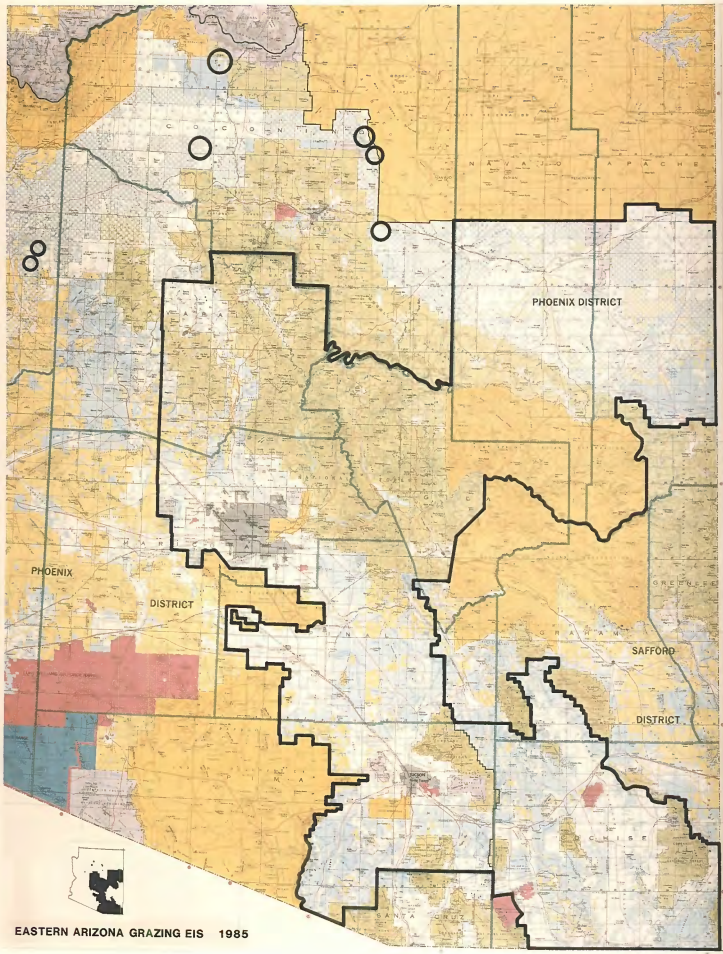
For Further Information Contact: Jerrold Coolidge, EIS Team Leader, Safford District, Bureau of Land Management, 425 E. 4th St., Safford, AZ, 85546 or call (602) 428-4040 or James Andersen, Assistant Team Leader, Phoenix District, Bureau of Land Management, 2015 West Deer Valley Road, Phoenix, AZ 85027, or call (602) 863-4464.

Comments on the Draft EIS are due: DEC 0 6 1985

MAP LEGEND

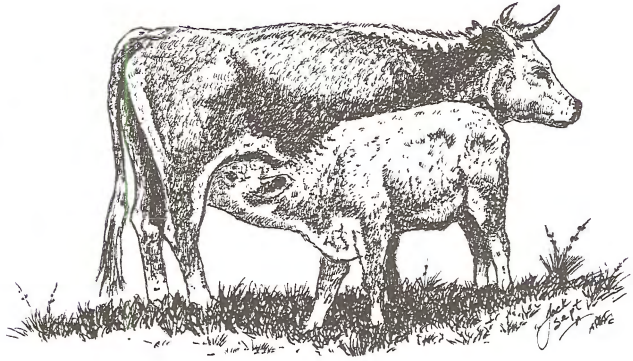
EASTERN ARIZONA GRAZING EIS

BLM LANDS	YELLOW
STATE LANDS	LIGHT BLUE
NATIONAL FOREST LANDS	GREEN
INDIAN RESERVATIONS	GOLD
NATIONAL PARKS, MONUMENTS AND RECREATION AREAS	PURPLE
MILITARY RESERVATIONS	RED
NATIONAL WILDLIFE REFUGES	DARK BLUE
PRIVATE LAND	WHITE



EASTERN ARIZONA GRAZING EIS 1985

SUMMARY



SUMMARY

PURPOSE AND NEED

The Eastern Arizona Grazing Environmental Impact Statement (EIS) involves grazing lands administered by the Bureau of Land Management (BLM) in the Phoenix Resource Area, Phoenix District, and the Cochise and San Pedro Planning Units of the Safford District. The Study Area, encompassing 12 counties, consists of approximately 22.54 million acres of which 1,060,000 acres (5%) are administered by BLM.

This EIS responds to requirements of the *National Environmental Policy Act of 1969* to analyze the impacts of projects having significant impacts on the environment and to the Federal Land Policy and Management Act's mandate to provide for the orderly use and development of public rangelands and to preserve the land and its resources.

The EIS has been prepared to:

1. Identify methods to restore and improve rangeland condition and productivity.
2. Provide for use and development of rangelands.
3. Maintain and improve habitat and viable wildlife populations.
4. Control future management actions.
5. Promote sustained yield and multiple use.

Throughout the planning process and EIS preparation, information and concerns were solicited from ranchers, public land users groups, conservation organizations, special interest groups, other land resource management agencies and private citizens.

Public participation in BLM's planning process was solicited through questionnaires mailed to each livestock operator using BLM lands. In addition, notices of public meetings were mailed to these ranchers, special interest groups, individuals and government agencies. These meetings were informal sessions, held in Benson, Bisbee, Phoenix, St. Johns, and Tucson, Arizona, October 23–30, 1984.

In this draft EIS, four alternatives were developed from which the final grazing management program will be selected. They are: *A) Rangeland Improvement, B) No Action, C) Reduced Livestock Use and D) No Grazing*. Based on resource inventories and issues raised, Alternative A "Rangeland Improvement" was selected as the *Preferred Alternative* because of resource benefits, costs and public comment. After reviewing the Final EIS BLM managers will select the rangeland management program to be implemented on public lands in the Eastern Arizona Grazing EIS area. This management program may be the *Preferred Alternative* or it may incorporate parts of all alternatives.

THE ALTERNATIVES AND THEIR CONSEQUENCES

Alternative A: Rangeland Improvement (Preferred Alternative)

Under this alternative three AMPs totaling 59,945 acres would be revised based on monitoring of resource conditions. Seven AMPs totaling 66,636 acres would be developed following the completion of the EIS. The remaining 326 allotments would not have AMPs developed by BLM due to small amounts of public land on these ranches limited resource conflicts, or no potential for improvement.

Land treatments such as land imprinting and seeding, chaining or prescribed burning may be implemented on approximately 75,000 acres, affecting 12 allotments, to enhance rangeland values, watershed conditions, and wildlife habitat. (See Table 4–1 footnotes for explanations of these land treatments).

Fences needed to support grazing or land treatments are shown on Table 4–1.

Lands that are presently unleased for livestock use would remain unleased, with vegetation reserved for wildlife and non-consumptive use.

CONSEQUENCES

The vegetation resource would benefit from the *Preferred Alternative*. Range condition would improve on the 10 allotments receiving AMPs and follow present trends on the remaining 326. Vegetation cover would improve on those allotments as well as the allotments that would receive land treatments.

Protected plants would benefit because the AMPs and land treatments proposed would be designed to minimize impacts, resulting in better habitat.

On allotments scheduled for AMPs or land treatments the soils resource would benefit significantly in the long term. On the remaining 326 allotments, soils resources would be expected to follow present trends.

Water resources would benefit slightly from the *Preferred Alternative*.

Livestock production and distribution would improve because of land treatments and range improvements. Ten AMPs would be implemented or modified providing an additional 1,195 AUMs in the long term. Land treatments would increase AUMs by 1,288 in the short term and 2,576 in the long term.

Wildlife habitat would improve on the 10 allotments with AMPs and remain static or continue along present trend on 326 allotments. Mule deer would be the most affected big game species and would benefit from the increased forage production. Small game and nongame would also benefit from the increased forage and cover.

Wild burros would benefit from additional waters that may be developed under this alternative.

Cultural resources would be impacted slightly under the *Preferred Alternative*. Development of range improvements would have an adverse impact by altering the values of undiscovered sites and increased access could increase the possibility of vandalism. Land treatments have positive impacts by reducing damage from natural forces over the long term.

Overall impacts to recreation would be beneficial. Proper utilization of forage by livestock, plus the increased forage from land treatments, could result in improved opportunities for hunting and wildlife observation.

No significant impacts would be anticipated to visual resources. Improvements will be designed and constructed to meet visual resource management objectives.

Wilderness values would not be impacted under the *Preferred Alternative*.

Based on the average impacts to representative ranchers, it can be assumed that no significant economic or social impacts would result from the *Preferred Alternative*.

Alternative B: No Action

This alternative would freeze the current range programs, initial and long term use levels under this alternative, regardless of range condition or potential, would be 114,019 AUMs to livestock. This alternative would also not allow any change in class of livestock or change in season of use. Implementation of approved AMPs would continue but no new AMPs would be developed. No new range improvements (fences, reservoirs, land treatments) would occur unless the range improvements were previously recognized in approved AMPs, or were considered necessary for watershed or wildlife resources. Maintenance of existing range improvements would be allowed.

There would be no cost to BLM for the implementation of this alternative as maintenance of all existing improvements is the responsibility of the operators.

CONSEQUENCES

The vegetation resource would be negatively impacted by this alternative. Except for the three allotments with approved AMPs it would be impossible to reverse deteriorating trends in range condition. It is also expected that populations of protected plants would decline.

The soil resource would be negatively impacted under this alternative. Soil erosion would continue at present or accelerated rates.

There would be no discernible change to the water resource.

Livestock production would remain static during the short term and could decline in the long term because of the lack of improved grazing management. Impacts on livestock grazing however would be insignificant.

Wildlife would benefit on the three AMP allotments and remain static or continue along present trends on the remaining 333 allotments.

Except for not being able to build new range improvements on allotments within the wild burro herd area there would be no significant impacts to burros. Habitat and numbers would continue along present trends.

Cultural resources would be slightly impacted because erosion, trampling and vandalism would continue.

There would be no significant impacts to recreation, visual resources, wilderness, ranch economics or social elements under this alternative.

Alternative C: Reduced Livestock Grazing

This alternative emphasizes the accelerated improvement of watershed and wildlife resources along with a short-term decrease in livestock numbers. Reductions under this alternative, affecting 85 allotments, would be based on the following:

1. Any allotment which has 10-25% of its BLM acreage in a poor ecological condition class would receive a 25% reduction in its BLM AUMs.
2. Any allotment which has more than 25% of its BLM acreage in a poor ecological condition class would receive a 50% percent reduction in its BLM AUMs.

Target figures in this alternative would initially be set at 102,663 AUMs for livestock. Long-term target figures based on projected increases in vegetation production (due to revision of implemented grazing systems, additional grazing and land treatments) are 117,790 AUMs to livestock. Lands that are presently unleased for livestock use would remain unleased, with vegetation reserved for wildlife and non-consumptive uses.

To implement this alternative, three AMPs would be revised, based on monitoring of resource conditions, and

seven AMPs would be developed following completion of the EIS. The remaining 326 allotments would not have AMPs developed by BLM due to small amounts of public land, limited resource conflicts or the lack of potential for improvements.

Land treatments could occur on approximately 75,000 acres affecting 12 allotments, to support rangeland values, watershed and wildlife habitat improvements. (See Table 4–1 footnotes for explanation of these land treatments).

Fences needed to support grazing or land treatments would be the same as in *Alternative A*. See Table 4–1.

CONSEQUENCES

The vegetation resource would benefit from the reduction in livestock numbers, the revision of three AMPs, development of seven AMPs, and the proposed land treatments. Range condition and trend would improve as would the habitat of protected plants.

This alternative would have essentially the same beneficial long-term effects on the soil resource as the *Preferred Alternative*, although results may be achieved quicker because of the initial reductions on 85 allotments.

Water resources would be expected to benefit slightly from this alternative due to the reduced soil erosion resulting in lowered sediment yield.

Livestock numbers would decline initially as a result of the suspension of 11,035 AUMs. However, these reductions would improve range condition and establish an upward trend. In the long term, AUMs initially suspended could be restored should monitoring indicate that there has been an improvement. The 10 allotments that would be revised or developed would provide an additional 1,195 AUMs in the long term. Land treatments would increase by 1,288 in the short term and 2,576 in the long term.

Wildlife habitat would improve on the 10 allotments with AMPs and the 85 allotments that would receive AUM reductions. Mule deer, small game, nongame and protected and sensitive reptiles would benefit most.

Livestock reductions resulting in increased forage plus the possibility of additional waters would benefit burros.

Cultural resources would benefit on allotments with AMPs or land treatments and allotments that are to receive reductions.

Overall impacts to recreation would be beneficial. Proper utilization of forage by livestock, plus the increased forage from land treatments, could result in improved opportunities for hunting and wildlife observation.

No significant impacts would be anticipated to visual resources since improvements will be designed and constructed to meet visual resource management objectives.

Wilderness values would not be impacted under this alternative.

The impacts to ranch economics from the reductions proposed in this alternative would vary greatly. In the short term the average reduction would cause a slight economic loss. Over the long term, however, a slight economic gain would be expected from the projected increase in forage.

Social attitudes would vary with the degree of livestock reductions.

Alternative D: No Grazing

Livestock grazing would not be permitted on public lands under this alternative. All leases would be phased out as lease terms expire. Range improvements would not be built or maintained unless the improvements were considered necessary for watershed or wildlife resources.

This alternative would phase out the current permitted livestock use of 114,019 AUMs on 336 allotments as each lease term expires. In the worst case analysis, BLM would require fencing of public lands to prevent livestock trespassing. About 6,600 miles of fence would be necessary for this undertaking, and according to current cost estimates, would cost about $21.2 million to construct. In addition, annual maintenance would cost $198,000. BLM would continue to monitor the rangeland for unauthorized use, and actions to prevent and process any unauthorized use would cost $90,000 annually.

CONSEQUENCES

The no grazing alternative would have significant positive impacts on the vegetative resource (range condition and trend), protected plants, soils, water resources, the greatest variety of wildlife (though fencing could cause problems) and cultural resources.

The livestock industry would be severely impacted by this alternative. A total of 114,019 AUMs would be lost causing a number of operators to sell their ranches or stop grazing altogether. Livestock production would decline on surrounding private and state lands.

Though the wild burro habitat would improve, the overall impacts to burros would be negative due to the amount of fencing that would be required.

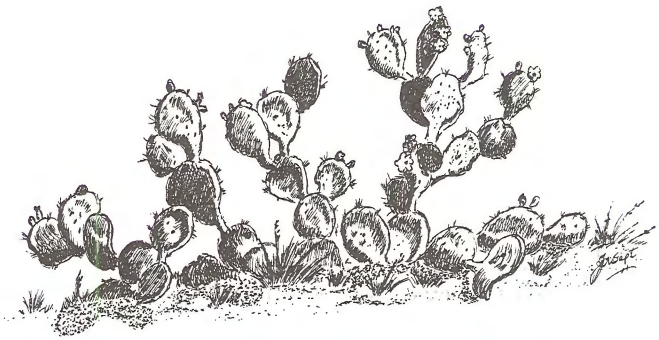
Recreation and visual resources could be negatively impacted should the BLM lands need to be fenced.

Wilderness would not be affected.

TABLE OF CONTENTS

CHAPTER 1

PURPOSE AND NEED



CHAPTER I
PURPOSE AND NEED

I. INTRODUCTION

The *Eastern Arizona Grazing Environmental Impact Statement* (EIS) analyzes the natural resource, social and economic impacts of implementing any of four alternatives for grazing management on public lands managed by the Bureau of Land Management in the Phoenix Resource Area, Phoenix District and the Cochise and San Pedro Planning Units in Safford District. Public lands addressed in this study area make up approximately 5% (1,060,000 acres) of all lands within the two districts. Refer to Map 1-1.

Historically, livestock grazing has constituted a significant part of the land use within the area. The lands have also provided important habitat for a wide variety of wildlife. Competition among users for limited forage has caused conflicts impacting watershed, wildlife habitat and rangeland productivity.

II. PURPOSE AND NEED

BLM is under congressional mandate to provide for the orderly use and development of the public lands and to preserve the land and its resources from destruction or unnecessary injury. The *Federal Land Policy and Management Act of 1976* (FLPMA) directs BLM to periodically inventory the lands and to project present and future uses in land use plans. These plans are to ensure the management of public rangelands on a multiple-use and sustained yield basis and to ensure that the quality of natural resources is preserved. Where actions are required and a land use plan does not exist, the environmental document, developed by an interdisciplinary team, becomes the basis for the decision on that proposal (43 CFR 1610.8(b)).

This EIS is written in compliance with the *National Environmental Policy Act of 1969,* Council on Environmental Quality Regulations, and in specific response to the court decision in Natural Resources Defense Council et al. vs Rogers C.B. Morton *et al.*, 1973 (U.S. District Court for the District of Columbia, ref. Case No. 1983-73).

III. SETTING

The Eastern Arizona Grazing EIS area is approximately 1,060,000 acres of public lands administered by the BLM in Arizona. These acres represent about 5% of the total surface area of 22,540,000 acres.

Geographically, these lands are located principally in Apache, Navajo, Yavapai, Maricopa, Pima, Pinal and Cochise Counties. Minor acreages are found in Coconino, Mohave, Santa Cruz, Gila and Graham Counties.

The EIS addresses the use of vegetation on BLM administered public lands, potential impacts which can be anticipated from livestock grazing, plus all reasonable alternatives which surfaced during the preparation of the EIS. Map 1-1 shows the EIS area.

There are currently 336 grazing allotments within the EIS area, 234 administered through grazing leases by the Phoenix District and 102 by the Safford District. See Appendices 1, 2. Allotment management plans (AMP) have been developed for three allotments in Phoenix District. Many of the allotments also operate under Soil Conservation Service ranch plans, which involve the BLM lands in the ranching operation.

While there are several large contiguous tracts of public lands, the overall land ownership pattern is that of small, isolated tracts of public lands intermingled with state and private lands. These land patterns strongly affect grazing and other multiple use management options. The public lands are often remote and rugged. Public lands are also used for wildlife habitat, recreation and other multiple use activities.

IV. SCOPING

Scoping is a step in the planning process to determine significant issues about a proposed action to be addressed in the EIS. Scoping also eliminates from detailed study insignificant issues or issues addressed in earlier environmental documents.

In preparing this EIS, the interdisciplinary team and resource managers considered the major areas of public interest and management concerns identified through scoping. The team used this process to determine which concerns would be analyzed in this EIS. Scoping identified the following significant issues:

1. Has existing grazing impaired wildlife and wildlife habitat?
2. Has livestock grazing created some areas of accelerated erosion and poor watershed conditions?
3. Has livestock grazing created changes in species composition and plant vigor?

V. ALTERNATIVES DEVELOPED

In response to known issues and resource conflicts, BLM began developing alternatives to be studied early in the preparation of the EIS. In October 1984 these alternatives were presented to the public for comment. These public comments and further identification of resource conflicts resulted in some changes to the scope of the original alternatives.

The alternatives included in this EIS are:

1. *Rangeland Improvement*
2. *No Action - Continuation of Present Management*
3. *Reduced Livestock Grazing*
4. *No Grazing*

These alternatives provided BLM managers a range of options from which they can develop grazing decisions. The *No Action Alternative* is required by regulation.

VI. MANAGEMENT GUIDELINES

The EIS area contains significant amounts of private lands as well as lands managed by the Arizona State Lands Department, U.S. Forest Service and National Park Service. The management of BLM lands is influenced by the varied ownerships.

Development of the rangeland management program is guided by mandates to manage the public lands for multiple use and sustained yield under FLPMA.

The EIS area includes the Black Canyon, Silver Bell, and Middle Gila Planning Units for which MFPs have been developed. These planning documents are available at the Phoenix District Office. The remaining planning units - Apache-Navajo, Central Arizona in Phoenix District, and San Pedro and Cochise in the Safford District have never been managed under land use plans.

Following the EIS, development plans and/or activity plans may be prepared. These plans will address specific management objectives such as AMPs, Habitat Management Plans (HMPs), Watershed Management Plans (WMPs), or Cooperative Management Agreements (CMAs) with the grazing lessees and other involved agencies such as the State Land Department or the Soil Conservation Service. A maximum of ten AMPs are anticipated, but most of the public lands addressed in this EIS are small, scattered tracts that constitute small parts of individual ranch operations. The analysis developed in the EIS will help guide development of these plans and future management. A larger data base will also be developed to help select the proper grazing systems, treatments, range improvements and grazing adjustments to implement the individual activity plans. All projects and improvements will be subject to site-specific environmental assessment and benefit/cost analysis before implementation.

VII. MONITORING AND EVALUATION

BLM policy requires systematic monitoring to verify livestock adjustments. Grazing management includes a system of monitoring and evaluation to ensure stated objectives are being met. Each allotment has different potentials, opportunities, problems and objectives. The activity plans may involve various levels of management intensity, including documentation of present management, on those allotments in custodial care (See *Chapter 2, Management Guidance Common to all Alternatives*, Allotment Categorization, for explanation of 'custodial'). The monitoring and evaluation plan will be flexible, cost effective and tailored to the needs of the allotments.

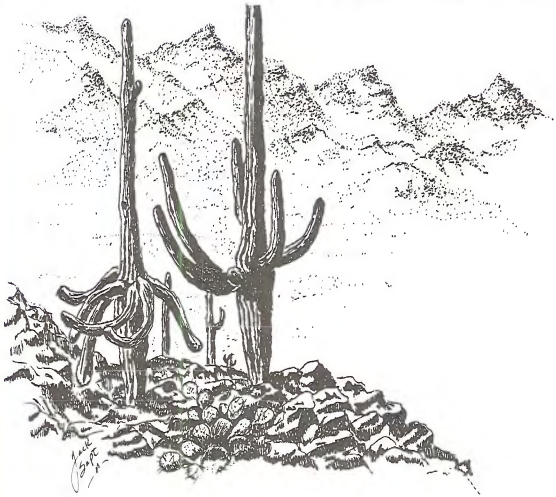
Typical monitoring activities include regular visits to observe the way the system is operating and to resolve problems. This involves checking utilization levels, collecting actual use, trend and weather information, and conducting any other appropriate studies which may include wildlife habitat, riparian vegetation, aquatic habitat, watershed conditions, water quality and protected species.

Allotment evaluation will be conducted periodically and will include assessment of changes in range condition, vegetation cover, plant vigor, wildlife habitat condition and watershed condition. Various study methods will be used to document trend in key areas.

The AMPs and development or activity plans will be revised as necessary. Revisions may include changes in the grazing system, livestock numbers, additional range improvements, or any combination of these necessary to attain management objectives. Strategies for monitoring will be developed in each district and specific objectives will be identified for each allotment.

CHAPTER 2

THE ALTERNATIVES



CHAPTER II

THE ALTERNATIVES

I. INTRODUCTION

The alternatives are described for both the short and long term. The short term is a five-year implementation period during which most proposed actions would take place—except for proposed land treatments. Before these treatments are implemented, grazing systems may need to be carried out for a longer period of time to determine if further treatment is needed. It is assumed that all responses to range development would occur in the long term, 15 or more years after implementation of an action.

Cost estimates for each alternative are made with the understanding that any proposed range development would be modified or reduced in scale to avoid cultural properties or threatened or endangered species. See Table 4-1.

II. MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES

Allotment Categorization

All 336 grazing allotments in the EIS Study Area have been assigned to one of three management categories based on present resource conditions and potential for improvement. The 39 *M* allotments (529,452 acres) generally will be managed to "maintain" current satisfactory resource conditions; the 10 *I* allotments (126,581 acres) generally will be managed to "improve" resource conditions; and the 287 *C* allotments (390,170 acres) will receive "custodial" management due to small acreage of public land and/or limited resource conflicts. See Appendix 3 for description of selective management categories.

Implementing Changes in Allotment Management

Activity or development plans are commonly used to present, in detail, the types of changes required in an allotment, and to establish a schedule for implementation. Actions set forth under any plan that affects the environment will be analyzed and compared to alternative actions. During the analysis, the proposal may be altered or completely rewritten to mitigate any adverse impacts. The following sections contain discussions of the types of changes likely to be recommended in an activity and the guidance that applies to these administrative actions.

Livestock use adjustments are most often made by changing one or more of the following: (1) the kind or class of livestock grazing on allotment, (2) the season of use, (3) the stocking rate or (4) the pattern of grazing. For each of the four alternatives presented in the EIS, target stocking rates have been set for each allotment. (Refer to Appendices 13, 14).

In reviewing the target stocking rate figures and other recommended changes, it is emphasized that the target Animal Unit Month (AUM) figures are not final stocking rates. Rather, all livestock use adjustments will be implemented through documented mutual agreement or by decision. When adjustments are made through mutual agreement, they may be implemented once the Rangeland Program Summary (record of decision) has been adopted. When livestock use adjustments are implemented by decision, the decision will be based on operator consultation, range survey data, ecological site data and monitoring of resource conditions. BLM policy emphasizes the use of a systematic monitoring program to verify the need for livestock adjustments proposed on the basis of one-time inventory data.

Monitoring will also be used to measure the changes brought about by new livestock management practices and to evaluate the effectiveness of management changes in meeting stated objectives.

BLM policy documents discuss applications of rangeland monitoring in more detail.

Federal regulations that govern changes in allocation of livestock forage provide special direction for livestock use adjustments implemented by agreement or decision (43 CFR 4110.3-3 of 03/22/84). The regulations state that:

(a) Permanent increases in livestock forage or suspensions or preference shall be implemented over a five-year period, unless after consultation with permittees or lessees and other affected interests, an agreement is reached to implement the increase or suspension in less than five years; (b) After consultation, coordination and cooperation, suspensions of preference shall be implemented through a documented agreement or by decision. If data acceptable to the authorized officer are available, an initial reduction shall be taken on the effective date of the agreement or decision and the balance taken in the third and fifth years following the effective date, except as provided in paragraph (a) of this section. If data acceptable to the authorized

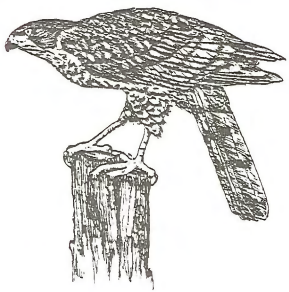
officer to support an initial reduction are not available, additional data will be collected by monitoring. Adjustments based on the additional data shall be implemented by agreement or decision that will initiate the five year implementation period.

All allotments in which rangeland improvement funds are to be spent will be subject to an economic analysis. The analysis will be used to develop a final priority ranking of allotments for the commitment of the rangeland improvements funds that are needed to implement activity plans. The highest priority for implementation generally will be assigned to those improvements with the highest benefit-cost ratio.

Measures for Resource Protection and Enhancement

BLM policy requires the use of protective measures during implementation of its rangeland programs to reduce or eliminate adverse environmental impacts and enhance resources. The following measures apply to developments built in the EIS area and are common to all alternatives.

1. An interdisciplinary team of resource specialists will review all rangeland development proposals to ensure the greatest multiple use benefits.
2. All proposals will be evaluated in an environmental study of appropriate scope to determine site-specific impacts. As a minimum, studies will address cultural resources, protected plants and animals, visual resources and wilderness values. Mitigating measures will be developed to reduce or eliminate site-specific impacts, if needed. Procedures for identifying and mitigating impacts on significant cultural resources are discussed in Appendix 4.



Unleased Tracts

Unleased tracts generally will remain available for further consideration for authorized grazing, as provided in the BLM grazing regulations (43 CFR 4110 and 4130). However, certain tracts totaling 18,635 acres are not currently authorized for grazing and will remain unleased. These lands are either unsuitable for grazing or have been scheduled for disposal.

III. ALTERNATIVES

Alternative A - Rangeland Improvement (Preferred Alternative)

Analysis of this alternative shows that the management goal of maintaining and improving rangeland conditions can be reached through rangeland improvements, monitoring programs and refinement of grazing systems.

Management emphasis would be in areas where rangeland potential is high but range condition is unsatisfactory, watershed problems exist or where conflicts in use patterns of livestock and wildlife exist. The present management program currently provides 114,019 AUMs to 336 allotments for grazing use. See Table 2-1.

Long-term target AUM figures (from increased vegetation production through revision of grazing systems already implemented, additional grazing systems and various land treatments) would be 117,790 AUMs to livestock. The vegetation increases would be distributed on the basis of 40 percent to livestock and wildlife and 60 percent to non-consumptive uses.

To implement this alternative, three AMPs, totaling 59,945 acres, would be revised—based on monitoring of resource conditions. Seven AMPs totaling 66,636 acres would be developed following completion of the EIS. The remaining 326 allotments would not have AMPs developed by BLM due to the small amounts of public land on these ranches, limited resource conflicts, or no potential for improvement. A total of 18,635 acres would remain unleased.

Grazing management systems—including rest rotation, deferred rotation, deferred, seasonal, short duration or others which are variations or combinations of these—would be implemented where needs are identified through monitoring (maintain and improve categorized

allotments). On custodial allotments, grazing systems or season of use would be coordinated with the private landowners, State Land Department or Soil Conservation Service.

Table 2-1
SUMMARY OF ALTERNATIVES

Bureau of Land Management
Phoenix and Safford Districts, Arizona

Alternatives	A	B	C	D
Number of Allotments	336	336	336	-
M	39	46	39	-
I	10	3	10	-
C	287	287	287	-
Initial Stocking	114,019	114,019	102,663	-
Potential Increase/Decrease	3,771	Slight Decrease	15,138	0
AMPs	10	3	10	0
Miles Fence	36	6	36	6,600
Reservoirs	8	2	8	0
Wells	2	1	2	0
Cattleguards	2	2	2	Unknown
Miles of pipeline	9.5	4	9.5	0
Acres of Land Treatments	9,100	200	9,100	0

M - Maintain, I - Intensive - Custodial
Source: BLM files

Land treatments such as imprinting and seeding, chaining or fire could be implemented on approximately 75,000 acres to enhance rangeland values, watershed conditions and wildlife habitat. (See Table 4-1 footnotes for explanation of these land treatments.) Fences would be needed to support grazing or land treatments and would be built to allow wildlife movement. Monitoring and surveys would determine if there were any need to develop new water sources to ensure better livestock distribution and improve wildlife habitat. Any fences that currently restrict wildlife movement would be modified to facilitate movement.

Stocking additional animals would be allowed in the good ephemeral years where additional but unquantified AUMs of forage are available.

Alternative B - No Action Continuation of Present Management

This alternative would freeze the current range program as it is today. Initial and long term use levels under this alternative, regardless of range condition or potential, would be 114,019 AUMs to livestock. Implementation of approved AMPs would continue but no new AMPs would be developed. No new range improvements (fences, reservoirs, land treatments) would be developed unless the range improvements were previously recognized in approved AMPs or were considered necessary for watershed or wildlife resources. Maintenance of current range improvements would be allowed.

This alternative would not allow any increase or decrease in livestock numbers, any change in class of livestock, any adjustment of season of use or any range improvements.

There would be no cost to BLM for the implementation of this alternative, as maintenance of all existing improvements is the responsibility of the operators.

Alternative C - Reduced Livestock Grazing

This alternative emphasizes the accelerated improvement of watershed and wildlife resources along with a short-term decrease in livestock numbers. Reductions under this alternative would be based on the following:

1. Any allotment which has 10-25 percent of its BLM acreage in a poor ecological condition class would receive a 25 percent reduction in its BLM AUMs.

2. Any allotment which has more than 25 percent of its BLM acreage in a poor ecological condition class would receive a 50 percent reduction in its BLM AUMs.

Target figures in this alternative would initially be set at 102,663 AUMs for livestock. Long-term target figures based on projected increases in vegetation production (due to revision of implemented grazing systems, additional grazing systems and land treatments) are 117,790 AUMs to livestock. Lands that are presently unleased for livestock use would remain unleased, with vegetation reserved for wildlife and non-consumptive uses.

To implement this alternative, three AMPs would be revised, based on monitoring of resource conditions, and seven AMPs would be developed following completion of the EIS. The remaining 326 allotments would not have AMPs developed by BLM due to small amounts of public land, limited resource conflicts or the lack of potential for improvement.

Land treatments could occur on approximately 75,000 acres to support watershed and wildlife habitat improvements. (See Table 4–1 footnotes for explanation of these land treatments). Fences needed to support grazing or land treatments would be the same as Alternative A. (See Table 4–1.

Alternative D - No Grazing

Livestock grazing would not be permitted on public lands in this alternative. All leases would be phased out as lease terms expire. Range improvements would not be built or maintained unless the improvements were considered necessary for watershed or wildlife resources.

This alternative would phase out the current permitted livestock use of 114,019 AUMs on 336 allotments as the lease terms expire. For purposes of this analysis, BLM would require fencing of public lands to prevent livestock trespass. About 6,600 miles of fence would be necessary for this undertaking and, according to current cost estimates, would cost about $21.2 million to construct. In addition, annual maintenance would cost $198,000. BLM would continue to monitor the rangeland for unauthorized use, and actions to prevent and process any unauthorized use would cost $90,000 annually.

Other means for implementing this alternative include issuing decisions to close the land for grazing, and with follow-up enforcement through patrol or remote sensing and trespass actions. These methods are not considered effective because: (1) most of the lands are scattered and intermixed within large holdings of private or State lands and are readily used in grazing by cattle; (2) ranchers would need to commit extra labor to patrol and move livestock away from public land—a significant financial commitment; and (3) the BLM would need to commit significant funding for personnel, vehicles, and aircraft to patrol, field investigation, processing cases of unauthorized use and to prepare and participate in hearings on appeals. BLM estimates the costs of these other methods would, over a 15- to 20-year span, probably be approximately the same as the cost for fencing and maintenance. Remote sensing technology has technical limitations and response time problems that would make this tool of little value for BLM in trespass detection at the present time.

IV. ALTERNATIVES CONSIDERED BUT NOT ADDRESSED

An alternative to dispose of the public lands in this study area through exchange or sale was considered, but it was determined that this alternative would not meet the purpose or need set forth in Chapter 1 and therefore was dropped from further consideration.

Another alternative presented by Pima County Parks and Recreation Department during scoping was that of permitting grazing as a range fire preventative measure only. Consideration of this as an alternative revealed that: 1) it would not be effective during an abundant forage year; 2) ecosystems often require periodic fire; 3) livestock management objectives could not be met by using grazing for this purpose only; and 4) existing land patterns in much of the area are such that management of fire on public lands would not prevent range fires on surrounding lands.

The alternative presented by Pima County was stated as "Present cattle grazing being for the ultimate benefit of individuals should be controlled to serve the public interest in watershed and wildlife on public lands until such time as a specific public use is identified."

The proposed alternative was not carried forward because cattle grazing is being controlled under the auspices of the Federal Land Policy and Management Act of 1976. Under this act watershed, wildlife, and livestock grazing are all legitimate uses of the land and must be managed for sustained yield.

The alternative to "allow grazing on lands until the land is classified for recreation or other public purposes and stop grazing at this time if the applicant desires natural growth rejuvenation." Grazing is allowed on lands until another use that would exclude grazing is authorized. For example, Public Purpose (R&PP) leases disallow grazing, not for natural growth rejuvenation, but because grazing is not compatible with the use authorized by the lease.

V. SUMMARY OF IMPACTS

The analysis of the environmental consequences of the Proposed Action and alternatives reveals that some of the alternatives would not measurably impact climate, topography, geology, minerals, air quality or urban land uses. Impacts of some significance, beneficial and adverse, could occur to vegetation, soil, wildlife, wildlife habitat, wild burros, cultural resources, livestock grazing, operations, social attitudes and ranch economics. Minor impacts would occur to recreation, visual resources and water quality.

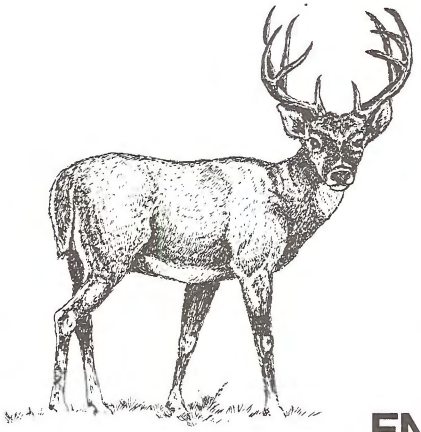
Table 2–2 summarizes these impacts by alternative. For a more detailed analysis of impacts see Chapter 4.

TABLE 2-2
IMPACT SUMMARY BY ALTERNATIVE
(Long Term)

Bureau of Land Management
Phoenix and Safford Districts, Arizona

Resource Elements	Alternative A Rangeland Improvements		Alternative B No Action		Alternative C Reduced Grazing		Alternative D No Grazing	
	BR	CP	BR	CP	BR	CP	BR	CP
Vegetation								
Plant Cover	++	o	--	o	++	o	++	++
Range Condition	++	o	--	o	++	+	++	++
Protected Plants	++	++	--	--	++	++	++	++
Soils								
Erosion	++	o	--	o	++	+	++	++
Water Resources								
Surface Water	+	o	o	o	+	o	++	++
Ground Water	o	o	o	o	o	o	++	++
Livestock Grazing								
Projected AUMs	84,477	33,313	80,706	33,313	84,477	33,313	0	0
Wildlife Habitat								
Mule Deer	++	o	--	o	++	o	++	++
White Tail Deer	++	N/A	--	N/A	++	N/A	++	N/A
Pronghorn	++	o	--	o	++	o	++	++
Bighorn Sheep	--	N/A	--	N/A	--	N/A	++	N/A
Javelina	++	N/A	o	N/A	++	N/A	++	N/A
Small game	++	++	--	--	++	++	++	++
Water fowl & wading birds	o	o	--	--	--	--	++	++
Non-game	++	o	o	o	++	++	++	++
Protected & sensitive species	o	o	o	o	++	-	++	++
Riparian & aquatic habitat	--	--	--	--	--	--	++	++
Wild Burros								
Habitat	++	N/A	--	N/A	++	N/A	--	N/A
Cultural Resources								
Archaeology	o	o	--	--	++	++	++	++
Paleontology	o	o	--	--	++	++	++	++
Recreation	++	++	o	o	++	++	--	--
Visual Resources	o	o	o	o	o	o	--	--
Wilderness	o	o	o	o	o	o	o	o
Ranch Economics								
Ranch Budgets	o	o	o	o	-	o	--	--
Ranch Finance	o	o	o	o	-	o	--	--
Social Element	o	o	o	o	--	--	--	--

BR - Basin and Range, CP - Colorado Plateau.
+ slight positive impact - slight negative impact o no change
++ significant positive impact -- significant negative impact N/A Not applicable



CHAPTER 3

AFFECTED ENVIRONMENT

CHAPTER III

AFFECTED ENVIRONMENT

I. INTRODUCTION

Chapter 3 describes the resources that may be impacted by the alternatives including the *Proposed Action*. Descriptions are only as detailed as needed for the reader to understand the effects of implementing the alternatives. Where impacts are slight or nonexistent (fire management, climate, topography, air quality, natural history), descriptions are brief or are omitted. More detailed descriptions of the resources in the EIS area may be reviewed in the Phoenix District Office or in the Safford District Office.

II. PHYSICAL SETTING

The EIS area lies in the Colorado Plateau and the Basin and Range physiographic provinces (Map 3-0). The Colorado Plateau is characterized by high, rolling desert grasslands, with scattered stands of juniper. The elevation ranges from 4,840 feet at Winslow to 6,964 feet at Springerville. Temperature maximums average 70.6° F at Winslow and 65.8° at Springerville with minimums averaging 39.9° and 31.5° respectively. Average precipitation is 7.3" at Winslow and 12.1" at Springerville—65% of which is deposited in the period of May-October.

The Basin and Range Province is generally described as possessing gently sloping valleys separated by abruptly rising mountains. Elevations range from 1,650 feet near Picacho to 7,730 feet on Baboquivari Peak. The climate is semiarid with precipitation in the mountains ranging from 20-22" to less than 10" in the lower elevations. Roughly one-fourth of the precipitation falls in the winter months, the other three-fourths in late summer months. The average minimum temperature in Prescott is 36.8° while in Casa Grande it is 53.4°. Average maximum temperature in Prescott is 69.1° and 86.6° in Casa Grande. Average precipitation at Prescott is 18.1" and 8.1" at Casa Grande.

III. VEGETATION

Vegetation is markedly different in the two physiographic provinces because of differences in elevation, precipitation, temperature, soils and geology. The Colorado Plateau is higher, cooler and receives somewhat more precipitation than the Basin and Range Province.

Major vegetation communities (Brown & Lowe 1980) are:

Colorado Plateau — (listed from most to least abundant)

- Great Basin Shrub-Grassland
- Great Basin Desertscrub
- Great Basin Conifer Woodland

Basin and Range — (listed from most to least abundant)

- Paloverde-Mixed Cacti
- Scrub-Grassland (Semidesert Grassland)
- Creosotebush-Bursage
- Interior Chaparral
- Chihuahuan Desert Scrub
- Madrean Evergreen Forest and Woodland

The Southwestern Riparian Deciduous Forest and Woodland community comprises less than 1,000 acres of the public land in the entire EIS area, but is of major importance to wildlife in both provinces.

A. Range Condition and Trend

Ecological range condition - expressed as excellent, good, fair, poor or unclassified - reflects the current vegetation composition of the rangeland compared to the potential climax community. Apparent range trend is the direction the vegetation community is changing compared to the potential climax community and is expressed as up, down or static (which means no direction of change is apparent). See Table 3-1, Range Condition and Apparent Trend.

B. Protected Plants

Two federally-listed endangered plant species are found in the EIS area with suitable supporting habitat for another. Also, the U.S. Fish and Wildlife Service (FWS) lists 25 species (which occur or may occur in the EIS area) for possible future listing as threatened or endangered. One of these has recently been proposed for listing as threatened (Table 3-2). The Arizona Natural Heritage Program special plant list (1983) includes 58 species which occur or may occur in the study area (Table 3-3).

The uncontrolled collection or destruction of many rare or commercially valuable species is prohibited by the *Arizona Native Plant Law* (A.R.S., CH.7, Article l) and administered by the Arizona Commission of Agriculture and Horticulture with the cooperation of the BLM. Six

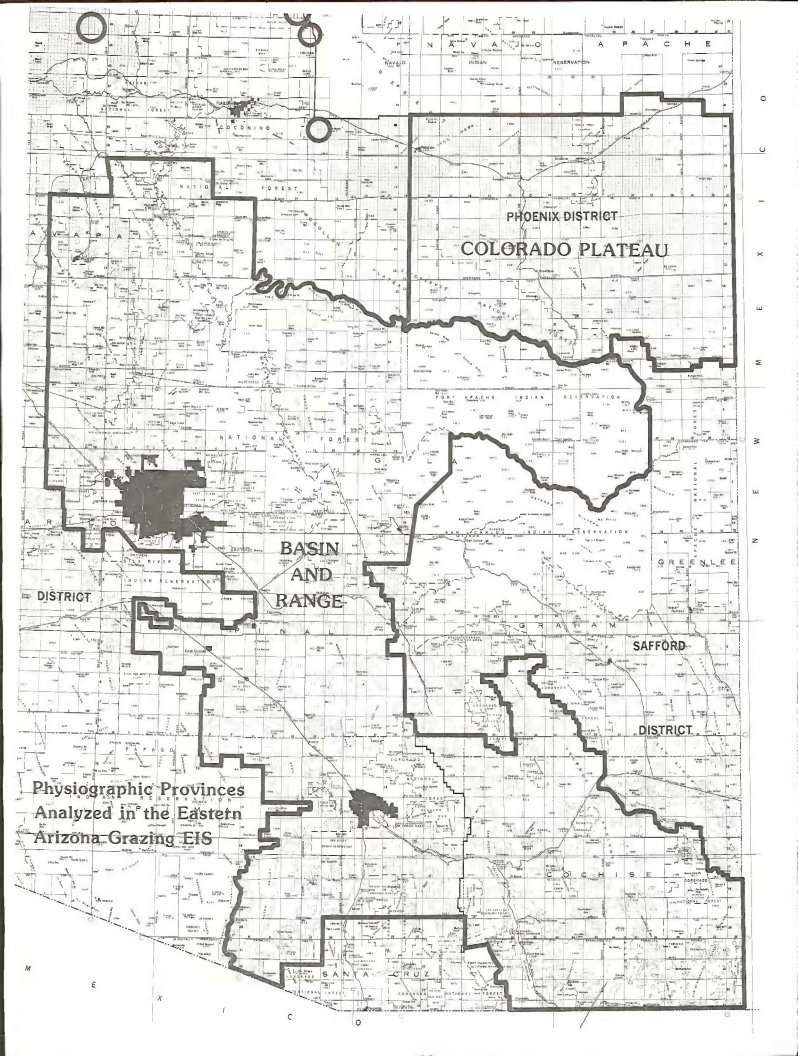

PHOENIX DISTRICT
COLORADO PLATEAU
BASIN
AND
RANGE
DISTRICT
SAFFORD
DISTRICT
Physiographic Provinces
Analyzed in the Eastern
Arizona Grazing EIS

TABLE 3-1

RANGELAND CONDITION AND APPARENT TREND
Bureau of Land Management
Phoenix and Safford Districts, Arizona

Physiographic Province	Total BLM Acres	Rangeland Condition					Apparent Trend		
		Unclass. Acres* %	Excel. Acres %	Good Acres %	Fair Acres %	Poor Acres %	Up Acres %	Down Acres %	Static Acres %
Colorado Plateau	240,679	14,218 5.9	16,770 6.9	158,016 65.7	49,125 20.4	2,550 1.1	8,193 3.4	10,777 4.5	107,491 86.2
Basin and Range	805,524	16,757 2.1	250,005 3.1	178,411 22.1	492,426 61.2	92,925 11.5	68,152 8.4	57,983 7.2	662,632 82.3
Total EIS Area	1,406,203	30,975 2.9	41,775 4.0	336,427 32.2	541,551 51.8	95,475 9.1	76,345 7.3	68,760 6.6	870,123 83.1

* Condition and trend not determined on non-rangeland areas such as dump sites or playas.

Source: BLM Files.

species in the various federal listing categories are believed affected by grazing or trampling by livestock. Monitoring plots have been established in the EIS area to gather longterm data on the population trends of eight species (these are marked with asterisks (*) next to the scientific name in Tables 3-2 and 3-3).

IV. SOILS

The soils in the EIS area range from very shallow (less than 10 inches) to deep (greater than 60 inches) and are derived from a wide variety of parent materials. The highly diverse parent materials, topography and climates have created soils with a very wide range in major soil characteristics (SCS State General Soil Map 1975).

In Table 3-4, soils of the EIS area have been grouped according to geomorphic features (position on the landscape) and by physiographic province.

Several allotments within the Basin and Range have been identified as having areas of accelerated soil erosion which has been caused to some degree by livestock grazing. The soils within these areas are generally deep soils on fan terraces, alluvial fans and/or flood plains (soil groupings: 9, 10 and 11 on Table 3-4). These allotments are shown on Table 4-1 and are indicated as being proposed for seeding. (Allotments: 6168, 6020, 6183, 6032, 6244, 6039, 6144, 6083, 6068, 6072, 6153 and 6126).

V. WATER RESOURCES

A. Surface Water

Surface water leaves the EIS area by two major river systems, the Little Colorado River and the Gila River. The Little Colorado River drains the Colorado Plateau and the Gila River drains the Basin and Range. Surface water leaving public lands in the Sulphur Springs Valley area is captured by the Willcox Playa—a closed basin.

Most of the watercourses in the EIS area are intermittent streams (flow only during wet periods, dry most of year). The Little Colorado River, Agua Fria River, Chevelon Creek, Hassayampa River, Gila River and the Babocomari River flow year round.

Surface water leaving the EIS area during the winter months is usually of fair quality with relatively small amounts of dissolved solids and suspended sediment because winter precipitation periods usually last several days. The precipitation can infiltrate into the soil with little runoff, resulting in minor soil erosion.

The majority of soil erosion occurs during the summer months when precipitation results from convective thunderstorms which cover a small area and usually last less than one hour. These thunderstorms can produce intense rainstorms in which rain falls much faster than it can be absorbed by the soil, thus causing runoff high in dissolved solids and suspended sediment.

TABLE 3-2

FEDERALLY LISTED AND CANDIDATE PLANTS
Bureau of Land Management
Phoenix and Safford Districts, Arizona

Scientific Name	Occurrence in the EIS Area	FWS Listing Category 1/	Physio-graphic Province 2/	Affected by Grazing
Agave parviflora*	confirmed	C(2)	BR	X
Amsonia kearneyana	possible	C(1)	BR	
Amsonia peeblesii	confirmed	C(2)	CP	
Astragalus barnebyi	confirmed	C(2)	CP	
Astragalus xiphoides*	confirmed	C(1)	CP	
Cheilanthes arizonica	confirmed	C(2)	BR	
Coryphantha robinsorum	possible	C(1)	BR	
Coryphantha scheeri var. robustispina	confirmed	C(1)	BR	
Dalea tentaculoides	possible	C(1)	BR	
Echinocactus horizonthalonius var. nicholii*	confirmed	E	BR	
Echinocereus triglochidiatus var.arizonicus	possible	E	BR	
Erigeron pringlei	probable	C(2)	BR	
Eriogonum capillare	possible	C(2)	BR	
Graptopetalum bartramii	confirmed	C(2)	BR	
Mammillaria thornberi*	confirmed	PT	BR	X
Neolloydia erectocentra var. acunensis	possible	C(1)	BR	
Neolloydia erectocentra var. erectocentra	probable	C(2)	BR	
Notholaena lemmoni	probable	C(2)	BR	
Pediocactus papyracanthus*	confirmed	C(2)	CP	X
Pediocactus peeblesianus var. fickeiseniae*	confirmed	C(1)	CP	X
Pediocactus peeblesianus var. peeblesianus*	confirmed	E	CP	X
Peniocereus greggii	confirmed	C(2)	BR	
Puccinellia parishii	possible	C(2)	BR	
Stenocereus thurberi	possible	C(2)	BR	
Tumamoca macdougalii	confirmed	C(1)	BR	
Vauquelinia pauciflora	probable	C(2)	BR	X

1/ Candidate species
C(1) Plants for which the FWS presently has sufficient information on hand to support their being listed as threatened or endangered
C(2) Plants for which the FWS has information indicating the probable appropriateness for listing but for which sufficient information to support a proposed rule is lacking

E = Endangered PT = Proposed Threatened

2/ BR = Basin and Range Physiographic Province
CP = Colorado Plateau Physiographic Province

* Indicates species for which a monitoring plot has been established in the EIS area

Source: BLM Files

TABLE 3-3

ARIZONA NATURAL HERITAGE PROGRAM
SPECIAL PLANTS 1/
Bureau of Land Management
Phoenix and Safford Districts, Arizona

Scientific Name	Physiographic Province 2/
Abutilon reventum	BR
Abutilon thurberi	BR
Agave murpheyi*	BR
Agave toumeyana var. bella	BR
Allium rhizomatum	BR
Anoda abutiloides	BR
Aster pauciflorus	BR
Atriplex griffithsii	BR
Bacopa rotundifolia	BR
Cardiospermum corindum	BR
Ceterach dalhousiae	BR
Colubrina californica	BR
Coryphantha scheeri var. valida	BR
Croton fruticulosus	BR
Cynanchum sinaloense	BR
Cynanchum wigginsii	BR
Echinocereus pectinatus var. pectinatus	BR
Eragrostis obtusifolia	BR
Errazurizia rotundata	CP
Graptopetalum rusbyi	BR
Heteranthera limosa	BR
Hexalectris spicata	BR
Ibervillea tenuisecta	BR
Lagascea decipiens	BR
Lindernia anagallidea	BR
Machaeranthera sonorae	BR
Malvastrum bicuspidatum	BR
Mammillaria viridiflora	BR
Mammillaria wrightii var. wilcoxii	BR
Manihot davisiae	BR
Maurandya acerifolia	BR
Mentzelia lindheimeri	BR
Muhlenbergia duboides	BR
Muhlenbergia xerophila	BR
Nemastylis tenuis	BR
Notholaena aschenborniana	BR
Notholaena neglecta	BR
Oenothera harvardii	BR
Pellaea ternifolia var. ternifolia	BR
Penstemon pinifolius	BR
Phyllanthus polygonoides	BR

TABLE 3-3

ARIZONA NATURAL HERITAGE PROGRAM (Continued)

Scientific Name	Physiographic Province 2/
Polygala glochidiata	BR
Polygonum fusiforme	BR
Psorothamnus scoparius	BR
Ranunculus arizonicus	BR
Sagittaria graminea	BR
Selaginella eremophila	BR
Senecio neomexicana var. toumeyi	BR
Senecio parryi	BR
Solanum heterodoxum	BR
Tillandsia recurvata	BR
Tragia amblyodonta	BR
Trichostemma brachiatum	BR
Tripsacum lanceolatum	BR
Zuchia arizonica	CP

1/ Many of these species have not been documented in the EIS area but literature and herbaria records indicate a possible occurrence.

2/ BR = Basin and Range Physiographic Province
CP = Colorado Plateau Physiographic Province

* Indicates species for which a monitoring plot has been established in the EIS Area.

Source: BLM files

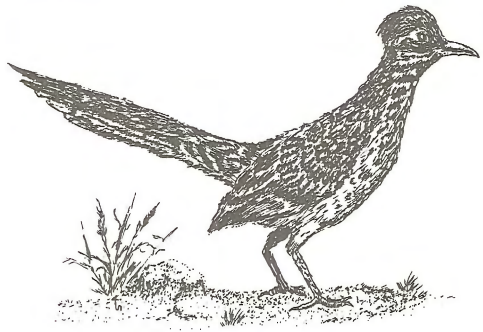


TABLE 3-4

SOILS GROUPS
Bureau of Land Management
Phoenix and Safford Districts, Arizona

Soil Groupings and Geomorphic Features	Soil Characteristics	Major Soil Series	Ecological Sites	Location in State	Water Erosion Susceptibility	Wind Erosion Susceptibility
Colorado Plateau						
1. Shallow soils on mountains & hills of sedimentary origin	Nearly level to moderately steep (0-25% slopes), sandy, loamy soils formed in sandstone to shale & limestone	Kopie, Spikom, Clay Springs, Winona, Travertine	Sandstone up land, shallow loamy shale upland	Widespread in Colorado Plateau Province	Slight to moderate	Slight to moderate
2. Shallow soils on mountains & hills of basic igneous origin	Nearly level to steep (0-60% slopes) loamy soils, shallow to deep formed in basalt bedrock cinders	Rudd, Bandera	Shallow loamy, cinder hills	Southeastern portion of Colorado Plateau	Slight to moderate	Slight to moderate
3. Deep soils on fan terraces	Nearly level to gently sloping (0-8% slopes), sandy & loamy soils from mixed parent material & eolian deposits	Clovis, Palma, Sheppard, Hubert, Hereford	Sandy loam upland, sandy upland, loamy upland	Widespread in Colorado Plateau	Moderate	Moderate
4. Deep soils on floodplains	Nearly level (0-3% slopes), loamy & clayey soils, maybe saline from recent alluvium	Tours, Jocity, Navajo	Loam bottom, clay bottom, saline bottom	Widespread in Colorado Plateau	Moderate to severe	Slight
5. Eroded shaley soils on breaks, & escarpments	Gently sloping to steep (3-60% slopes), loamy, clayey soils formed in claystone, mudstone, siltstone	Miscellaneous land type	Badlands	Northeastern portion of Colorado Plateau	Severe	Severe
Basin and Range						
6. Shallow soils on mountains & hills from sedimentary origin	Moderately steep to very steep (15-90% slopes), loamy soils formed in limestone	Mabray Retriever, Saint Thomas	Limestone hills	Southern portion of basin & range	Slight to moderate	Slight
7. Shallow soils on mountains & hills from acidic origin	Gently sloping to very steep (0-90% slopes), loamy, clayey soils formed from granite gneiss, schist & rhyolite	Lampshire, Cellars, Barkerville, Moano, Anklam, Romero	Granitic hills, volcanic hills, schist hills, shallow upland limy hills	Widespread in basin & range	Slight to severe	Slight
8. Shallow Soils on mountains & hills from basic origin	Moderately steep to very steep (15-90% slopes) loamy, clayey soils formed in basalt & andesite	Graham, House Mountain, Lehmans, Gachado, Atacosa	Volcanic hills, basalt hills	Widespread in basin & range	Moderate to severe	Slight
9. Deep soils on fan terraces	Nearly level to moderately steep (0-25% slopes), loamy, clayey soils, formed in mixed alluvium	Continental, Mohave, Cetrital, Eba, Caralamp	Loamy upland, loamy hills, sandy Loam upland, clay loam upland	Widespread in basin & range	Slight to moderate	Moderate
10. Limy soils on fan terraces	Nearly level to moderately steep (0-25% slopes), shallow to deep soils formed in limy alluvium	Pinaleno, Nickel, Cave Kimbrough Gunsight	Limy upland, limy slopes	Widespread in basin & range	Slight to moderate	Slight

TABLE 3-4
SOILS GROUPS (Continued)

Soil Groupings and Geomorphic Features	Soil Characters	Major Soil Series	Ecological Sites	Location In State	Water Erosion Susceptibility	Wind Erosion Susceptibility
11. Deep soils on alluvial fans and floodplains	Nearly level (0-3% slopes), sandy, loamy & clayey soils formed in mixed alluvium	Anthony, Aco, Guest, Glendale, Arizo	Clay loam bottom, sand bottom, clay bottom, saline bottom, sandy loam upland, limy fans	Throughout basin & range along drainageways	Moderate to severe	Severe

Source: BLM files

Average annual water yield for the Gila River Basin within the EIS area is about 177,000 acre-feet per year. Average annual water yield for the little Colorado River Basin within the EIS area is about 128,000 acre-feet per year. Public lands in both basins are so widely scattered that estimates of water or sediment yield on the public lands in EIS area cannot be made with available data. The EIS area contains numerous (about 700) springs and reservoirs that provide drinking water for livestock and wildlife as well as support for many riparian vegetation species in the area. Few of the reservoirs provide year-round water.

B. Groundwater

The public lands of the EIS area have 171 wells, most pumped by windmills but some with electric or gasoline engines. The depth to water varies from less than 50 feet to more than 500 feet. Generally these wells supply relatively small amounts of water (estimated to be from 150,000 to 500,000 gallons per year). Most wells are classified by the State of Arizona as "Exempt" because they provide less than 35 gallons per minute.

Concentrations of dissolved solids (salt or salinity) in the groundwater typically range from 1,000 to 3,000 milligrams per liter (mg/l) but may range as high as 10,000 mg/l. Groundwater is produced from many different types of geologic formations in the EIS area. In the Basin and Range Province, water is pumped from wells drilled into valley fill deposits (alluvium) or into mountain bedrock zones. On the Colorado Plateau, groundwater is obtained from different layers of sedimentary rock. Depths to groundwater are generally greater on the Colorado Plateau than in the Basin and Range Province.

VI. LIVESTOCK GRAZING

A. Basin and Range

There are 245 operators leasing 246 (BLM) allotments (805,524 acres) with a current authorized use of 80,706 animal unit months (AUMs). See Appendix 1. These livestock operations vary greatly and some may involve complex ownership relationships. A number of operators have more than one allotment leased while one allotment is a community allotment (more than one operator). Operations are run by individuals, families, partnerships, corporations, or a combination of all four.

A total of 228 allotments are designated for perennial-ephemeral grazing management and may be grazed yearlong by cow-calf/yearling operations, although they tend to use only the winter months when temperatures are cool and forage supply is best. This is especially true in the lower elevations of the Basin and Range Province. The winter and early spring moisture produce annual forage that enhances grazing, and livestock waters are more certain as reservoirs are often filled by the winter rains. The average base herd size of the yearlong operators is 206 head, however stocking rates vary from year to year, depending upon abundance of annual forage.

Eight allotments have been classified for seasonal grazing, usually from about the first of November to the end of April of each year. Seasonal grazing allows the rancher to maintain a larger herd (than yearlong grazing would) because of the winter rains that increase both forage and water supplies for his animals. The average herd size on these allotments is 315 head.

Ten allotments classified as ephemeral range lack sufficient perennial forage for a large enough base herd to

justify an operator's supervision, maintenance and handling costs for a yearlong operation. Under the special ephemeral rule published in the Federal Register on December 7, 1968, BLM may permit grazing on ephemeral allotments only when precipitation and temperature show the probability of an ephemeral crop. The operators leasing these allotments usually graze steers when the annual forage is available. BLM may authorize an increase in livestock numbers when climatic conditions assure an abundant growth of annual forage on the perennial-ephemeral and the seasonal allotments.

Three allotments presently have approved AMPs; however only one plan has actually been implemented. The other two lack the necessary range improvements to start the grazing plan. Presently, BLM plans to implement AMPs on seven additional allotments.

All grazing allotments in the EIS area have been assigned to one of three selective management categories based on the following criteria: range condition, resource potential, presence of resource-use conflicts or controversy, opportunity for positive economic return on investments and the present management situation. The Maintain (M) allotments are managed to maintain current satisfactory resource conditions; Improve (I) allotments are managed to improve resource conditions; and Custodial (C) allotments receive custodial management with protection for the existing resource values. For detailed descriptions of criteria for each category, refer to Appendix 3.

Allotments may change from one category to another for various reasons including land exchanges, resource conflicts or results of monitoring studies. There are now 34 allotments in the Maintain category, ten in the Improve category and 202 allotments in the Custodial category.

Most operators graze cattle on their allotments, although a few graze sheep and horses, and one grazes goats.

B. Colorado Plateau

There are 84 operators leasing 90 BLM allotments (240,679 acres) with a current authorized use of 33,313 AUMs. See Appendix 2. A total of 79 allotments are designated for perennial grazing management and may be grazed yearlong by cow-calf/yearling operations. The average herd size of these operations is 303 head.

On the 11 allotments classified for seasonal grazing, half of the operators graze their livestock from around December 1 to May 31; the other half graze from June 1 to the end of October. The average herd size for these operations is 306 head.

Presently, there are no approved AMPs implemented by BLM on the Colorado Plateau. Two operators have implemented, on an experimental basis, their six BLM allotments under the Holistic Resource Management (Savory Grazing Method). These experimental allotments are being monitored by BLM to determine the impacts to the resource under these grazing conditions. If the impacts are found to be beneficial, i.e., condition and trend improve, this type of grazing management would be allowed to continue. No AMPs are proposed by BLM on the Colorado Plateau. However, many ranches using BLM-administered lands have ranch plans implemented by the Soil Conservation Service, Arizona State Land Department or by the United States Forest Service.

Five allotments are in the Maintain category and 85 allotments in the Custodial category. No allotments are classified under the improve category.

Most operators graze cattle; however a few graze sheep or pasture horses.

VII. WILDLIFE

A. Introduction

The wildlife section discusses big game, small game, waterfowl and wading birds, nongame, protected and sensitive species and riparian and aquatic habitats.

B. Big Game

1. MULE DEER

Habitat within the Colorado Plateau portion of the EIS area is marginal except for scattered areas adjacent to broken terrain and permanent water (AG&FD 1984). Mule deer occur at varying densities throughout most of the Basin and Range portion. See Table 3-5 for occurrence. Mule deer occur in all 10 I category allotments.

Important factors influencing deer distribution include the availability of preferred browse species, especially during the fall months when the browse species may be more nutritious than grass, and deer/livestock competition for the nutritious new growth increases. Other distribution factors include the spring herbaceous forage, water and protective cover.

2. WHITE-TAILED DEER

See Table 3-5 for important white-tailed deer areas. This species lives mainly in the Basin and Range portion of the EIS area, with higher densities at the upper elevations.

TABLE 3-5

IMPORTANT WILDLIFE AREAS
Bureau of Land Management
Phoenix and Safford Districts, Arizona

Area	Code	Township	Range	Comments
Colorado Plateau				
Black Canyon	A	14 N.	17 E.	
		15 N.	17 E.	
Hard Scrabble Wash	R,A	15 N.	28 E.	
		16 N.	28 E.	
Little Colorado River	R	19 N.	16 E.	
		20 N.	16 E.	
Pink Cliffs	A	14 N.	19 E.	
		15 N.	18, 19 E.	
Rio Puerco	R,A	18 N.	22 E.	
		18 N.	23, 24 E.	
Upper Chevelon Canyon	R	16 N.	16 E.	
Zuni River	R,A	14 N.	26 E.	
		14 N.	27 E.	
		15 N.	27 E.	
		16 N.	16 E.	
Basin and Range				
Agua Fria River	R	8 N.	2 E.	
		11 N.	3 E.	
		13 N.	1 E.	
Babocomari River	R,T	20 S.	20 E.	
Baboquivari Peak	W,JA,Q	18 S.	7 W.	
		19 S.	7 W.	
Baker Canyon	T,R,Q	24 S.	32 E.	WHIP
Buehman Canyon	R,H	12 S.	18 E.	HMP
Bumblebee Creek	R	9½ N.	2 E.	
		20 N.	2 E.	
Boulder Creek	R	8 N.	1 E.	
		9 N.	1 E.	
Cedar Basin	T	11 N.	2 W.	Unique chaparral area Gilbert's Skink
Cocio Wash	R,H	12 S.	9 E.	
Coyote Mountains	W,JA,Q	16 S.	8 E.	
		17 S.	8 E.	
Dewey-Mayer Area	A	12 N.	2 E.	Important wildlife movement area.
		13 N.	2 E.	

TABLE 3-5

IMPORTANT WILDLIFE AREAS (Continued)

Area	Code	Township	Range	Comments
Dripping Springs Mountains	D	3 S.	14 E.	
Durham Wash, Brady Wash, Ninety-six Hills		7 S.	12 E.	Important Gambels quail - scaled quail area.
Gila River	R,H,T	4 S.	11 E.	
		4 S.	12 E.	
		4 S.	13 E.	
Hackberry Spring	R	13 S.	20 E.	WHIP
Hassayampa River	R	9 N.	3 W.	
		10 N.	3 W.	
Joe's Hill	AL	19½ N.	3 W.	
Las Guijas	W,JA	20 S.	9 E.	
		20 S.	10 E.	
		21 S.	10 E.	
Little Dragoons	D,Q,JA	15 S.	22 E.	WHIP, HMP
Martinez Canyon	R,H	4 S.	11 E.	
		4 S.	12 E.	
Mary Spring	R	15 S.	25 E.	WHIP
Mule Mountains	D,W,Q	22 S.	24 E., 23 E.	WHIP
		23 S.	24 E., 23 E.	
Oak Creek	R	9 N.	2 W., 3 W.	
Paige Canyon	R,T	14 S.	19 E.	WHIP, HMP
Picacho Reservoir	R,H,T	5 S.	8 E.	
Picacho Mountains	M,J,A	8 S.	9 E.	
Ragged Peak	SL	11 S.	8 E.	
Redfield Canyon, Swamp Spring	Q,H,N,F R,P,T,S	11 S.	20 E.	Existing bighorn sheepwaters HMP
Roble Spring	R	13 S.	19 E.	WHIP, HMP
Salcita Springs	R	12 S.	20 E.	WHIP
San Pedro River	R,T	12 S.	19 E.	HMP
Sierrita Mountains	M,JA	17 S.	10 E.	
		18 S.	10, 11E.	
Sierra Blanca Spring	R	13 S.	20 E.	WHIP
Silver Bell Mountains	S	11 S.	8 & 9 E.	
		12 S.	9 E.	
Swisshelm Mountains	W,Q,R	21 S.	28 E.	WHIP
Sycamore Creek	R	11 N.	3 E.	
Sycamore Mesa	A	11 N.	3 E.	

TABLE 3-5

IMPORTANT WILDLIFE AREAS (Continued)

Area	Code	Township	Range	Comments
Tobosa Grassland	B	18 S.	25 E.	
Tortilla Mountains	D,J	4 S.	13 E., 14 E.	
		5 S.	13 E., 14 E.	
Walnut Canyon	R,H	13 S.	12 E., 13 E.	
West Silver Bell Mountains	S	11 S.	7 E., 8 E.	
White Canyon	R,H	3 S.	12 E.	
Willcox Playa	R,N,J,B,T	14 S.	24 E.	

A - Antelope
B - Prime example of biotic communities
D - Mule deer
F - Necessary for foraging for certain species
H - Native fishery or potential for fishery
JA - Javelina
J - Capable of producing high population of wildlife. Loss would jeopardize population.
L - Lambing or fawning (e.g. - AL=Antelope fawning area for example)
N - Necessary for survival of a species such as bighorn sheep
P - Optimum habitat for reintroduction of species
Q - Mearns Quail
R - Perennial streams, riparian areas (including mesquite bosques) and wetlands
S - Desert Bighorn Sheep
T - T&E species
W - White-tailed deer
WHIP - Wildlife Habitat Improvement Potential

EXPLANATION OF TABLE -- These areas have been identified in cooperation with AG&FD (AG&FD 1982). Any grazing management changes within these areas should be implemented only after an interdisciplinary analysis of impacts to wildlife habitats, including necessary mitigation, is done.

Source: BLM files
AG&FD

The population fluctuates greatly and may be related to spring and early summer soil moisture and its role in the production of forbs necessary for fawn survival. Factors influencing distribution are as listed for mule deer.

3. PRONGHORN ANTELOPE

The majority of the Colorado Plateau portion of the EIS area is good pronghorn antelope habitat with areas of high population densities. Habitat for pronghorn in the Basin and Range is limited and population density ranges from low to medium.

Preferred pronghorn habitat consists of a mixture of perennial grasses, shrubs and forbs—with forbs forming the major part of the diet. Pronghorns prefer cover having an average height of 15 inches (Yoakum 1975).

4. DESERT BIGHORN SHEEP

The desert bighorn sheep is a Group III threatened state-listed wildlife species (Table 3-6). Desert bighorns occur only in the Basin and Range portion of the EIS area (Table 3-5). The Silver Bell and West Silver Bell Mountains provide habitat for a remnant desert bighorn population (AG&FD 1980). Ragged Peak is an important lambing area.

The Sawtooth, Roskruge and Coyote Mountains are historic bighorn habitat; however the extent of current desert bighorn use is unknown. An introduced population in the Redfield Canyon is reproducing and AG&FD has designated it and other areas along the Galiuro mountains as high priority release sites.

Bighorns must be able to move freely and are typically intolerant of human disturbances and developments. Safely negotiating livestock fences can be difficult for desert bighorns because of the fences' location, type or condition.

5. JAVELINA

Javelina live throughout the Basin and Range portion of the EIS area with the highest densities in desert scrub and riparian vegetation. Very high densities are found in the bajadas and in the foothills of mountain ranges.

C. Small Game

1. DOVES

Mourning doves live in the Colorado Plateau area and both mourning and white-winged doves in the Basin and Range portion. White-winged doves tend to be more numerous in mesquite or saltcedar bosque areas, and both are in riparian areas. Mourning doves are very common, especially in the desert scrub type, as long as water is within flying distance.

2. QUAIL

Limited numbers of Gambel's and scaled quail are found in the Colorado Plateau portion. Gambel's, scaled and Mearns quail inhabit the Basin and Range portion.

Gambels quail are more abundant in the desert scrub and grassland vegetation types. Populations vary greatly depending on winter and spring rains and spring annual production. Green forage plants are high in Vitamin A, which is necessary for quail to reach breeding condition (Hungerford 1960).

Scaled quail prefer the scrubland and grassland habitats in the southernmost part of the EIS area. Good scaled quail habitat is desert grassland having mixed perennial grasses interspersed with suitable shrubs (Brown 1970).

Mearns quail are limited to encinal habitat and upper elevation grasslands. See Table 3-5 for some specific areas.

D. Waterfowl and the Wading Birds

Eighteen to 20 species of waterfowl and possibly up to 25 species of shorebirds use aquatic habitat in the EIS area, although limited breeding occurs. The greatest use is during fall migration and winter. Public lands provide a very limited amount of habitat around springs, reservoirs, stock ponds and streams. Table 3-5 lists important riparian and aquatic habitats used by waterfowl and shorebirds.

Currently 5,000 to 8,000 sandhill cranes winter in the Willcox Playa area. Present livestock grazing at the roost sites is controlling vegetation and helping to maintain good sandhill crane habitat in the Playa (AG&FD 1982).

E. Nongame

A great variety of nongame birds, mammals, reptiles, amphibians and fish inhabit the EIS area.

The major limiting factor to many nongame species in the EIS area is cover (Jones and Porzer, in preparation; Millsap 1981; Taylor and Walchuck 1980). Each nongame species requires a different set of cover needs of living (vegetation) and nonliving (soil and rock) materials. Sufficient cover under 15 inches high is a habitat requirement for the area's nongame species (BLM 1981).

Riparian vegetation has high vegetation production but in many cases only the upper canopy layer is present. This results in a poorer nongame habitat. Water is an important limiting factor for some nongame species. Amphibians

TABLE 3-6

THREATENED AND ENDANGERED SPECIES -- FEDERAL AND STATE
Bureau of Land Management
Phoenix and Safford Districts, Arizona

Wildlife Species Common Names	Classification Federal	State	Occurrence	Location	Comments
Colorado River Roundtail Chub	-	G-III	P	Chevelon Canyon	Currently being reintroduced
Desert Pupfish	-	G-I	V (I)		
Gila Chub	C-1	G-III	V	Redfield Canyon-Swamp Springs	
Gila Topminnow	Endangered	G-III	V (I)		Found in only one site on public land. Being reintroduced.
Little Colorado River Spikedace	-	G-III	P	Little Colorado River, higher elevations	
Desert Tortoise	C-2	G-III	V		Needs variety of cover.
Gila Monster	C-2		V		
Arizona Gilberts Skink	-	G-IV	P		Requires good cover in chaparral, riparian & grassland habitats.
Mountain Skink	-	G-IV	P	Baboquivari Mountains	Oak-woodland habitat
Desert Hook-nosed Snake	-	G-IV	V		
Desert Massasauga	-	G-IV	V		
Black-crowned Night-heron	-	G-IV	V		Stockponds, reservoirs and ripian habitats.
Snowy Egret	-	G-IV	V		Breeds at Picacho Reservoir.
Great Egret	-	G-IV	P		
Whooping Crane	Endangered	-	P	Willcox Playa	
Black-bellied Whistling-Duck	-	G-IV	V		
Yuma Clapper Rail	Endangered	G-III	V	Picacho Reservoir	
Bald Eagle	Endangered	G-II	V	Picacho Reservoir Lake Pleasant	
Mississippi Kite	-	G-III	P		Breeds in riparian habitat.
Swainson's Hawk	C-2	-	V		
Ferruginous Hawk	C-2	-	V		
Common Black-hawk	-	G-III	V		Restricted to riparian habitat.
Gray Hawk	-	G-III	P		
Osprey	-	G-III	P		
Crested Caracara	-	G-IV	V		
Peregrine Falcon	Endangered	G-III	P	Nests SE portion of ElS area. Uncommon migrant in other areas.	
Masked Bobwhite	Endangered	G-II	I		USFWS may propose introductions.
Elegant Trogon	-	G-IV	P	Baker Canyon	
Yellow-billed Cuckoo	C-2	G-III	V		
Violet-crowned Hummingbird	-	G-IV	P	Baker Canyon	
Thick-billed Kingbird	-	G-III	V	Baker Canyon	
Tropical Kingbird	-	G-III	V	Baker Canyon	
Sulphur-bellied Flycatcher	-	G-III	P	Baker Canyon	
Desert Bighorn Sheep	-	G-III	V		Discussed under Big Game
Coati	-	G-IV	V		
Mexican Gray Wolf	Endangered	G-I	I		No recent verified sightings.

TABLE 3-6

THREATENED AND ENDANGERED SPECIES -- FEDERAL AND STATE (Continued)

Wildlife Species Common Names	Classification Federal	State	Occurrence	Location	Comments
Black-footed Ferret	Endangered	G-I	I		Tied to prairie dog towns - declined with control of prairie dog.
Five-striped Sparrow	-	G-III	P	Santa Cruz and Southern Pima Counties	

Federal Classification

Endangered -- any species which is in danger of extinction throughout all or a significant portion of its range.
Threatened -- any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

C-1 -- Candidate species for which USFWS has sufficient information on hand to support its listing as threatened or endangered.
C-2 -- Candidate species for which USFWS does not have sufficient information on hand to support its listing at this time.
P -- species currently being proposed for listing under the Endangered Species Act.

State Classification

Group I -- Species that are known or suspected to be extinct in Arizona but that still exist in other parts of the U.S. or Mexico.
Group II -- Corresponds to Federal "endangered" categories.
Group III -- Corresponds to Federal "threatened" categories.
Group IV -- Species of interest primarily because of limited distribution.

Occurrence in EIS Area

V -- Presence verified on or near a BLM administered parcel.
P -- Species not confirmed but habitat is there and species may be there also.
I -- Species not now known to occur but may be introduced into proper habitats.

and fish are generally restricted to the major riparian areas, springs, stock tanks and reservoirs.

F. Protected and Sensitive Wildlife

Table 3-6 lists species and subspecies of wildlife which the United States Fish and Wildlife Service (USFWS) considers "Threatened" or "Endangered" (T&E) and those species which are candidate species for listing. "Threatened Native Wildlife" species for which the State of Arizona recommends special consideration, are also included. The desert bighorn sheep, a state-listed species is discussed under big game.

The desert tortoise occurs in Basin and Range portion of the EIS area. It is well adapted and resistant to the climatic and biological demands of an arid region, but its future survival is in jeopardy because of human activities (Luckenbach 1982). A major limiting factor for desert tortoises is forage. When tortoises awake from hibernation they rely on abundant winter-spring annuals to provide energy for the years reproduction. When annuals are not present in the spring, perennial grasses become an extremely important source of forage (Sheppard 1981). Conservation groups are proposing this species for Federal listing.

G. Riparian and Aquatic Habitats

Riparian habitats are associated with perennial and intermittent streams, washes and reservoirs. See Table 3-5 - Important Wildlife Areas - for areas with riparian values.

Jahn and Trefethen (1971) stated "regardless of species, riparian vegetation is the most valuable wildlife habitat in

Arizona." Streams and washes supporting riparian vegetation provide important travel routes for various wildlife species.

Some broadleaf riparian habitats in the planning area have deteriorated, producing far below their potential. Old and decadent riparian trees are not being replaced by young ones, resulting in the imminent decline and possible elimination of many protected and sensitive animals.

Native fish, mainly non-game species, tend to be rare and extremely important. Their rarity is due largely to the scarcity of free-flowing perennial waters. See Table 3-5 for areas with fisheries. AG&FD has introduced native fish into areas such as the Swamp Springs-Redfield Canyon drainage with mixed success (AG&FD 1980) and plans to introduce fish into other suitable habitat.

Water quality studies have been done on existing and potential fishery habitat in the EIS area. Some springs may need protective development to ensure year-round water and suitable surrounding habitat.

VIII. BURROS

Burros are found within the EIS area in the Basin and Range physiographic province. A small herd of burros (approximately 150) lives around Lake Pleasant and the adjacent Hieroglyphic Mountains (See Map 3-1). Lake Pleasant water is the heart of the burro area with the adjacent hills and canyons providing the forage and escape cover requirements. The following five BLM grazing allotments have wild free-roaming burros on the land: 6044, 6095, 6103, 6215 and 6246.

IX. CULTURAL AND PALEONTOLOGICAL RESOURCES

A. Introduction

The Eastern Arizona Environmental Impact Statement (EIS) study area contains a wide spectrum of cultural properties. Approximately 44,000 acres have been inventoried since the first scientific expeditions of the late nineteenth century. It is not within the scope of this project to detail all of the studies performed in the past century; however the Class I inventories (archaeological literature searches) provide summary data for the following Planning Units:

Cochise	(Professional Analysts: 1982)
San Pedro	(Professional Analysts: 1982)
Silver Bell	(Professional Analysts: 1982; Fuller: 1974)
Middle Gila	(Debowski and Fritz: 1974)
Central Arizona	(Doelle and Fritz: 1975)
Black Canyon	(Sherman: 1974)
Apache-Navajo	(Coe and Fuller: 1975; Plog: 1981)

Phoenix and Safford District site files also provided Class I information for this EIS.

Due to the cultural diversity of the study area, it is useful to view cultural values in terms of major river drainages (See Map 3-2) which are within the two Physiographic Regions (corresponding planning units are in parenthesis):

Basin and Range

San Pedro	(Cochise, San Pedro)
San Bernardino	(Cochise)
Sulphur Springs	(Cochise)
Santa Cruz	(Silver Bell)
Salt-Gila	(Central Arizona, Middle Gila)
Agua Fria	(Black Canyon)

Colorado Plateau

Little Colorado	(Apache-Navajo)
Silver Creek	(Apache-Navajo)

More inventory information is available at Safford District and Phoenix District offices. Site-specific information is confidential and will be made available only to qualified individuals with legitimate research interests.

B. Cultural Background

Existing archaeological data, specifically on BLM acreage in the EIS area, is known to be culturally rich and diverse. The cultural history of the region spans at least 13,000 years. A detailed discussion is found in Appendix 6. The diversity of cultural properties (see Table 3-7, Appendix 6) is indicative of the wide range of land use in the past.

C. Summary of Known Cultural Resources on BLM Land

Most of the data for analysis and conclusions regarding the cultural resource potential of BLM land in the EIS area are from an existing data inventory (Class I) and in the district's site files. Both of these sources include the known cultural resources on all lands—privately, state or federally owned—and were used to assess the site potential of the BLM acreage within the area. The presentation of known cultural properties is organized by the physiographic regions already mentioned (See Table 3-7).

1. BASIN AND RANGE

San Bernardino Valley Some areas of high sensitivity, where site density or potential is high, have been identified for the San Bernardino Valley.

Sulphur Springs Valley Site density is known to be high along major drainage and side drainages. In addition,

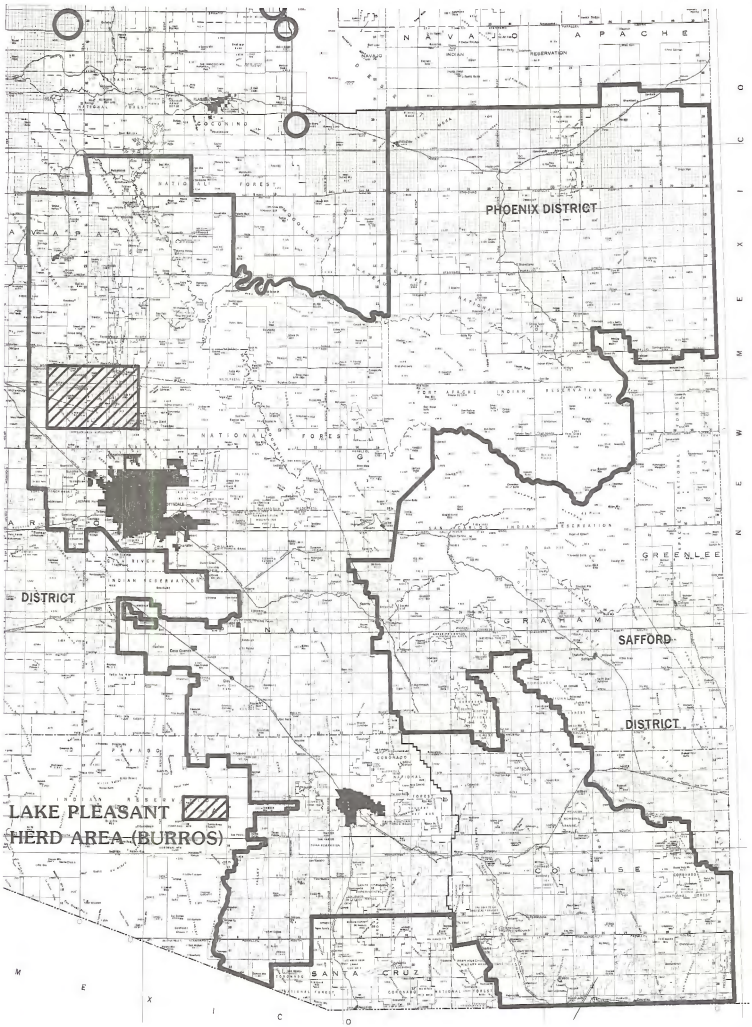

PHOENIX DISTRICT
SAFFORD
DISTRICT
DISTRICT
LAKE PLEASANT
HERD AREA (BURROS)
NAVAJO
APACHE
COCONINO
YAVAPAI
GILA
GREENLEE
GRAHAM
COCHISE
SANTA CRUZ
NEW MEXICO
MEXICO

TABLE 3-7

INVENTORY SUMMARY TABLE
Bureau of Land Management
Phoenix and Safford Districts, Arizona

BLM REGION	BLM Acres	BLM Acres Inventoried	Percent of Total	SITE TYPE*				
				Habitation	Agri-cultural	Resource Utilization	Socio-cultural	TOTAL
San Pedro	79,000	2,900	3.6	8	0	21	0	29
San Bernardino	11,520	115	0.9	0	0	1	0	1
Sulphur Springs ***	31,132	-	-	-	-	-	-	-
Santa Cruz	252,503	8,257	3.2	5	3	44	2	54
Salt-Gila	203,312	11,119	5.5	47	9	161	3	220
Agua Fria	235,127	5,319	2.2	30	4	32	3	69
Little Colorado**	167,419	3,510	2.1	25	1	23	7	56
Silver Creek**	48,200	12,786	26.5	38	1	52	2	93
TOTAL	1,028,213	44,006	4.3	153	18	334	17	522

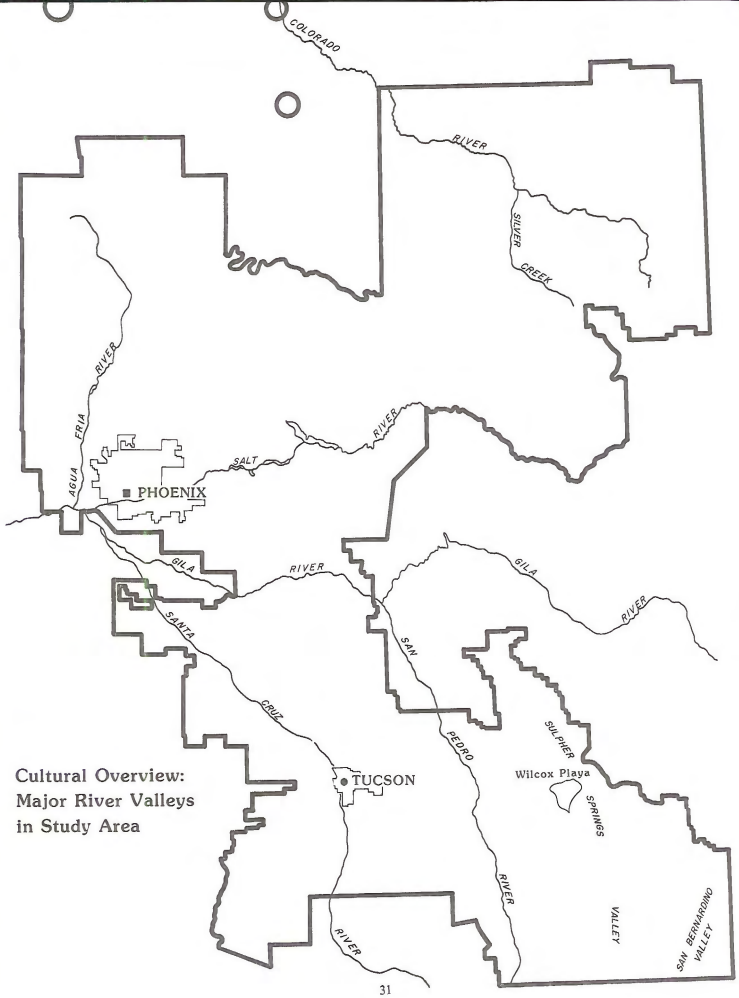
Site types

1. Habitation: includes (but not limited to) prehistoric and historic villages, camps, cabins, rock shelters.
2. Agriculture: includes (but not limited to) prehistoric and historic terraces, water control devices and ranching facilities.
3. Resource Utilization: includes (but not limited to) prehistoric and historic artifact scatters, trash iddens, quarries, mines, roasting pits, hearths, and ovens.
4. Socio-cultural: includes (but not limited to) rock art, religious, ballcourts, kivas, community rooms, mortuary, roads.

** Silver Creek (Apache-Navajo) allotment Nos.: 6007, 6037, 6047, 6057, 6058, 6064, 6086, 6106, 6107, 6180, 6184, 6214, 6220, 6242, 6034.
** Little Colorado region is represented by all other Apache-Navajo Allotment Numbers.

*** Data is unavailable; there are no known sites on BLM acreages.

Source: BLM files



Cultural Overview: Major River Valleys in Study Area

BLM acreage around the Willcox Playa is in a high potential area.

San Pedro Valley Site density and potential are highest in the upper (south) San Pedro area. Acreage abuts both sides of the river and alongside drainages.

During the same inventory, however, BLM acreage along Babocomari Wash was determined to be eligible for nomination as a National Register District.

Site density and potential on federal acreage in the middle San Pedro valley north of Benson is apparently low, based on the results of a Class II sample survey. The scattered tracts in the Texas Canyon area in the Dragoons are considered to have a moderate-high potential.

Santa Cruz Site density is high in the Avra Valley and in the Roskruge Mountains to the south. Other areas of potentially high sensitivity include Honey Bee Canyon and the Picacho Mountain areas.

Salt-Gila Extremely high site densities have been documented along the middle Gila River region east of Florence. Little inventory data exist for regions away from the Gila, however, other surveys in the area have shown that Globe and other areas downstream along the Gila are potentially sensitive.

Agua Fria The area along the lower Agua Fria River has been intensively surveyed and shown to be highly sensitive. The middle Agua Fria ("Mesa-Canyon" area) is also highly sensitive. Portions of the Prescott-Dewey-Humboldt region are potentially sensitive.

2. COLORADO PLATEAU

Little Colorado The middle Little Colorado River region near Winslow and Joseph City is high in sensitivity. The St. Johns-Springerville area of the upper Little Colorado is a high density site area, historically and prehistorically. Major Little Colorado tributaries, Zuni and Hardscrabble, have had small surveys done. Enough is known about the area to classify it as potentially high.

Silver Creek The main reason that Silver Creek was given a separate designation from the Little Colorado region (within the Apache-Navajo Planning Unit) is that most of it is extremely sensitive to cultural resources. The Snowflake-Show Low-Concho triangle should be singled out as containing a large number of National Register potential properties.

D. PALEONTOLOGICAL RESOURCES

Basin and Range, Colorado Plateau

Data on the paleontological resources are taken from three inventory reports (Lindsay 1979; Saunders n.d.; Terranova 1980). These studies identified and classified all the known vertebrate, invertebrate and paleobotanical fossils in the EIS area. Fossils of scientific interest are exposed on the surface or are very likely to be discovered with detailed field work in the area (Lindsay 1979).

Vertebrate fossils found are well represented in the Miocene (23 million years (M.Y.) ago), Pliocene (12 M.Y. ago) and Pleistocene (1 M.Y. ago). Species include elephants, dogs, camels, horses and a variety of large mammals and small rodents. Invertebrates include corals, trilobites, gastropods and a variety of marine specimens (Terranova 1980). Paleobotanical specimens were not extensively discussed in any of the reports. Of the 32 sites meeting these criteria identified by Lindsay, 11 are either on or directly adjacent to BLM acreage in the Upper San Pedro River Valley. Other fossil locations include the Prescott (or Agua Fria) region, Wolcott Peak (in the Santa Cruz Valley), and on the Colorado Plateau in the Holbrook-Snowflake (or Little Colorado-Silver Creek) region. Three known paleontological sites are on BLM land in the Wolcott Peak portion of the Silver Bell Mountains (Sanders n.d.). The site-specific condition of the paleontological sites is unknown.

X. RECREATION

A variety of recreation opportunities are available throughout the EIS area. Primary activities are hunting, rock hounding and offroad vehicle (ORV) driving; but hiking, camping, fishing, floatboating and sightseeing are also enjoyed. Recreationists often participate in a combination of several activities. Recreation use is dispersed throughout the EIS area. Nearly all of the public lands are used for some type of recreation but the BLM administers no developed recreation sites. Scattered throughout the EIS area, however, are many developed camping and picnic areas on land not administered by the BLM. Many of these facilities are adjacent to and contribute to recreation use of the public lands.

There are only a few opportunities for water-based recreation in the EIS area. They include: the Gila River east of Florence and the Agua Fria River upstream of Lake Pleasant (year round flow), the Hassayampa River upstream of Wickenburg and the New River east of Lake Pleasant (intermittent flow), the San Pedro at Benson and Clear Creek and the Little Colorado River near Winslow and Holbrook. The rivers near Benson, Winslow and Holbrook provide many recreation opportunities but cross very little public land. The Gila and Agua Fria Rivers provide opportunities for floatboating, fishing and swimming. Riparian areas (river or stream bank areas), whether along major yearlong rivers or smaller intermittent side streams, attract many of the recreationists in the EIS area.

Access to public lands is generally good. Four-wheel drive roads, maintained gravel roads and state highways

usually provide dependable access. Because of the scattered nature of the public lands, however, roads and trails often cross private lands where locked gates may be encountered.

No visitor use data has been collected for public lands in the EIS area and no attempt has been made to estimate use levels for this analysis. The origin of use is normally from communities near the public lands as well as the large metropolitan areas of Tucson and Phoenix. Many winter visitors to Arizona are also discovering these lands. The proximity of Tucson and Phoenix to public lands has resulted in increased recreation use. As the metropolitan areas and local communities continue to grow, use of the public lands can be expected to increase.

In southeastern Arizona the primary recreation areas include the San Pedro River near Benson and Tombstone, Mule Mountains around Bisbee, Little Dragoon Mountains southwest of Willcox and Swisshelm Mountains north of Douglas. Recreationists on these public lands enjoy hunting, rock hounding, birding, hiking and ORV driving. In the Tucson area most use on public lands occurs south of Tucson in the Altar and Santa Cruz Valleys, west of town in the Silver Bell, Roskruge and Baboquivari Mountains and north of Tucson in the Picacho and Tortolita Mountain areas. Recreation use in these areas includes hunting, hiking, picnicking, rock climbing, ORV driving and rock hounding. There is also some use on public lands near Continental, Sahuarita and Helvetia in the Santa Rita Mountain area. East of Florence, along the Gila River, recreationists enjoy hunting, rock hounding, fishing, floatboating and picnicking. West of Florence in the Santan and Sacaton Mountains the primary uses are rock hounding and ORV driving, with some hunting.

Most of the public lands in the Phoenix area are located north of the city along Interstate 17 (Black Canyon Trails Area) and south of the Prescott National Forest in the southern end of the Bradshaw Mountains. Recreation use in this area includes hiking, horseback riding, hunting, ORV driving, rock hounding and sightseeing. Most recreation use east of Wickenburg occurs in the Hassayampa River Canyon and in the Hieroglyphic Mountains. The activities most commonly enjoyed are hunting, rock hounding, hiking, sightseeing and ORV driving. In the northern part of the EIS area around Holbrook and St. Johns, recreation use includes hunting, rock hounding and ORV driving. This part of Arizona is rich in prehistoric cultures and archaeological study may also occur.

XI. VISUAL RESOURCES

The landscape features of the EIS area are varied and thus so is the visual, or scenic quality. While a person's perception of scenery is a highly subjective determination, there are certain features of a landscape that can be assessed. The form, line, color and texture (basic landscape elements) of the topography, soil, vegetation and man-made structures on the landscape all affect the scene. Generally, a landscape with a harmonious variety of the basic elements will be more interesting and appealing.

Most of the EIS area is in the Basin and Range Physiographic Province—an area of broad, gently sloping valleys with rugged mountains rising abruptly above them. This province includes a variety of landscape types with scenic areas. The mountainous topography of the Dripping Springs, Picacho, Baboquivari and Mule Mountains and the canyons of the Gila, Agua Fria, New, Hassayampa and San Pedro Rivers all provide scenic landscapes. Agricultural modification of the landscape is readily apparent in the Santa Cruz, Altar, Aguirre, Sulphur Springs and Avra Valleys. Mining in the Silver Bell, Empire, Las Guijas and San Luis Mountains has also modified the landscape.

Public lands around Holbrook and St. Johns are part of the Colorado Plateau Physiographic Province – the high plateau and canyon country of the Four Corners region of Arizona, New Mexico, Colorado and Utah. While most of this area is relatively flat and covered by sagebrush, it is cut by some spectacular canyons of the Little Colorado River, Clear Creek and Chevlon Creek. While these canyons add to the overall scenic quality of the area, most public land is in the flat, sagebrush covered country.

Visual resource management (VRM) is a process used by the BLM to identify and manage the quality of the visual environment and to reduce the visual impact of development activities. To manage the visual resources, management classes have been developed that describe the degree of landscape modification permissible. Within the EIS area only the Black Canyon Planning Unit of the Phoenix Resource Area has been inventoried to establish VRM objectives and classes. Until VRM inventories are complete, all public lands except wilderness study areas will be managed as VRM Class III areas (See Appendix 7 for management class definitions). Wilderness study areas are managed as VRM Class II areas during the wilderness study process. Table 3–8 identifies acreage by VRM Class in the EIS area.

XII. WILDERNESS VALUES

Wilderness is an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. Further, a wilderness is an area of undeveloped land managed to retain its primitive character and influence. Under Section 603 of FLPMA the Secretary of Interior, through the BLM, is directed to review roadless areas of 5000 acres or more having wilderness characteristics to determine their suitability for preservation as wilderness. Eight wilderness study areas (WSA) within the EIS area are now under review to determine their suitability for wilderness designation. Table 3–9

TABLE 3-8

ACREAGE BY VRM CLASS

Bureau of Land Management
Phoenix and Safford Districts, Arizona

VRM CLASS	ACREAGE
I	0
II	195,705
III	864,295
IV	0
V	0
TOTAL	1,060,00

Source: Safford and Phoenix District Files

TABLE 3-9
WILDERNESS STUDY AREAS

Bureau of Land Management
Phoenix and Safford Districts, Arizona

WSA	ACREAGE	ACREAGE PROPOSED FOR WILDERNESS IN CURRENT STUDIES
Hassayampa River Canyon	21,900 (8,140 within EIS area)	0
Hells Canyon	9,379	0
South Bradshaws	640	*
White Canyon	6,968	0
Picacho Mountains	6,400	0
Ragged Top	4,460	*
Coyote Mountains	5,080	0
Baboquivari Mountains	2,065	2,065
Galiuro Additions No. 3	640	640
Baker Canyon	4,812	0

* Studies have not progressed to the point where BLM has formally made a recommendation on wilderness suitability in a draft environmental impact statement.

Source: Upper Sonoran Draft Wilderness EIS, September 1982
Phoenix Draft Wilderness EIS, December 1984
Phoenix and Safford District files

shows the WSAs, their acreage and acreages proposed for wilderness in current studies. To date no studies have been completed. There are no BLM wilderness areas in the EIS area.

All studies will be completed by 1987 and recommendations forwarded for the Secretary of Interior's consideration. Ultimately Congress must decide whether these WSAs will become wilderness. Until Congress makes that

decision, the WSAs will be managed to prevent impairment of their wilderness values.

XIII. ECONOMIC CONDITIONS

To describe the economic conditions relating to the *Proposed Action* and its alternatives, BLM specialists identified an area surrounding the Eastern Arizona grazing EIS area in which residents might be economically impacted. Named the economic study area (ESA), this area includes Apache, Cochise, Coconino, Gila, Graham, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, and Yavapai Counties, Arizona.

A. Ranch Economics

The economic analysis of ranch enterprises in the EIS area will be through the use of representative ranch budgets. These budgets are used to determine the economic effect various EIS alternatives will have on area ranchers. However, the economic effect on the ESA as a whole will not be addressed because the economic base of the ESA is large and minimal impact to the area is expected from the alternatives.

B. Ranch Size Classes

Ranchers in the EIS area were divided into two areas (1) Apache Navajo Area – the Colorado Plateau; and (2) all other allotments – Basin and Range. Ranchers within each area were then divided into size classes based on their authorized grazing preferences on federal, state, and private levels. Representative ranch budgets for each area and size class are shown in Appendix 8. A summary of these representative ranch budgets is also shown in Appendix 8. The following size classes were used for Colorado Plateau area: Small, 0–99 head per ranch (39 cows typical); medium, 100–199 (151 cows typical); and large, 200 head and over (546 cows typical). The following size classes were used for the Basin and Range area: small, 0–99 head per ranch (38 cows typical); medium, 100–199 (131 cows typical); and large, 200 head and over (504 cows typical). Information pertaining to each area and size class is shown in Tables 3–10 and 3–11, and Appendix 8.

C. Ranch Budgets

Although the term representative ranch is used, the ESA has no typical or representative ranches. Each ranch in the area has unique characteristics. Ranches were placed in categories because data on each ranch were lacking. The budgets were developed by using information from the USDA Economic Research Service. See Table 3–11 and Appendices 8 and 9.

The ranch budgets focus on net revenue, which is calculated by subtracting the ranch cash costs from the revenue derived from the sale of cattle (gross revenue). Net revenue estimates the amount of cash available to the rancher to provide for the living expenses of the ranch family, to purchase new machinery and improvements and to service outstanding long-term debts. Also shown in the budget is the value of family labor. This represents the dollar value of the ranch family's labor used to operate the ranch for one year. Connected with the value of family labor is the return above net revenue and family labor which estimates the ranch's net income after the cash costs and the value of family labor are subtracted.

D. Ranch Finance

The rancher's ability to borrow money is determined by many factors, including assets, current liabilities, and the ranch's profitability. BLM grazing leases are commonly bought and sold. Each lease's value is based on the number of animal units that can be stocked on that lease. The current market value of leases in the EIS area is estimated to be $125 per AUM or $1500 per cow yearlong. (This value is based on the total AUMs on a ranch.) Public laws (*Taylor Grazing Act* Sec. 3 and FLPMA Sec. 403 (f)) accord no right, title, interest or estate in or to the public lands by issuing a grazing permit or lease; therefore, BLM may not recognize grazing preference as real property. At a $1500 per animal unit the value of the typical small ranch in the Colorado Plateau would be $63,000, the typical medium size ranch $243,000, and the typical large ranch $873,000. The typical small ranch in the Basin-Range area would be valued at $61,500, the medium size ranch $210,000 and the large ranch $807,000.

XIV. SOCIAL ELEMENTS

This section discusses two types of social elements: population and public attitudes that could be affected by the proposed alternatives.

Table 3–12 shows population data for the economic study area (ESA), defined in the Economics section as twelve counties in Arizona.

Specific information, in documents on file in the State Office, is available regarding the ESA residents' attitudes toward grazing issues. Based on this information it can be assumed that ranch operators want to preserve their current lifestyle and would favor plans that enhance ranch operations and oppose actions that would negatively impact ranch operations.

TABLE 3-10

OPERATOR SIZE CLASSES - EASTERN ARIZONA GRAZING
Bureau of Land Management
Phoenix and Safford Districts, Arizona

Size Class (Number of Cows)	Number of Operators	BLM Dependency (Percent)
	Colorado Plateau	
Small	21	31
Medium	12	10
Large	30	1
TOTALS	63	
	Basin and Range	
Small	100	31
Medium	40	24
Large	71	10
TOTALS	211	

Source: Phoenix District and Safford District files.

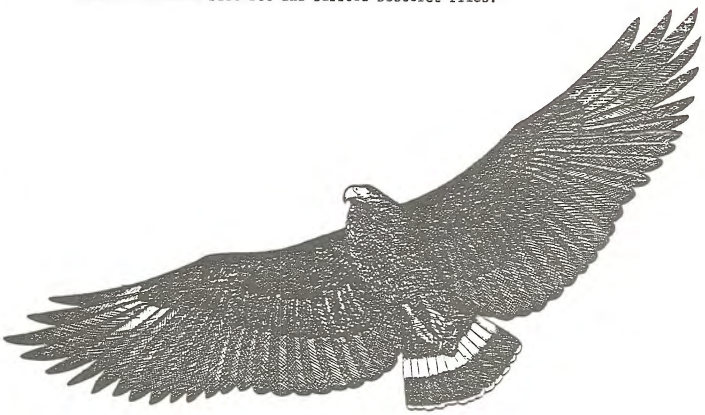


TABLE 3-11

REPRESENTATIVE RANCH BUDGETS 1/
(Existing Situation)
Bureau of Land Management
Phoenix and Safford Districts, Arizona

	Ranch Size		
	Small	Medium	Large
	Colorado Plateau Area		
Revenue 2/	$ 7,146	$26,509	$84,562
Cash Costs 3/	3,366	10,727	38,204
Net Revenue	3,780	15,782	46,358
Less Family Labor	2,164	12,000	12,600
Net Income	$ 1,616	$ 3,782	$33,758
	Basin and Range Area		
Revenue 2/	$ 6,816	$23,101	78,358
Cash Costs 3/	3,569	11,308	38,893
Net Revenue	3,247	11,793	39,465
Less Family Labor	2,164	12,000	12,000
Net Income	$ 1,083	$(-207)	$27,465

1/ A detailed version of these budgets is included in the Appendix 8.

2/ Revenue is derived from the sale of calves, yearlings and cull cows.

3/ Cash costs include grazing fees, salt and mineral purchases, veterinary medicine, trucking, marketing, hired labor, machinery fuels and repairs, and interest on operating capital.

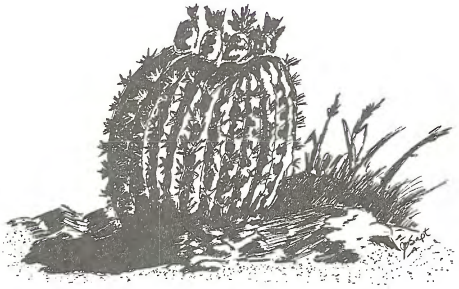
Source: Economic Research Service, University of Arizona, Tucson.

TABLE 3-12

POPULATION CHARACTERISTICS FOR ESA
Bureau of Land Management
Phoenix and Safford Districts

	Population 1980	% Change Population 1970 - 1980	Population Per Sq. Mi. (1984)
Apache	52,108	61.3	5.2
Cochise	85,686	38.4	14.9
Coconino	75,008	55.2	4.5
Gila	37,080	26.8	8.3
Graham	22,862	37.9	5.4
Maricopa	1,509,252	55.4	187.6
Mohave	55,865	116.1	4.6
Navajo	67,629	42.2	7.4
Pima	531,443	51.1	65.5
Pinal	90,918	32.6	18.4
Santa Cruz	20,459	46.5	18.5
Yavapai	68,145	84.2	0.3
ESA Total	2,616,465	53.5	

Source: U.S. Department of Commerce, Bureau of the Census



CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

CHAPTER IV

ENVIRONMENTAL CONSEQUENCES

I. INTRODUCTION

Chapter 4 analyzes the environmental consequences of all alternatives including the *Proposed Action*. The level of analysis discussed for each resource will depend upon the degree of impact expected. The interdisciplinary team determined no measurable impacts would occur to topography, air quality, natural history, climate or fire management. These resources will not be discussed further in this chapter.

II. BASIC ASSUMPTIONS

The impact analysis was based on the following assumptions:

1. Funding and manpower will be available to fully implement any alternative.
2. Livestock stocking rates are valid.
3. Those resources currently receiving special protection will continue to receive that protection.
4. Long term is defined as 15 years or more.
5. Lands analyzed will remain in public ownership for at least twenty years.
6. Native American religious practices shall receive due consideration under the provisions of the American Indian Religious Freedom Act (P.L. 95-341).
7. Weather will be normal with respect to temperature and precipitation.

III. IMPACTS OF RANGELAND IMPROVEMENT (PROPOSED ACTION) (ALTERNATIVE A)

A. Vegetation

Range Condition and Trend. Range condition would improve on 10 allotments scheduled for AMPs. Trend would be variable on allotments in the M and C categories, depending on current management. See Appendices 10, 11.

The increased livestock use would still allow sufficient vegetation for wildlife and nonconsumptive uses. Vegetation increases would be expected on those allotments proposed for AMPs or land treatments. Proposed range improvement projects are shown on Table 4-1. No increases in vegetation production have been projected for the M and C category allotments.

Conclusion. The vegetation resource would receive a slight benefit from the implementation of this *Proposed Action*.

Protected Plants. Under the alternative, grazing management systems could be chosen from among those least likely to be detrimental to protected plants adversely affected by cattle. AMPs and land treatment plans would include mitigating measures to minimize impacts. Combined with planned measures for resource protection and enhancement in range development projects (Chapter 2), the rangeland improvement options would generally result in better habitat for the protected group of plants.

B. Soils

Basin and Range. The *Proposed Action* would have positive impacts on the soil resource on the 10 allotments scheduled for revision of AMPs and new AMPs and the nine allotments with proposed land treatments under site specific watershed activity plans. The mechanical treatments proposed in this alternative would improve water infiltration and increase soil moisture, thus improving vegetation cover on areas having accelerated erosion. This increased vegetation would reduce soil erosion caused by wind and/or water. AMPs and range improvements, such as fences and waters, would result in improved livestock distribution. This improved distribution should reduce soil compaction and improve productivity.

Colorado Plateau. Though there are no mechanical treatments or AMPs proposed in the Colorado Plateau Province, the opportunity to develop new range improvements does exist and would result in the same benefits to the soil resource as is expected in the Basin and Range Province.

Conclusion. The *Proposed Action* would have significant beneficial impacts on the soil resource.

C. Water Resources

Surface Water. An increase in productivity and range condition would result in slightly higher quality of water resources but the benefits would be negligible overall.

TABLE 4-1

RANGELAND DEVELOPMENT
SUMMARY FOR ALTERNATIVES A AND C
Bureau of Land Management
Phoenix and Safford Districts, Arizona

ALLOTMENT NUMBER	DEVELOPMENT APPROXIMATE TYPE	UNIT	COST	TOTAL INCREASES IN AUMs Short Term	Long Term
6239*	Fence	6 miles	$ 19,200		
	Well	1	10,000	70	334
	Catchments	2	7,500		
	***Brush Mgmt.	200 Ac.	7,500		
6103*	Cattleguards	2	7,500		
	Reservoirs	2	8,000	0	182
6095*	Pipeline	4 miles	12,000	0	157
4408	**Brush Management (Mechanical)	2,000 Ac.	20,000		
	Fence	2 miles	6,000	114	247
	Reservoir	1	4,000		
4409	Fence	5 miles	15,000		
	Pipeline & Storage	.5 mile	4,000	0	96
5284	Fence	3 miles	9,000		
	Reservoirs	2	8,000	0	20
6168	Fence	10 miles	30,000		
	Reservoirs	1	4,000		
	Well	1	10,000	68	442
	***Seeding	300 Ac.	7,500		
6169	Pipeline	2 miles	6,000		
	Reservoir	1	4,000	0	32
6020	Reservoir	1	4,000		
	Pipeline	3 miles	9,000	74	201
	***Seeding	600 Ac.	15,000		
6183	Fence	10 miles	30,000		
	Pipeline	10 miles	30,000	76	288
	***Seeding	400 Ac.	10,000		
6032	***Seeding	400 Ac.	10,000	46	92

TABLE 4-1

RANGELAND DEVELOPMENT
SUMMARY FOR ALTERNATIVES A AND C (Continued)

ALLOTMENT NUMBER	DEVELOPMENT APPROXIMATE TYPE	UNIT	COST	TOTAL INCREASES IN AUMs Short Term	Long Term
6244	***Seeding	500 Ac.	12,500	96	192
6039	***Seeding	300 Ac.	$ 7,500	62	124
6144	***Seeding	1,250 Ac.	31,250	238	476
6083	***Seeding	700 Ac.	17,500	116	232
6068	***Seeding	900 Ac.	22,500	126	252
6072	***Seeding	550 Ac.	13,750	20	40
6153	***Seeding	650 Ac.	16,250	148	296
6126	***Seeding	350 Ac.	8,750	34	68

* These allotments would also receive improvements listed under Alternative B. Range Developments (although not proposed) may occur on allotments not shown on this table to: (1) maintain existing range condition, (2) prevent deterioration of range condition, (3) rectify resource conflicts, (4) experiment in management practices.

** For the two allotments proposed for brush management, a site specific analysis would be needed to determine the best method of vegetation manipulation, such as fire or various types of mechanical treatment. These acres are actual and affected acres.

*** These seedings (if approved after an Environmental Analysis), would be done with a land imprinter. Tests have shown that it is not necessary to treat an entire area, but rather in strips so that the actual treated area might be 9% of the total affected area. The acre figures listed above are actual acres treated, not affected acres (75,000 acres as mentioned throughout the EIS).

Source: BLM files

Ground Water. Two new wells would be drilled under this Alternative which would have an insignificant impact on ground water resources.

Conclusion. Negligible impacts to the water resources would result.

D. Livestock Grazing

Basin and Range. Current stocking levels (authorized grazing preference) would remain intact under the *Proposed Action*. Any future adjustments (up or down) would be based on data gathered from monitoring studies.

To implement the *Proposed Action*, three existing AMPs, totaling 59,945 acres would be updated or modified to assure meeting of multiple use objectives. Seven additional allotments totalling 66,636 acres would eventually have AMPs or some other type of activity plan such as WMPs, HMPs or CMAs. The grazing management would be implemented to increase forage production and eventually the improved rangeland condition could increase the total AUMs on these allotments. Implementation of these ten AMPs should provide an additional 1195 AUMs in the long term (does not include land treatments).

Intensive grazing management would require more labor to maintain pasture fences and move livestock from pasture to pasture. Moving livestock from pasture to pasture would require livestock to change their habits by adapting to new terrain, water sources, and to more frequent handling and movement. Possible stress on livestock, though significant at the time, should be short-lived as livestock adapt to the plans. Over time, these plans would improve range condition by reducing grazing pressure in overgrazed areas and producing better distribution. These plans should also give the operators greater control, thus providing a better opportunity to monitor the herds, health, quality and breeding.

No major changes would occur on the allotments with static trends in rangeland condition. However, allotments with downward trends would show a decline in forage and livestock production in the long term.

Land treatments such as imprinting, drilling, seeding, brush management, etc., would be implemented on approximately 75,000 acres to enhance rangeland values and increase livestock forage. Land treatments would increase AUMs by 1288 in the short term and 2576 in the long term. See Table 4-2 and Appendix 13.

Colorado Plateau. Current stocking levels would remain the same. Therefore, there are no impacts under this Alternative. (Appendix 14)

Conclusion. Livestock production would increase and distribution would improve because of land treatments and range improvements. Ten AMPs would be implemented or modified, providing an additional 1,195 AUMS in the long term. Land treatments would increase AUMs by 1,288 in the short term and 2,576 in the long term. Allotments with downward trends would continue to decline.

E. Wildlife

Management to improve range condition on 10 allotments would provide rest in some areas from livestock grazing, thus ensuring moderate utilization to eventually improve rangeland condition and increase forage production. Significant habitat improvement, however, cannot be predicted for rest treatments on intensively managed allotments because different systems have different effects (BLM 1979). Impacts can be projected with certainty only after AMPs with specific treatments and systems are developed. Rested pastures would, however, temporarily provide increased forage and cover for wildlife.

Management to maintain range condition on 39 allotments would provide for yearlong grazing and no rest treatments, except on the 19 allotments where seasonal grazing presently occurs.

Custodial management on 287 allotments would allow yearlong grazing on 258 allotments and only ephemeral grazing on 10 allotments. Wildlife habitat would continue to improve or decline along present trends or would remain static, depending upon grazing management practices. No significant improvements in wildlife habitat would occur on these areas.

Ephemeral grazing on ephemeral-perennial allotments could conflict with wildlife requirements by increasing wildlife-livestock competition for production of annual blooms that provide energy for reproduction.

Big Game

Mule Deer. The vegetation production on mule deer habitat should increase on the ten intensively managed improve category allotments: 6239, 6103, 6095, 6010, 6020, 6168, 6045, 4408, 4409 and 5284.

Deer-livestock competition for forage should decrease as range condition improves. Mule deer habitat would be rested in a pattern over the allotments, providing sufficient forage for deer in at least one pasture per allotment. Mule deer might not fully use all rested pastures, since they often seem reluctant to move into new areas.

Land treatments could be beneficial to mule deer as the projects are designed to leave islands of untreated vegetation and maximize the "edge effect."

New water developments would significantly extend the range of livestock into areas which have been previously only lightly grazed. As a result, livestock and deer competition for food and space could increase. New fences would cause short-term disruption of daily movement and access to developed waters.

Livestock-deer competition for forage on maintain and custodial category allotments would continue. The greatest competition would occur in areas where livestock use browse as a major part of their diet and would result in lower reproduction and reduced deer populations in the long-term. The opportunity does exist for making adjustment in seasons of use on maintain category allotments. Monitoring data would be required to support any such changes in management.

White-tailed Deer. Under the *Proposed Action* white-tailed deer effects on populations in the Basin and Range portion would be similar to the effects on mule deer populations. On those allotments with improved range

TABLE 4-2

POSSIBLE DEGREE OF ADVERSE IMPACT TO CULTURAL SITES
Bureau of Land Management
Phoenix and Safford Districts, Arizona

IMPACTING ACTIVITIES	NATURE OF SITE					
	Surface	Sub-Surface	Architectural	Non Architectural	Rock Shelter	Rock Art
Fences	L	L	L	L	L	L
Pipelines	H	M	H	M	L	L
Roads	H	M	H	M	L	L
Water troughs	L	L	M	L	L	L
Water storage tanks	M	L	H	H	L	L
Earthen Reservoirs	H	H	H	H	L	L
Rainfall catchments	H	M	H	M	M	L
Spring developments	M	M	M	L	M	M
Wells	M	M	M	L	L	L
Surface Treatment	H	M-H	H	H	L	L
Data recovery	H	H	M	H	H	L
Trampling	H	L	M	H	H	L
Vandalism	H	H	H	H	H	H
Erosion	H	H	H	H	M	H

Low (L) - The impact would not significantly alter the property's research, recreational or other values.

Medium (M) - The impact would alter or destroy a significant portion of the property's research, recreational or other values.

High (H) - The impact would alter or destroy most of the property's research, recreational or other values.

conditions there could be a greater availability of spring and summer forbs for deer. Effects of fences, waters and other improvements would be similar to those listed for mule deer (see above).

Pronghorn Antelope. The *Proposed Action* could result in increased forage production on two allotments within the Basin and Range portion of the EIS area—6169 and 6239. Pronghorns would be negatively impacted by grazing systems or land treatments which reduce forbs or protective cover. Pronghorns would be impacted if livestock remove the perennial forb component of the habitat and reduce the overall height of cover to less than the preferred 15-inch average. Land treatment projects will be designed to leave islands of untreated vegetation and to maximize the "edge effect."

Under the *Proposed Action* resolution of livestock conflicts with pronghorn antelope will occur on five maintain category allotments in the Colorado Plateau portion of the EIS area and one allotment in the Basin and Range Portion. If monitoring studies show that heavy livestock grazing is reducing long-term reproductive success, the grazing system or numbers would be revised.

The *Proposed Action* allows the modification of these fences which presently restrict pronghorn movement and access to water.

Desert Bighorn Sheep. Forage production would remain the same on desert bighorn sheep habitat in the Basin and Range portion since the habitat does not lie within any of the improve category allotments. Any existing competition between livestock and desert bighorn for perennial and annual forage would continue.

Ephemeral grazing would occur in years when annual vegetation is abundant. Thus it would be possible for the "new" cattle in the area to transmit diseases to desert bighorn sheep. Although domestic sheep are the main problem in disease transmission, imported steers have the potential for carrying and transmitting disease.

The *Proposed Action* allows the modification of existing fences which are hazardous to sheep movement.

The opportunity would exist to change present management on two maintain category allotments—Malpais Hill and Silver Bell Peak—provided adequate monitoring data support such changes. Management changes could provide significant opportunities for improvements to sheep habitat through rest rotation systems, for example: the expected increase in forage should allow for a more stable sheep population in the long-term.

Javelina. The *Proposed Action* would benefit javelina on the 10 improve category allotments. In the short term javelina would benefit from rested pastures and in the long term from increased forage production resulting in higher reproductive success.

Small Game

On the 10 intensively managed allotments mourning and white-winged doves and Gambel's quail would take advantage of periodically ungrazed habitat. Rest from grazing would somewhat alleviate competition for food and space in the short term and would increase needed cover. Gambel's quail populations would be more stable, experiencing less drastic reduction than at present.

Impacts would continue on maintain category allotments in areas where livestock grazing is reducing the amount of available scaled and Mearn's quail cover.

Waterfowl and Wading Birds. The *Proposed Action* would not significantly benefit waterfowl and wading birds in the 10 improve category allotments since habitat mostly consists of a few stock ponds. Migrating birds would continue to use these ponds. There would be no impact to sandhill crane habitat.

Nongame

On 10 intensive allotments increased plant cover and decreased competition among perennial forage users would improve the condition of the lower layers of vegetation needed for cover by many nongame species. Habitat in the remaining 326 allotments would remain static or continue along current trends. Conflicts would continue in areas lacking the lower vegetation layers.

Protected and Sensitive Wildlife

The *Proposed Action* is not expected to significantly affect most federally listed endangered species or their habitats. The following species may be affected, however. Black hawk riparian nesting habitat quality (See Table 3-6) would remain static or possibly decline in the long term if riparian areas are not protected to allow for natural revegetation of nesting trees. Grazing systems which rest riparian areas for 2-3 years would improve their habitats.

Gilbert's skink habitat would improve in the long term on the improve category allotments primarily due to the increase in plant cover. Grazing periods would help increase ground cover and possibly increase insect prey.

There should be a slight improvement in both the short and long term with respect to desert tortoise habitat. In the short term there would be less competition for winter-spring annuals in the rested pastures of the Improve category allotments. However, the situation on ephemeral allotments would remain the same with considerable competition at times due to the tortoise's limited home range. In the long term perennial herbaceous forage would increase and competition for forage would decrease, thus ensuring more resources available to the tortoise. On the remaining maintain and custodial allotments habitat quality would remain static or decline. Thus, there is the potential for creating an artificial drought, causing tortoises to lose weight and their reproduction to decline (Berry 1978).

The quality of Gila monster habitat would improve on improve category allotments, primarily due to increases in prey base. Prey would increase as a result of periodic rest from grazing and an increase in plant cover.

Riparian and Aquatic Habitats - In the short term riparian and aquatic habitat condition would remain static. However, in the long term habitat condition would decline in those areas where livestock habitually congregate. Livestock trampling and grazing would reduce broadleaf tree regeneration or eliminate it, and could reduce aquatic animal density and/or diversity.

Poor and fair condition riparian habitat will improve where a grazing system resting these areas for 2-3 years is established. Fencing, proposed under an HMP or AMP, would also protect woody plants and ensure broadleaf reproduction.

Conclusion - The *Proposed Action* would improve habitat condition on 10 allotments and allow habitat on 326 allotments to remain static or continue along present trends. The most significant effects on wildlife habitat would occur in the long term since the impacts involved are related to changes in vegetative production and recovery.

Mule deer would be the most affected big game species, since deer live in all 10 AMP allotments, and would benefit from increased forage production and decreased competition with livestock. Small game and nongame would benefit from increased forage and cover.

Within the 10 AMP allotments, riparian and aquatic habitats would remain in their current condition in the short term. In the long term heavy livestock use areas would decrease in quality for dependent wildlife species. The remaining habitats not included in the management areas would remain static or continue along present trends.

F. Burros

Burros will continue to be protected and managed under the Wild Horse and Burro Act and any changes to the habitat will be coordinated to consider burro needs.

The impacts of the range developments (see Table 4–1) within the burro herd area are moderately beneficial because of additional waters. If available to burros, these waters will reduce burro and livestock competition.

G. Cultural Resources

Rangeland developments may affect cultural resources in the following ways: (1) loss of the spatial relationships between cultural materials and their surroundings; (2) loss of site elements, such as artifacts, features, or portions of site areas; (3) loss of historical context, especially information on occupation dates and prehistoric environment; and (4) reduction in the cultural resource base after mitigation. The nature and degree of these impacts from grazing management have not been adequately monitored and documented. A limited study by Roney (1977), however, found that cattle trampling significantly damages lithic (stone tools) sites and artifacts.

The significance of these impacts on cultural resources varies according to the location and condition of the site. Buried deposits, undetectable by intensive (100%) surface survey (Class III), could be affected by construction. Concentrated trampling of livestock would have the greatest effect on surface sites, which include most of the sites in the EIS area. All site types are vulnerable to vandalism and looting, but structures, rockshelters, and rock art are more common targets. The degree and extent of this impact depends on the accessibility and use of an area. Site erosion impacts most sites and can be aggravated by trampling and overgrazing. Livestock grazing directly affects certain cultural resources. For example, surface features and structures can be destroyed by trampling and rubbing. Surface treatment programs, depending upon the amount and depth of disturbance, can at least partially alter a site's cultural value.

Archaeology – Since significant direct impacts on cultural resources would be avoided or mitigated (See Appendix 4), indirect or inadvertent impacts are the principle concern. The source and significance of impacts on cultural resources from grazing management practices are shown on Table 4–2. Most of the agents of deterioration are erosion, rangeland developments or vandals.

Generally, the *Proposed Action* would moderately increase certain impacts to cultural resources in the EIS area. Building new rangeland developments could alter the values of undiscovered sites and additional access to sites could increase the possibility of vandalism. These activities are subject to site-specific environmental documentation and cultural clearances, all of which tend to reduce the significance of these actions to the minimum. Over the long term erosion control measures could result in positive impacts by reducing site damage caused by natural forces.

One special management area, the Cocoraque Butte Archaeological District, will be directly affected by this action. Proposed range improvements include pipeline, reservoir and an extensive surface treatment program. All have the potential of adverse impact on the resource.

Paleontology – Implementation of grazing systems to facilitate rangeland improvement could benefit in some cases and adversely impact sites in others.

Cattle will trample and break exposed paleontological remains (fossils) and contribute to bank sloughing by walking along and climbing up and down banks. The resulting fossils displacement contributes to the loss of their contextual values.

Construction of range improvements such as fences and waters could adversely impact sites. Land treatments to revegetate and mitigate for erosion would ultimately benefit sites by arresting erosion which exposes fossils and destroys geological context. Construction of structures and other surface disturbances, such as reseeding and imprinting, could adversely impact sites.

Conclusion. Moderate adverse impacts to cultural resources from rangeland improvements. Moderate positive impacts resulting from erosion control issues.

H. Recreation

No significant adverse impacts to recreation resources and opportunities would result under the *Proposed Action*. Through management of the rangeland for wildlife and watershed, as well as livestock, opportunities for many types of recreation would improve.

Proper levels of forage utilization and additional water sources would benefit watershed condition and wildlife populations and result in additional opportunities for hunting and wildlife observation.

Regardless of management category (maintain, improve or custodial), allotments would be monitored to survey the

success of planned management objectives. In many allotments, this would be the first regular and recurring monitoring program of the public lands. Monitoring would identify not only livestock management adjustments that need to be made but wildlife and watershed adjustments also. This improved management of public lands would result in sustained recreation opportunities.

The addition of man-made structures to the landscape would have an adverse impact on sightseeing opportunities but these impacts would be minimal. Through management of the visual resources (see *Chapter 3, Visual Resources*), impacts to the landscape and sightseeing opportunities would be minimized.

Conclusion - Both beneficial and some adverse impacts to recreation opportunities would result under the *Proposed Action*. The overall impact would be beneficial to recreation resources. Proper levels of forage utilization and additional waters would result in additional opportunities for hunting and wildlife observation. Development of rangeland facilities would have adverse impacts on the landscape and opportunities for sightseeing, but impacts would be minimal.

I. Visual Resources

No significant adverse impacts to visual resources would occur under the *Proposed Action*. However, development of rangeland facilities (Table 4-1) would have adverse impacts on the visual resources unless the projects were located, designed and constructed to meet visual resource management objectives. Depending on the variety in landscape characteristics and the proposed rangeland development, the degree of contrast with the landscape would vary.

Fencelines and pipelines would create contrasts in the landscape unless they were designed and located to minimize the "straight line" effect that is so often apparent. Reservoirs, wells and storage tanks would also create significant contrasts in the landscape unless they were designed to minimize contrasts in the basic landscape elements (form, line, color and texture - see *Chapter 3*). All changes in the landscape would not necessarily be unpleasant to view. Prior to seeding, the existing shrub community is crushed by an imprinter to allow the grass to grow. The conversion of a rather monotonous desert shrub landscape to islands of grasslands mixed with desert shrub (while not a natural vegetation composition) would result in landscape variety that may be more pleasant to view.

Increases in livestock numbers also have the potential to result in apparent changes to the landscape. On a landscape dominated by grasses, consumption of the grasses by cattle would be more apparent than in a landscape of mixed grasses, shrubs and trees. Proper forage utilization levels, achieved through grazing systems and monitoring, would minimize these potential impacts to visual resources.

Conclusion - While man-made modification of the landscape is possible under the *Proposed Action*, proper location, design and implementation of grazing systems and rangeland development would keep impacts to the landscape to acceptable levels. No significant adverse impacts are anticipated under the *Proposed Action*.

J. Wilderness Values

The *Proposed Action* would not cause adverse impacts to wilderness values because public law and BLM policy do not allow wilderness values to be impaired. Livestock would continue to graze in wilderness study areas (WSA) but no rangeland developments are proposed in the WSAs. Rangeland developments could be proposed in any of the WSAs in the future but the *Wilderness Act of 1964* (Public Law 88-577), *Interim Management Policy for Lands Under Wilderness Review* (BLM 1979), *Wilderness Management Policy* (BLM 1981) and the *Federal Land Policy and Management Act of 1976* (Public Law 94-579) do not allow impairment of wilderness values in either WSAs or designated wilderness areas.

Conclusion - Wilderness values would not be adversely impacted under the *Proposed Action*. Public law and BLM policy do not allow impairment of wilderness values.

K. Ranch Economics

General Assumptions for Economics

1. Site-specific impacts to individual operators cannot be quantified because of a lack of site-specific financial data for each ESA ranch. Rather, impacts to these operators are analyzed through the use of six representative ranch income statements, from which generalizations about impacted operations are drawn.

2. The estimated change in ranch income is based on the assumption that the representative ranch operation would adjust its herd size in response to an adjustment in AUMs. However the AUM change had to be at least 12 AUMs before an increase or decrease in herd size was analyzed.
3. The representative ranch budgets depict the impact to the average ranch and reflect the average dependency on BLM AUMs.

Impacts to ESA ranch operators are analyzed through the use of representative ranch budgets. See Appendices 8 and 9 for these budgets.

Ranch Budgets

Basin and Range. Under the *Proposed Action* only the large size typical ranch would experience any change in revenue because of the long-term forage increases. In the short term, net revenue would remain at the existing level of $39,465 and would gradually increase one percent to $39,712 after 20 years.

Implementing the AMPs would require construction of rangeland improvements which would increase operator workloads and expenses initially. See Table 4–1. The costs of maintaining these new improvements would be permanent.

Colorado Plateau. Under the *Proposed Action* the short and long-term herd size of the typical small, medium and large size ranches would not change because average AUM changes would not be large enough for any of the ranch groups to alter their herd size See Table 4–3 for revenue figures for all alternatives.

Ranch Finance

Basin and Range. Under the *Proposed Action* the value of the typical large size ranch in the Basin and Range area would change in the long term. The value of this typical large ranch would gradually increase from $807,000 to $810,000 in 20 years, an increase of less than one percent.

Colorado Plateau. No changes in ranch finance are anticipated under the *Proposed Action*.

Conclusion. Based on the average impacts to representative ranchers, it can be assumed that no significant economic impacts to the ESA area ranchers would result from the *Proposed Action* alternative. However, impacts to operators who vary significantly from the typical may be a different impact.

L. Social Elements

The *Rangeland Improvement Alternative* would not significantly change the current grazing situations; therefore, no social impacts to ranchers would occur.

IV. IMPACTS OF CONTINUATION OF PRESENT GRAZING MANAGEMENT (ALTERNATIVE B)

A. Vegetation

Range Condition and Trend. Current trends in rangeland condition would continue in the short and long term. See Appendices 10, 11. Areas now declining would continue to decline in the long term and there would be no opportunity to correct the problems with changes in management.

Conclusion. This alternative would result in general maintenance of present trends (see Appendices 10, 11) and ecological range conditions in the short term.

Protected Plants. This alternative would result in a decline in populations of protected plants.

B. Soils

Basin and Range. This alternative would have negative impacts on the soil resource. Soil erosion would continue at present rate on lands in fair, good and excellent condition and increase on lands in poor watershed condition. This alternative would result in continued soil compaction and declining productivity.

Colorado Plateau. The same impacts can be anticipated, as in the Basin and Range Province.

C. Water Resources

This alternative would cause no discernible change in the water quality or quantity.

D. Livestock Grazing

Basin and Range. This alternative would allow livestock grazing to continue at its present authorized grazing preference of 80,706 AUMs. In the short term, present stocking rates could maintain present livestock performance. See Appendix 13.

Based on the current range condition, stocking levels would change very little, if any, in the near future. However, livestock forage would decline on allotments that have a downward trend or are presently overstocked. Over the long term some of these allotments would not be able to keep producing forage at their present rate, and operators would have to reduce their herd sizes. These reductions, if any, would not have a significant impact on any one ranch. The long term value of the rangeland for

TABLE 4-3

RANCH ECONOMIC IMPACTS BY ALTERNATIVE
Bureau of Land Management
Phoenix and Safford Districts, Arizona

Ranch Impacts	Existing Situations	Rngland Impvmnt Short Term	Rngland Impvmnt Long Term	No Action Short Term	No Action Long Term	Rdcd Lvstk Grzng Short Term	Rdcd Lvstk Grzng Long Term	No Grazing Short Term	No Grazing Long Term
Colorado Plateau									
				Net Revenue ($)*					
Small (0-99 head)	3,780	3,780	3,780	3,780	3,780	3,780	3,780	2,279	2,279
Medium (100-199 head)	15,782	15,782	15,782	15,782	15,782	15,782	15,782	13,595	13,595
Large (over 200 head)	46,358	46,358	46,358	46,358	46,358	46,358	46,358	39,968	39,968
				Ranch Values ($)**					
Small (0-99 head)	63,000	63,000	63,000	63,000	63,000	63,000	63,000	50,300	50,300
Medium (100-199 head)	243,000	243,000	243,000	243,000	243,000	243,000	243,000	220,300	220,300
Large (over 200 head)	873,000	873,000	873,000	873,000	873,000	873,000	873,000	799,000	799,000
Basin and Range									
				Net Revenue ($)*					
Small (0-99 head)	3,247	3,247	3,247	3,247	3,247	3,247	3,247	2,099	2,099
Medium (100-199 head)	11,793	11,793	11,793	11,793	11,793	11,379	11,793	7,037	7,037
Large (over 200 head)	39,465	39,712	39,465	39,465	39,465	38,334	39,712	32,938	32,938
				Ranch Values ($)**					
Small (0-99 head)	61,500	61,500	61,500	61,500	61,500	61,500	61,500	45,000	45,000
Medium (100-199 head)	210,000	210,000	210,000	210,000	210,000	205,500	213,000	163,000	163,000
Large (over 200 head)	807,000	807,000	810,000	807,000	807,000	796,500	810,000	734,300	734,300

*Net revenue is defined as gross revenue minus cash costs. Net revenue is the amount remaining to pay for owner/operator labor, buy new equipment, pay off existing ranch debts.
**Ranch values area calculated on the basis of the ranches' carrying capacity at a value of $1,500 per cow.

Source: Eastern Arizona Ranch Budgets, Phoenix and Safford District files.

livestock production on the allotments that have a downward trend would decline as soil is depleted through erosion and as invading plants replace desirable vegetation.

There would be no change in seasons of use, grazing patterns, or land treatments. Poor livestock distribution would continue where it presently exists; this would contribute to poor forage production in certain areas.

Colorado Plateau. Livestock grazing would continue at its present authorized grazing preference of 33,313 AUMs in both short term and long term. All other impacts that applied under Basin and Range of the *Proposed Action* also apply to the Colorado Plateau. See Appendix 14.

Conclusion. Livestock production would remain static during the short term, and could decline in the long term because of the lack of improved grazing management. Impacts on livestock grazing under this alternative are insignificant.

E. Wildlife

The *No Action* Alternative would implement management plans on three allotments and continue present management of the remaining 333 allotments.

This analysis assumes that apparent trends in rangeland and habitat condition, wildlife populations and stocking levels would continue as at the present.

Big Game

Mule Deer. Livestock-deer competition for forbs and desirable browse species would be reduced on the three approved AMP allotments but would continue at existing levels elsewhere. Habitat trends would continue, with much of the habitat remaining in the current condition. On the remaining allotments fawn production and overall deer populations would fluctuate as they do at present.

White-tailed Deer. Impacts would be similar to those for mule deer. High population fluctuations noted in this species would continue, with the danger of populations being eliminated in some areas.

Pronghorn Antelope. This alternative would impact pronghorn habitat because it would be difficult to adjust livestock numbers or season of use on five allotments should monitoring data support such changes. The affects would be reduced fawn survival with a subsequent reduction in the population.

Desert Bighorn Sheep. Seasonal high intensity grazing would continue when ephemerals were abundant, increasing the chances of livestock transmitting diseases to desert bighorn sheep. Existing fences would continue to interfere with bighorn movements.

Javelina. Javelina habitat would not change significantly under this alternative.

Small Game. Perennial forage in small game habitat would decline in heavy livestock use areas and would force a greater reliance on ephemerals. Gambel's quail populations could fluctuate more than at the present because of reduced forage (Gallizioli 1960). Mourning dove and white-winged dove populations would likely remain the same. Areas lacking important scaled quail cover due to livestock use would remain in the current condition.

Waterfowl and Wading Birds. This alternative would not significantly benefit waterfowl and wading birds in the three AMP allotments, since habitat mostly consists of a few small stock ponds. Migrating birds would continue to use these ponds. There would be no impact to existing sandhill crane habitat.

Nongame. This alternative would increase plant cover and decrease competition among perennial forage users on three allotments.

Protected and Sensitive Wildlife. This alternative is not expected to significantly affect federally listed endangered species or their habitats. The following species may be affected, however. For example, a combination of factors may currently result in a determination of wildlife habitat. This alternative would not allow, in most cases, manipulation of certain factors (like a change in grazing system) to reverse downward trends.

The impacts to black hawk, zone-tailed hawk, Cooper's hawk and sharp-shinned hawk habitat are the same as given for the *Proposed Action*.

Conflicts would continue in areas where livestock are competing with desert tortoises for perennial herbaceous forage. The impacts from livestock use of ephemeral forage would be the same as discussed under the *Proposed Action*.

Gila monster habitat condition would remain static or decline in the long term, primarily due to a decline in prey resulting from reduced plant cover.

Riparian and Aquatic Habitats. There is less opportunity to establish rest-rotation systems under this alternative and therefore this alternative has, in general, a more negative impact and less chance for riparian regeneration.

Conclusion. This alternative would improve habitat condition on three allotments and would allow habitat condition on 333 allotments to remain static or continue along present trends.

On three allotments, long-term impacts associated with increased forage and cover would benefit mule deer, nongame and small game. The overall impacts would not be significant.

In the short term riparian and aquatic habitats throughout the EIS area would remain in their current condition. In the long term, heavy livestock use areas would decrease in quality for dependent wildlife species.

The remaining habitats not included in the management areas would remain static or continue along present trends.

F. Burros

Under this alternative the continued heavy utilization of forage by livestock around permanent water would reduce forage availability for wild burros during the dry season. This lack of forage would result in increased travel distance between forage and water, with the greatest impacts to jennys and young foals, increasing mortality within the population.

G. Cultural Resources

Archaeology. This alternative would slightly increase impacts to cultural resources. The agents of erosion, trampling, and vandalism would continue. See Table 4–2. The present trend toward greater deterioration would continue.

Paleontology. Since there are no data available regarding the existing condition of the sites, it is unknown to what degree they would be affected. Eventually the negative impacts of grazing would increase on allotments with a downward trend. As the forage is reduced and erosion accelerated, fossil displacement and contextual destruction is also accelerated.

H. Recreation

While recreation opportunities would not decline under this alternative, they would not improve. Recreation use levels would continue to increase regardless of rangeland management due to population increases in nearby cities and towns.

Conclusion. Recreation opportunities would not decline under this alternative but they would not improve either. Recreation use levels would continue to increase with population increases.

I. Visual Resources

Under this alternative impacts to visual resources would be the same as those under the *Proposed Action*. However, the significantly fewer rangeland improvement projects proposed would reduce the potential for man-made modification to the landscape. Rangeland development would occur on only three allotments (see Table 4–1) rather than on 19 allotments under the *Proposed Action*. Impacts to visual resources would not be significant if properly located, designed and constructed.

J. Wilderness Values

There would be no adverse impacts to wilderness values under this alternative.

K. Economic Conditions

Ranch Budgets. Under this alternative, ranches in the ESA would keep their authorized grazing preferences. Thus, ranches would be allowed to stock cattle up to the grazing preference and the financial situation depicted by the typical ranch budgets for the two areas would be expected to continue (See Tables 3–4). However, the livestock section predicts that there may be a slight decrease on those allotments with a downward trend. This reduction is not expected to change any one ranch operation significantly.

L. Social Elements

Conclusion. The *No Action* Alternative would maintain the current grazing situation; therefore, no social impacts to ranchers would occur.

V. IMPACTS OF REDUCED LIVESTOCK USE (ALTERNATIVE C)

A. Vegetation

Range Condition and Trend. This alternative would have a beneficial impact on the vegetation resource due to the lower stocking rates on rangelands in poor condition. Less livestock grazing would allow the vegetation to recover more quickly on 84 allotments, allowing the range condition to improve faster than under either *alternatives A or B*. Range condition and trend would be variable on those allotments where grazing would not be reduced. See Appendix 11, 12.

Protected Plants. Protected plants in allotments scheduled for reduced livestock use would benefit from expected improvements to habitat and reduced damage by grazing and trampling. Protected plants would continue to be damaged on allotments where no reductions were scheduled.

B. Soils

Basin and Range. This alternative would have essentially the same long-term effects on the soil resource as *Alternative A (Rangeland Improvement)*. These benefits may be achieved sooner in *Alternative C* than *Alternative A* due to the initial reductions in livestock numbers, resulting in less soil compaction and greater vegetative cover. Mechanical treatments proposed in this alternative would improve water infiltration, increase soil moisture, and increase vegetation cover, on areas having accelerated erosion, thus reducing soil loss due to wind and water.

The opportunity to initiate AMPs and develop range improvements would result in improved livestock distribution, reduced soil compaction and increased plant productivity.

Colorado Plateau. The same impacts can be expected as in the *Proposed Action*.

C. Water Resources

This alternative would have essentially the same long term effect on the water resources as is listed for *Alternative A*. In the short term, soil erosion should be reduced faster, resulting in lowered sediment yields.

D. Livestock Grazing

Basin and Range. Under this alternative, a total of 11,035 AUMs would be suspended after total reductions have taken place. Based on the soil and vegetation inventory, 34 allotments have between 10 and 25 percent of the BLM acres in poor condition and would receive, under this alternative, a 25 percent reduction in BLM AUMs. A total of 50 allotments have greater than 25 percent of the BLM acres in poor condition and would receive a 50 percent reduction in BLM AUMs. The remaining 170 allotments would not be affected and present management methods would continue. See Appendix 13.

The 84 allotments that require adjustments would be impacted to degrees depending on amount of reductions, size of the operation, dependency of public land to sustain livestock operation and other various factors. The majority of these allotments contain so little BLM-administered land compared to the entire ranch operations that a reduction of this nature would not have a seriously negative impact.

Allotments with a high percentage of public land would receive significant negative impacts. Reductions in herd size would affect each operator differently. The reductions of 50 percent could force a few operators to sell out at a loss or to erase grazing operations altogether. Adjustments would take place as stated in Chapter 2 "Implementing Changes in Allotment Management."

On the allotments receiving reductions, studies are expected to reflect an improved rangeland condition and upward trend. It is anticipated that the AUMs would be increased in the long term through AMP implementation and seedings, to the levels in the *Proposed Action*. Stocking additional animals in the good ephemeral years would still be allowed.

Colorado Plateau. All of the impacts discussed under Basin and Range also pertain to the Colorado Plateau. The only difference would be the loss of AUMs after the adjustments in livestock use take place. Two allotments would have a total of 321 AUMs suspended because up to 10 to 25 percent of their BLM acres fall within a poor condition class. It is expected that these suspended AUMs would be restored in the long term. See Appendix 14.

Conclusions. Livestock numbers would decline initially as a result of the suspension of 11,035 AUMs. These reductions could force a few operators to sell out or stop grazing operations altogether. However, these reductions would also improve rangeland condition and establish an upward trend. In the long term, AUMs initially suspended under this alternative would be restored to the level of use prior to implementation of this alternative. In addition, implementing AMPs and land treatments would provide an additional 3771 AUMs.

E. Wildlife

Impacts associated with this alternative are primarily due to the reduction in livestock numbers on 85 allotments.

Big Game

Mule Deer. In the short term more forage would be available to deer on those allotments having a reduction of authorized livestock. In the long term vegetation production would increase and livestockdeer competition would decrease, especially on the 10 improve category allotments.

White-tailed Deer. The white-tailed population would be similarly affected.

Pronghorn Antelope. Since the majority of pronghorn habitat occurs in allotments having acreage classified in fair to good vegetative condition, there would be no immediate reduction of livestock numbers. Impacts resulting from intensively managing two allotments are the same as those given under the *Proposed Action*.

Desert Bighorn Sheep. There would be no short-term impacts since livestock numbers would not be reduced in areas inhabited by desert bighorn sheep. Long-term effects would be comparable to those of the *Proposed Action*.

Javelina. In the short term javelina would likely benefit from increased forage production resulting from reductions of authorized livestock. In the long term, the effects would be the same as those of the *Proposed Action*.

Small Game. Reduced grazing pressure under this alternative would result in more available food for doves and quail in the short term and increased productivity in the long term. Gambel's quail numbers would fluctuate less than at the present and populations could remain higher during higher rainfall years. Mourning and white-winged dove populations would not likely change significantly.

Waterfowl and Wading Birds. This alternative would not significantly benefit waterfowl and wading birds since livestock would continue to concentrate in and adjacent to riparian and aquatic habitats. Habitat condition would remain static or would decline in the long term in heavy livestock use areas. Increased cover could have a negative impact on sandhill crane feeding.

Nongame. The 85 allotments receiving livestock reductions would have increased plant cover and decreased competition among perennial forage users, and also improvement in the lower layers of vegetation needed for cover by many nongame species. Nongame would temporarily benefit in each pasture during rest periods when cover would be more abundant and nest-trampling and forage competition would be reduced. Habitat in the remaining 251 allotments would remain static or continue along current trends. Conflicts would continue in areas lacking the lower vegetation layers.

Protected and Sensitive Wildlife. This alternative is not expected to significantly affect any federally listed endangered species or their habitat. The following state-listed and federal candidate species may be impacted.

Livestock would continue to concentrate in portions of black hawk, zone-tailed hawk, Cooper's hawk and sharp-shinned hawk riparian nesting habitat. In the short term, heavy use areas could remain in static condition, but in the long term would probably decline.

Reduced grazing in Gilbert's skink habitat could benefit these lizards in the long term due to an increase in plant cover.

In the long term, perennial herbaceous forage would increase and competition between livestock, tortoises and other users would decrease. The impacts resulting from continued livestock use of ephemeral areas would be the same as those discussed under the *Proposed Action.*

The quality of Gila monster habitat would increase in the long term, primarily due to an increase in prey base resulting from increased cover.

Riparian and Aquatic Habitats. Impacts would be similar to those for the *Proposed Action.*

Conclusion. The *Reduced Grazing* Alternative would improve habitat condition by implementing management plans on 10 allotments and reducing authorized livestock on 85 allotments.

Mule deer, small game, nongame and protected and sensitive reptiles would benefit most from increased forage and cover.

Livestock would continue to concentrate in riparian and aquatic habitats. Therefore, in the long term heavy livestock use areas would decrease in quality for protected and sensitive raptors and other wildlife dependent upon these habitats.

F. Burros

Livestock reduction would result in increased forage available for burros.

G. Cultural Resources

Archaeology. This alternative would lower the impacts of livestock trampling, but would probably not reduce vandalism. Habitat and watershed related treatments present the possibility of adversely impacting sites by damaging undetected and subsurface sites. However, such watershed treatments would reduce the erosion of sites in treated areas. On allotments where no reduction is recommended, the existing negative impacts would continue.

Paleontology. Reduced grazing on allotments that show a downward trend would relieve the pressure on forage, thereby increasing vegetation to decrease erosion. The direct impacts of cattle trampling would also be reduced. On allotments where no reductions are recommended, the existing negative impacts would continue.

H. Recreation

Impacts to recreation opportunities would be the same as those described under the *Proposed Action.*

I. Visual Resources

Impacts to visual resources would be the same as those under the *Proposed Action.*

J. Wilderness Values

Impacts to wilderness values under this Alternative would be the same as those under the *Proposed Action*—no adverse impacts.

K. Ranch Economics

Ranch Budgets

Basin and Range. Under this alternative, 84 operations would have short term decreases. See Table 4-3 for present reduction. The net revenue of typical medium size unit would be reduced by four percent, from 11,793 to 11,379, because of decreases in livestock forage in the short term.

Long-term forage increase would allow the typical medium size ranch to increase its net revenue by two percent to $12,024 from $11,793. The short-term net revenue of the typical large size unit would be reduced by three percent, from 39,465 to 38,334, because of decrease in stocking rate, while its long-term forage increase would increase net revenue one percent, from $39,465 to $39,712. On the average, the existing herd size of the typical small ranch would not change.

Colorado Plateau. Under the *Reduced Livestock Grazing* Alternative, the existing herd size of the typical small, medium and large size ranches would not change. See Table 4-3 for revenue figures for all alternatives.

Ranch Finance

Basin and Range and Colorado Plateau. This alternative would not change ranch revenues for the typical size Colorado Plateau ranch. This alternative would reduce the authorized grazing preference for the Basin and Range typical medium and large size ranches in the short term, but gradually this preference would increase in the long term to a higher level than now exists.

The value of the typical Basin and Range medium ranch would decrease two percent from an existing value of $210,000 to $205,000 in the short term. Long-term AUM increase, however, would gradually raise the value of the medium size ranch one percent to $213,000. The value of the typical large ranch would decrease from an existing value of $807,000 to $796,500 in the short term, but after 20 years, gradual increases in grazing authorizations are expected to raise the value to $810,000.

The overall impact of this alternative on ESA ranchers would vary from ranch to ranch. Generally, any short-term reduction in ranch values would adversely affect the asset base of the ranchers, making it more difficult to borrow money. Long-term increases in ranch value, however, would improve this asset base.

Conclusion. Under the *Reduced Livestock Grazing* alternative on the average, the typical rancher in the Basin and Range Province would experience a slight economic loss in the short term. Over the long term, however, these ranchers would realize a slight economic benefit from the projected increase in forage.

L. Social Elements

Conclusion. The *Reduced Livestock Grazing* alternative would slightly improve the long-term tenure and permit value of some ranchers. It is assumed that the attitudes of these affected ranchers would be positive. Those ranchers with higher than average income losses and a high dependency on BLM AUMs would be severely affected by short-term reductions in BLM AUMs. The attitudes of those ranchers would be negative toward the BLM and this alternative.

VI. IMPACTS OF NO LIVESTOCK GRAZING (ALTERNATIVE D)

A. Vegetation

Range Condition and Trend. The elimination of livestock grazing would bring about initial rapid improvement in plant vigor and vegetation cover in the short term. In the long term, range condition would improve and approach excellent condition. Some range sites would improve very slowly because of soil limitations but eventually they would reach excellent condition. Those range sites already in excellent condition would remain so.

Protected Plants. Under this alternative all of the protected plants would be expected to benefit from improved habitat conditions and by the absence of grazing or trampling from livestock. Exclosure fences to protect against damage to protected plants by cattle would be eliminated from management plans.

B. Soils

Basin and Range. This alternative would have a rapid, positive impact on the soil resource. The elimination of grazing would increase vegetation cover, levels of organic matter and soil moisture. These increases would improve soil productivity and development and reduce soil erosion caused by wind and water. Soil compaction caused by livestock would be nonexistent.

Colorado Plateau. The same impacts and benefits could be anticipated as those given for the Basin and Range Province.

C. Water Resources

Surface Water. This alternative would reduce sediment yields and improve water quality. The improvement in water quality would be negligible for the entire EIS area.

Ground Water. Recharge would increase, but rates and amounts would be unquantifiable.

D. Livestock Grazing

Basin and Range. Livestock grazing on public lands would be phased out as each operator's grazing lease expires. Presently, grazing leases have a maximum term of ten years; therefore, it could possibly take ten years to completely phase out all grazing on the public lands. However, leases are expiring every year and the impacts of the loss of public lands for grazing would be felt immediately. A total of 80,706 AUMs would be suspended if all the leases were expired. The loss of grazing use on ephemeral forage in the lower elevational areas would also have a major negative impact on the areas local livestock industry. See Appendix 13.

The loss of grazing would also reduce animal performance on private and state lands. Livestock would need to trail around public lands in many areas to make use of private and state lands within a ranch. This continuing movement would cause livestock stress which would result in reduced performance such as weight, reproductive ability, etc.

Factors determining the amount of impact from this alternative would be: percentage of public land within the allotment, location of public land within the allotment (small parcel on border of allotment or in the middle of allotment, checkerboarded, etc.) and location of improvements on public lands. All allotments would be impacted; however, those with a large percentage of public land would be impacted more severely. Operators on these allotments would be forced to reduce their herds or seek other sources of forage by buying or leasing private or state-administered lands. An undetermined number of operators could not continue to ranch and would be forced to sell or acquire adjoining ranch lands to form an economic ranch unit.

Ranchers continuing to operate would face difficult management constraints. A highly intermingled land ownership pattern would limit alternatives for grazing management and require frequent movement of livestock, often by vehicle, from pasture to pasture. In addition, large investments would be needed to replace the essential improvements (such as water sources) that are on the

public land. Investments would also be needed to develop waters, fences, etc., on isolated tracts to make them suitable for grazing. Grazing use on many of these small tracts would probably be lost due to the costs of developing improvements to make them suitable for grazing.

Controlling unauthorized use of livestock on public lands would take considerable time and expense. About 5,100 miles of fencing, at a cost of $16.4 million, would be necessary to fence off public lands. In addition, $222,000 would be needed annually to maintain these fences and to monitor unauthorized use.

Colorado Plateau. All of the impacts discussed under Basin and Range also pertain to the Colorado Plateau. In the Colorado Plateau a loss of 33,313 AUMs would eventually occur. About 1500 miles of fence would be needed at a cost of $4.8 million to fence off public lands, and $66,000 annually to maintain these fences and to monitor unauthorized use.

Conclusion. A total of 114,019 AUMs would be lost as a result of this alternative. An undetermined number of operators could be forced to sell out or stop grazing operations altogether. Livestock production would decline on surrounding private and state lands. It would cost $21.2 million to fence 6,600 miles of public lands. In addition, $288,000 would be needed annually to maintain fences and monitor unauthorized use.

E. Wildlife

In the long term the *No Grazing* Alternative would allow more vegetation production than any other alternative. Habitat would improve (in the form of decreased competition for a limited resource more than as a result of increased vegetation production alone) and the improvement would be evident in both the short and long term. This alternative provides the greatest allocations of vegetation to wildlife. *No Grazing* is the only alternative that would measurably improve habitat on public lands in the custodial allotments now having a static or downward apparent trend.

Existing waters on public lands important to wildlife would have to be maintained to reduce adverse impacts to wildlife habitat. BLM would assume maintenance costs previously borne by the livestock operators. Abandonment of developments on non-public lands by the operators, however, could leave certain areas without water for wildlife.

New fencing required to exclude livestock from public lands would significantly impact big game in allotments where land ownership is a checkerboard pattern.

Big Game

Mule Deer. Forage production in mule deer habitat would increase greatly in the short term but taper off in the long term. Mule deer would have to compete for forage and space only in the allotments inhabited by burros. Range and habitat condition would improve.

Mule deer habitat would be heavily crossed by fences, and deer deaths from fence entanglement would greatly rise, even with protective features built in. The fences would also force deer to change their movement patterns.

The overall impact would be great initially but taper off over the long term.

White-tailed Deer. White-tailed populations would respond more positively than mule deer, as this species tends to be less mobile in southern Arizona. They would be able to use some areas previously unsuitable to them.

Pronghorn Antelope. The benefits to pronghorns from increased forage and fawning cover could be offset by the lack of water sources. Fencing public lands to exclude livestock would significantly impact pronghorns. Even though the fences would be designed for pronghorn movement, the fences would be so numerous that they would restrict movement and access to water.

Desert Bighorn Sheep. The forage productivity of desert bighorn habitat (as determined by plant cover) would increase in the long term. Although production would not greatly increase, bighorn sheep would no longer compete with livestock for forage or space, and could, therefore, extend their range onto the lower elevations.

The *No Grazing* Alternative would eliminate competition with livestock on ephemeral ranges and the chances of livestock transmitting diseases to desert bighorn sheep.

Fencing public lands to exclude livestock would not significantly impact desert bighorn in the Silver Bell and West Silver Bell Mountains since public lands ownership is blocked. Fencing would have little impact in the Redfield Canyon-Swamp Springs area.

Javelina. Javelina would benefit in the long and short term by the increased availability of forage and cover.

Small Game. Small game would benefit from eliminating livestock grazing. Gambel's quail cover and forage would increase and populations could fluctuate less than at the present. Scaled quail populations could increase in the long term as increased cover results in increased survival and population carryover. As riparian habitat regenerates in the long term, cover in white-winged dove habitat would increase and result in a corresponding increase in numbers. Mourning dove populations would probably not rise noticeably.

Waterfowl and Wading Birds. The *No Grazing* Alternative would increase plant cover in areas adjacent to stock ponds, reservoirs and streams and would therefore benefit

waterfowl and wading birds. More species could linger in the EIS area during the year and some might remain to breed. There would be a negative effect on sandhill crane habitat because of increased vegetation height in their roosting habitat.

Nongame. Nongame habitat would significantly improve. Increased forage production, plant cover and height and cover of unused grasses and forbs would combine to relieve the short- and long-term lack of low level vegetation required by most nongame wildlife. The best habitat, however, would develop in the very long term with the growth of different size classes of riparian trees.

Protected and Sensitive Wildlife. There would be no impacts to Federally listed species. State-listed species would be affected as follows. In the long term black hawk, riparian nesting habitat would improve as the number of sites with suitable nesting trees increases. Gilbert's skink populations would slightly increase with increased plant and litter cover.

In desert tortoise habitat, forage productivity would increase, and competition for winter-spring annuals would nearly end. In the long term tortoise numbers could increase.

Gila monster habitat condition would improve primarily due to an increase in prey resulting from increased plant cover and litter.

Riparian and Aquatic. In the long term, fair and poor condition riparian and aquatic habitat would improve significantly. With fencing to exclude livestock, woody riparian plants would flourish (Moore et al 1979), and the structural diversity of riparian vegetation would increase. Many wildlife species would benefit and the diversity and density of aquatic animals could increase.

Conclusion. The *No Grazing* Alternative would affect portions of all allotments. This alternative would have significant beneficial impacts to the greatest variety of wildlife species over the greatest area. It is the only alternative which would measurably improve habitat in custodial allotments having a static or downward trend.

Increased forage and cover resulting from *No Grazing* would significantly benefit mule deer, pronghorn, desert bighorn sheep, small game, nongame and protected and sensitive species. Plant cover around stock ponds and riparian areas would increase significantly and would benefit waterfowl and wading birds, quail, doves and nongame birds. Tree regeneration in riparian habitat would benefit protected and sensitive raptors. Aquatic animal diversity and density could increase.

New fencing of public lands to exclude livestock would interfere with big game movement in areas where public lands are not blocked.

F. Burros

Fencing of public lands to exclude livestock grazing would increase available forage for burros. However, this fencing would restrict burro movement, making access to water and forage difficult and impossible in some areas. The net effect would be negative.

G. Cultural Resources

Archaeology. *No Grazing* would eliminate impacts from livestock trampling. Fencing off public land would reduce public access and, therefore, reduce the vandalism problems. The increased need for fence building could impact undiscovered sites. See Table 4–2.

Paleontology. The phasing out of all cattle on BLM land would alleviate the direct negative impacts of trampling and overgrazing and related erosion.

H. Recreation

The public lands would be managed for wildlife and watershed, resulting in increased hunting and wildlife observation opportunities. Picnicking, camping and ORV travel associated with hunting and wildlife observation would also increase. To implement this alternative, public lands may need to be fenced and cattleguards or gates installed to permit vehicles to enter public lands. Off-road vehicle play areas where vehicles did not stay on roads might be divided by fencing resulting in adverse impacts to ORV travel. Monitoring of public lands would continue with the same result as described under the *Proposed Action* Alternative.

Conclusion. Both on and off-road vehicle travel could be disrupted by fencing the public lands. Management of the public lands for wildlife and watershed condition would result in improved hunting and wildlife observation opportunities.

I. Visual Resources

Impacts to visual resources may result from rangeland development, whether for livestock and/or wildlife. Impacts, however, would be acceptable if projects were properly located, designed and implemented. If public lands were fenced to exclude livestock, visual impacts resulting from excessive fenceline construction may not be mitigated. Fences would probably be located on property lines, limiting opportunity to vary the location of the fence to reduce visual contrasts.

Conclusion. No significant impacts to visual resources would be expected unless it became necessary to fence public lands to exclude livestock. Under this scenario, adverse impacts to visual resources would probably result.

J. Wilderness Values

There would be no adverse impacts to wilderness values under this alternative.

K. Ranch Economics

Ranch Budgets.

Basin and Range

Under this alternative because of the loss of the authorized grazing preference, the yearly net revenue of the typical small-size ranch would decrease by 35 percent from $3,247 to $2,099 and would remain at that level over the long term.

Under this alternative, the yearly net revenue of the typical medium size ranch would decrease by 40 percent from $11,793 to $7,037 and would remain at that level over the long term.

Under this alternative, the yearly net revenue of the typical large-size ranch would decrease by 17 percent from $39,456 to $32,938 and would remain at that level over the long term.

Colorado Plateau

Under this alternative, the yearly net revenue of the typical small size ranch would decrease by 40 percent from $3,780 to $2,279 and would remain at that level over the long term (Table 4–3).

Under this alternative, the yearly net revenue of the typical medium size ranch would decrease by 14 percent from $15,782 to $13,595 and remain at that level over the long term.

Under this alternative yearly net revenue of the typical large ranch would decrease by 14 percent from $46,358 to $39,968 and remain at that level over the long term.

Ranch Finance. The *No Grazing* alternative would severely reduce the net income of ranches and thus the value of the ranches in the ESA.

Basin and Range. The value of the typical Basin and Range small ranch would decrease from an existing value of $61,500 to $45,000 and remain at that value over the long term. The value of the typical medium size ranch would decrease from an existing value of $210,000 to $163,000 and remain at that value over the long term. The value of the typical large size ranch would decrease from an existing value of $807,000 to $734,300 and remain at that level over the long term.

Colorado Plateau. The value of the typical Colorado Plateau small ranch would decrease from an existing value of $63,000 to $50,300 and remain at that value over the long term. The value of the typical medium size ranch would decrease from an existing value of $243,000 to $220,300 and remain at that value over the long term. The value of the typical large size ranch would decrease from an existing value of $873,000 to $799,000 and remain at that level over the long term.

Conclusion. The overall economic impact of the *No Grazing* alternative on ESA ranches would be large. Ranches now operating at their authorized grazing preference would have to reduce their herd sizes. Ranches now operating efficiently would have excess equipment and range improvements. Fixed costs on a per cow basis would increase and some ranches would be forced out of business. Ranch values would decrease, thus reducing a rancher's asset base and making it difficult to borrow money. In addition, net revenue would decrease, making it difficult for the ranch operation to pay family living expenses, replace equipment and pay off existing debts. No estimate is made as to numbers of operators who would go out of business because of this alternative. Although individual ranchers would suffer under this alternative, the economy of the ESA would not be significantly impacted.

L. Social Elements

Under the *No Grazing* alternative, ranchers would be negatively impacted due to losses in income and permit value. Those with a high dependency on BLM AUMs would be most affected. The attitude of affected ranchers would be expected to be negative toward the BLM.

VII. ENERGY CONSERVATION

Energy requirements would not differ significantly for any alternatives. No significant conservation potential exists.

VIII. MITIGATING MEASURES

Measures necessary to protect or enhance conditions common to all alternatives are discussed in Chapter 2. This section discusses additional mitigating measures which BLM may select during decision making or implementation of activity plans to reduce impacts or enhance resource conditions. If an impact is not determined to be significant, no mitigating measures have been formulated.

A. Vegetation

Developing the HMPs for protected plants adversely affected by grazing.

B. Soils and Watershed

Soil erosion and watershed problems could be resolved through the development and implementation of watershed activity plans either unilaterally or in cooperation with the rancher and other concerned agencies.

C. Livestock Grazing

Monitoring studies would be used after initial reduction and if trend declines, either reduce numbers and improve a system which provide periods in rest or both.

D. Wildlife

To the extent possible, BLM will not authorize construction of rangeland developments that will result in heavy livestock concentrations within crucial desert tortoise habitat. Grazing practices will consider ways to increase desert tortoise forage production and to reduce tortoise-livestock competition for ephemeral in crucial habitat areas.

Disturbed areas around water developments create unsatisfactory condition for some wildlife species. As part of its monitoring plan, BLM could study the effects of livestock overgrazing on wildlife food and cover around waters and develop and implement management guidelines to reduce the size and impact of these areas.

Earthen reservoirs and adjacent riparian habitat may be completely or partially fenced from livestock entry where feasible and where a need has been identified.

Where necessary, AMPs or HMPs will call for exclusion of grazing animals through fencing, deferment or other actions to provide for broadleaf tree reproduction and long-term enhancement.

Broadleaf tree reproduction will be improved by supplemental plantings of 4- to 5-year old seedlings in suitable riparian habitats. Stands will be fenced to exclude livestock and wild burros to allow seedling establishment and growth. Fences will be removed once the seedlings have matured and are no longer subject to damage from grazing.

Land treatments will be designed to leave islands or create strips to leave a maximum amount of edge. This will benefit wildlife.

Introductions of domestic sheep and steers into bighorn sheep habitat should require close scrutiny by BLM due to disease problems.

E. Burros

Provide permanent water to burros during those periods livestock are not in pasture.

F. Cultural

Increase public education program to reduce vandalism to archaeological and paleontological resources.

G. Visual Resources

Design improvements to minimize contrasts in vegetation.

IX. UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts are the adverse impacts of the *Proposed Action* that cannot be mitigated. They are unavoidable because the *Proposed Action* directly conflicts mainly with other values or the costs of mitigations would be prohibitively high. Unavoidable adverse impacts are listed below.

- New rangeland developments would permanently disturb soil and vegetation.
- Concentrated livestock grazing around new waters would maintain surrounding lands in unsatisfactory condition.
- Construction of new fence could restrict big game movement and increase the potential for big game entanglement in fences.
- Livestock would continue to compete with wildlife until grazing systems or adjustments are implemented. During this time, most of the EIS area would remain under current conditions.
- Visual resources could be adversely impacted by the placement of rangeland developments in previously undisturbed areas where feasibility does not permit out of sight locations.
- Subsurface cultural resources not discovered in initial surface surveys could be damaged or destroyed during construction of rangeland developments. In addition, vandalism could occur at cultural resource sites.

X. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

- Proposed livestock grazing and rangeland developments could disturb certain cultural and paleontological resources, either directly or indirectly through vandalism. The irretrievable loss of historical, archaeological or paleontological sites for future study would deplete or alter the nonrenewable

resource base and could result in a gap in the history of the area. The mitigation of impacts by salvage—surface collection or excavation rather than avoidance—would also lead to an irretrievable commitment of the resources.

- Construction of rangeland development would result in permanent loss of small amount of forage. Soil disturbance during construction and subsequent use of the developments would result in small and insignificant loss of productivity.

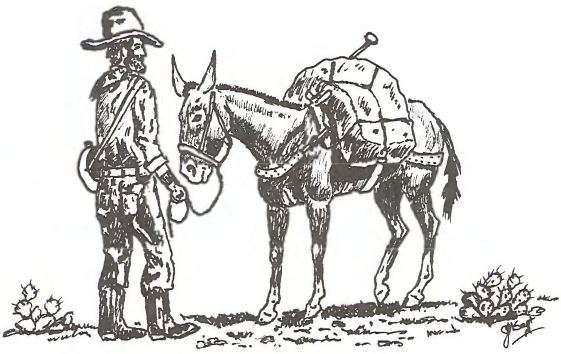
XI. RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

During the period of implementation, BLM proposed a number of improvements affecting the short-term use of the public rangeland in the EIS area. These include developing specific activity plans for livestock grazing, implementing intensive grazing systems, constructing rangeland improvements and monitoring activities to judge the effectiveness of the program. The purpose of these actions is to protect critical resources including riparian areas, increase rangeland productivity, and provide for greater multiple use benefits in the rangeland management program.

Fifteen years after the proposals are fully implemented, rangeland condition would improve in portions of the EIS area. Average utilization of key forage by grazing animals would be held to moderate levels between 40 and 60 percent, leading to increased vigor and production of plants and increased plant cover. Minor benefit would accrue through less erosion and sedimentation and improved water quality. Conflicts in important wildlife habitats would be reduced and deteriorated riparian habitats restored, thus preserving dependent populations of wildlife.

CHAPTER 5

CONSULTATION AND COORDINATION



CHAPTER V

CONSULTATION AND COORDINATION

I. INTRODUCTION

The Eastern Arizona Grazing Environmental Impact Statement was prepared by specialists from the Phoenix and Safford Districts and the Arizona State Office. The Arizona State Office also provided technical reviews and suggestions. Disciplines and skills used to develop this EIS were range, wildlife, recreation, soils, water resources, sociology, cultural resources, visual resource management, wilderness, wild horse and burro management, editing, word processing and writing. Writing of the EIS began in October 1984. Consultation and coordination with agencies, organizations and individuals occurred throughout the development of the EIS in a variety of ways.

II. PUBLIC INVOLVEMENT AND CONSULTATION DURING DEVELOPMENT OF THE DRAFT EIS

The public participation process conducted during the development of this EIS included letters written to interested individuals and organizations from both Districts' mailing lists, followed by public informational/scoping meetings. These meetings were in St. Johns on October 23, Phoenix and Bisbee on October 24, Benson on October 25 and Tucson on October 30, 1984. Subsequent involvements have been in the nature of one-on-one contacts with organizations, individuals and agencies.

The Bureau consulted informally with U.S. Fish and Wildlife Service and the Arizona Game and Fish. These agencies will also be involved in the review process.

III. OTHER ORGANIZATIONS AND AGENCIES CONSULTED

The Eastern Arizona EIS team consulted with and/or received comments from the following during the preparation of the EIS:

Federal Agencies

Environmental Protection Agency
Soil Conservation Service
Fish and Wildlife Service
Forest Service
National Park Service
Bureau of Indian Affairs

State Agencies

Arizona Game and Fish Department, Regions I, II, IV, V, VI
New Mexico Fish and Game
Arizona State Land Department
Arizona Game and Fish Department (Nongame Branch)
(Arizona Natural Heritage Program)
Arizona State Museum
Arizona Agriculture and Horticultural Commission
County Supervisors and Planning Boards
Graham County
Cochise County
Pima County Parks and Recreation Department

Special Interest Groups

Natural Resources Defense Council
Southeast Arizona Government organizations
Coronado Resource Conservation and Development Area

IV. COMMENTS REQUESTED

Copies of the EIS have been sent to and comments requested from, the following agencies, organizations and interest groups in addition to the grazing lessees.

Federal Agencies

Advisory Council on Historic Preservation
Soil Conservation Service
Forest Service
Agricultural Stabilization and Conservation Service
Department of Defense
Army Corps of Engineers
Department of Commerce
Department of Interior
Bureau of Indian Affairs
Bureau of Mines
Fish and Wildlife Service
Geological Survey
Bureau of Reclamation
National Park Service
Environmental Protection Agency
Council on Environmental Quality

County Supervisors and Planning Boards

Apache County
Cochise County
Coconino County
Gila County
Graham County
Maricopa County
Mohave County
Navajo County
Pima County
Pinal County
Santa Cruz County
Yavapai County

Central Arizona Association of Governments
District 4 Council of Governments
Local Indian tribal leaders
Maricopa Association of Governments
Northern Arizona Council of Governments
Southeast Arizona Government Organizations

Arizona State Agencies

Office of Economic Planning and Development
Game and Fish Department
Clearing House
State Historic Preservation Officer
State Land Department
University of Arizona
State Parks Board
Governor's Commission on Arizona Environment
Water Resources Department
State Land Commissioner
Natural Heritage Program
Department of Transportation
Department of Library, Archives and Public Records
Agriculture and Horticulture Commission

Special Interest Groups

Natural Resources Defense Council
Arizona Cattlegrowers Association
Cochise Cattlegrowers Association
Arizona Desert Bighorn Sheep Society
Arizona Wildlife Federation
Arizona Woolgrowers Association
Arizona 4-wheel Drive Association
Audubon Society
Defenders of Wildlife
Desert Tortoise Council
Phoenix District Grazing Advisory Board
Phoenix District Public Lands Advisory Council
Safford District Grazing Advisory Board
Safford District Public Lands Advisory Council
League of Women Voters
National Council of Public Land Users
Arizona State Association 4 Wheel Drive Clubs
Public Lands Council
Sierra Club (local and national)
Wilderness Society
Wild Burro Protection Association
Wildlife Society

Elected Representatives

FEDERAL

Senator Dennis DeConcini
Senator Barry Goldwater
Representative John McCain
Representative Jim Kolbe
Representative Bob Stump
Representative Morris K. Udall
Representative Eldon Rudd

STATE

Senator Bill Davis
Senator Tony Gabaldon
Senator A. V. "Bill" Hardt
Senator John Hays
Senator Jeffrey Hill
Senator Greg Lunn
Senator John Mawhinney
Senator Peter Rios
Senator S. H. "Hal" Runyon
Senator Ed Sawyer
Senator Alan Stephens
Representative Gus Arzberger
Representative Bart Baker
Representative David Bartlett
Representative Janice Brewer
Representative Dave Carson
Representative Bob Denny
Representative Reid Ewing
Representative Henry Evans
Representative Edward G. Guerrero
Representative Larry Hawke
Representative Roy Hudson
Representative Jack B. Jewett
Representative Joe Lane
Representative Sam A. McConnell Jr.
Representative Richard "Dick" Pacheco
Representative James B. Ratliff
Representative Sterling Ridge
Representative E. C. "Polly" Rosenbaum
Representative Nancy Wessel
Representative John Wettaw
Representative Pat Wright

LIST OF PREPARERS

NAME	POSITION	EIS ASSIGNMENT	EDUCATION	EXPERIENCE
James V. Andersen	Soil Conservationist, Phoenix Resource Area	Chapter 2; Vegetation, Soils, Water Resources Chapters 3 & 4; Assistant Team Leader	B.S. Natural Resource Management, AZ State Univ.	7 years BLM
Jerrold Coolidge	Environmental Coordinator, Safford District	Chapers 1, 5 Team Leader	B.S., M.S. Botany Univ. of ID	15 years BLM
Olga R. Diaz	Editorial Clerk, Safford District	Word Processor	3 years Eastern AZ College, 1 year Univ. of AZ	8½ years BLM
Donald P. Ducote	Botanist, Phoenix Resource Area	Protected Plants, Chapters 3 & 4	M.S. Botany, Univ. of AZ	5 years BLM
William R. Gibson	Archaeologist, Phoenix Resource Area	Cultural Resources P.R.A. Portions of Chapters 3 & 4	B.S. Business Administration, AZ State; Grad. Studies, Archaeology – AZ State University	5 years BLM
Ronald K. Gottsponer	Supervisory Range Conservationist, Phoenix Resource Area	Livestock Grazing Chapters 3 & 4	B.S. Wildlife Biology, NM State Univ.	10 years BLM
Larry Humphrey	Natural Resource Spec., San Simon Resource Area Safford District	Chapters 3 & 4 Soils, Water, Vegetation	B.S. Animal Science & Soil Science Univ. of AZ	12 years BLM 3 years Soil Conservation
Wanda Johnson	Clerk-Typist, Administration, Phoenix District Office	Word Processor	A.A. Business Administration, Big Bend Community College, Moses Lake, WA	5 years USBR, 10 yrs. BLM
Sylvia Jordan	Wildlife Biologist, Phoenix Resource Area	Wildlife, Chapters 3 & 4	B.S. Wildlife Biology AZ State Univ.	10 years BLM
Steve Knox	Outdoor Recreation Planner, Safford Resources Staff	Chapters 3, 4 Recreation, Visual, Wilderness	B.S. Watershed Management, Univ. of AZ	10 years BLM
Glenn F. Martin	WH&B Specialist, Natural Resource Specialist, Phoenix Resource Area	Wild Burros, Chapters 3 & 4	B.S. Forestry (Range Management) Univ. of ID	20+ years BLM
Dorie Morrison	Secretary, Phoenix Resource Area	Word Processor	High School, Clover Park Technical, Tacoma, WA	2 years BLM, Medical Office Mgmt.
Robert Parker	Wildlife Biologist, Gila Resource Area, Safford District	Chapters 3, 4 Wildlife	B.S., Wildlife Management, Humboldt State University	8½ years BLM
Jeanette Pranzo	Regional Economist, Arizona State Office	Chapters 3, 4 Social-Economic	B.A. Economics, Hunter College, M.A. Economics, Univ. of Pittsburgh	8 years BLM, 5 years Army Corps of Engineer

LIST OF PREPARERS (Continued)

NAME	POSITION	EIS ASSIGNMENT	EDUCATION	EXPERIENCE
Carole Romero	Clerk-Steno, Safford District Office	Word Processor	High School Graduate	Six months BLM, 4 years Graham County Superior Court
Meredith Rucks	Archaeologist, Gila Resource Area Safford District	Chapters 3, 4 Cultural	B.A. Anthropology, Univ. of CA, Berkeley	5 years BLM, 1 year National Museum, Kenya
Jack Sept	Public Affairs Specialist, Safford District Office	Public Affairs	B.A. History/Science/ Art, Univ. of MT	10 years BLM, six years teaching

ASO Assistance

The following people from the Arizona State Office provided technical review for this EIS:

Bob Abbey	Wilderness Specialist
John Castellano	Wildlife Biologist
Jane Closson	Writer Editor
Dan McGlothlin	Soils, Watershed Specialist
Keith Pearson	Planning Coordinator
George Ramey	Range Conservationist
Stan Wagner	Environmental Coordinator
Marvin Weiss	Regional Economist

APPENDICES

APPENDIX 1

ALLOTMENT SUMMARY DATA - BASIN AND RANGE
Bureau of Land Management - Phoenix and Safford Districts

Allot. No.	Cat. M,I,C	BLM Acres	Other Acres	% BLM	BLM Acres/Gond. Class Poor	Fair	Good	Excel	BLM Acres/Apparent Trend Down	Static	Up	Acres Not Classified	BLM AUMS	Class Livstk	Herd Size	Season of Use
4401	C	3039	47611	6	679	600	1500	260	-	1113	1926		459	C/H	0	YL
4402	C	200	3420	6	-	20	100	80	20	110	70		30	C/H	85	YL
4403	C	441	28147	2	111	290	40	-	60	121	260		75	C/H	518	YL
4404	C	1855	5565	25	200	1600	55	-	455	200	1200		300	C/H	190	YL
4405	C	80	63920	0.1	80	-	-	-	-	80	-		12	C/H	2000	YL
4406	C	990	990	50	200	540	250	-	-	-	990		223	C/H	0	YL
4407	C	80	6120	1	80	-	-	-	-	-	80		8	C/H	70	YL
4408	I	3360	7840	30	310	2760	290	-	340	1040	1980		192	C/H	85	YL
4409	I	6426	9300	41	846	4960	620	-	200	2250	3970		964	C/H	150	YL
4410	M	793	3612	18	-	93	500	200	100	193	500		96	C/H	50	YL
4411	M	80	10203	0.8	-	80	-	-	-	-	80		12	C/H	122	YL
4412	M	366	1464	20	-	51	240	75	-	-	366		63	C/H	25	YL
4413	C	1440	27360	5	250	980	210	-	200	240	1000		197	C/H	0	YL
4415 1/	C	7046	1739	80	851	3040	3155	-	350	1501	5195		931	C/H	180	YL
4416	C	2323	17035	12	213	1910	200	-	160	303	1860		168	C/H	230	YL
4418	C	4641	31059	13	606	3225	810	-	265	586	3790		372	C/H	235	YL
4419	M	40	23489	0.2	-	-	40	-	-	-	40		12	C/H	225	YL
4420	M	80	*	*	-	80	-	-	-	80	-		40	C/H	*	YL
4421	C	877	*	*	252	625	-	-	160	202	515		84	C/H	350	YL
5201	C	720	720	50	200	320	120	80	-	40	680		80	C/H	175	YL
5202	C	81	*	*	81	-	-	-	-	81	-		8	C/H	50	YL
5203	C	160	*	*	40	-	120	-	100	60	-		9	C/H	20	YL
5204	C	381	127	75	81	300	100	-	80	181	120		72	C/H	10	YL
5205	C	5191	9228	36	426	4165	500	100	690	3976	525		612	C/H	185	YL
5206	M	70	*	*	-	-	70	-	-	-	70		11	C/H	10	YL
5207	C	400	79600	0.5	-	200	200	-	-	200	200		53	C/H	200	YL
5208	C	720	10708	6	560	160	-	-	300	380	40		122	C/H	100	YL
5209	M	280	*	*	40	-	140	100	40	100	140		58	C/H	5	YL
5210	M	254	*	*	-	54	200	-	30	124	100		24	C/H	140	YL
5211	C	1293	28707	4	250	400	400	243	200	453	640		219	C/H	300	YL

APPENDIX 1 (Continued p. 2)
ALLOTMENT SUMMARY DATA - BASIN AND RANGE

Allot. No.	Cat. M,I,C	BLM Acres	Other Acres	% BLM	BLM Acres/Cond. Class Poor	Fair	Good	Excel	BLM Acres/Apparent Trend Down	Static	Up	Acres Not Classified	BLM AUMS	Class Livstk	Herd Size	Season of Use
5213	C	1221	4884	20	121	700	400	-	100	821	300		92	C/H	58	YL
5214	C	960	*	*	960	-	-	-	360	600	-		27	C/H	27	YL
5215	C	88	*	*	88	-	-	-	-	88	-		7	C/H	3	YL
5216	C	80	*	*	20	40	20	-	40	20	20		15	C/H	60	YL
5217	C	1910	7455	20	300	1410	200	-	200	910	800		213	C/H	60	YL
5218	C	1202	*	*	102	1000	100	-	100	702	400		113	C/H	150	YL
5219	C	282	*	*	100	182	-	-	100	182	-		24	C/H	16	YL
5220	M	20	14980	0.1	-	-	20	-	-	20	-		3	C/H	1	YL
5221	C	480	2046	19	300	100	80	-	100	80	300		48	C/H	25	YL
5222	C	380	*	*	140	200	40	-	-	180	200		22	C/H	1	YL
5223	M	80	*	*	-	-	60	20	-	60	20		12	C/H	1	YL
5224	C	330	4826	6	170	160	-	-	140	170	20		20	C/H	120	YL
5225	C	1044	*	*	344	700	-	-	100	144	800		60	C/H	400	YL
5226	C	1858	*	*	598	1260	-	-	460	1133	265		105	C/H	100	YL
5227	M	4840	*	*	290	540	3760	250	210	3660	970		636	C/H	300	YL
5228	C	937	*	*	600	337	-	-	237	500	200		126	C/H	11	YL
5229	M	40	210	16	-	-	-	40	-	40	-		12	C/H	20	YL
5230	C	384	*	*	63	200	121	-	60	203	121		72	C/H	300	YL
5231	M	91	*	*	-	60	31	-	-	91	-		17	C/H	2	YL
5232	C	2201	*	*	2001	200	-	-	-	2001	200		127	C/H	39	YL
5233	C	1486	30131	5	1186	300	-	-	200	886	400		42	C/H	350	YL
5234	M	160	*	*	-	-	160	-	-	160	-		9	C/H	43	YL
5235	C	1159	*	*	159	1000	-	-	700	259	200		131	C/H	25	YL
5237	C	103	14997	0.7	-	103	-	-	-	103	-		14	C/H	200	YL
5238	C	480	*	*	40	220	220	-	40	220	220		39	C/H	225	YL
5239	C	139	5207	3	139	-	-	-	59	80	-		24	C/H	250	YL
5240	C	118	*	*	-	78	40	-	20	78	20		18	C/H	2	YL
5241	M	120	660	15	-	10	90	20	10	20	90		16	C/H	20	YL
5242	C	1877	10636	15	577	1300	-	-	700	1077	100		176	C/H	115	YL
5243	C	800	7745	9	90	200	510	-	200	340	260		75	C/H	100	YL
5244	M	276	*	*	-	-	276	-	-	-	276		64	C/H	5	YL
5246	M	80	*	*	-	-	60	20	-	60	20		12	C/H	1	YL
5247	M	80	5600	1	-	80	-	-	-	80	-		15	C/H	75	YL

APPENDIX 1 (Continued p. 3)
ALLOTMENT SUMMARY DATA - BASIN AND RANGE

Allot. No.	Cat. M,I,C	BLM Acres	Other Acres	% BLM	BLM Acres/Cond. Class Poor	Fair	Good	Excel	BLM Acres/Apparent Trend Down	Static	Up	Acres Not Classified	BLM AUMS	Class Livstk	Herd Size	Season of Use
5240	M	884	*	*	84	400	300	100	100	584	200		70	C/H	6	YL
5250	M	60	500	11	-	20	40	-	-	60	-		5	C/H	10	YL
5251	C	838	958	47	430	408	-	-	40	400	398		84	C/H	25	YL
5252	C	9448	*	*	5188	4160	100	-	6500	2748	200		1080	C/H	98	YL
5254	M	1147	13190	8	-	47	1100	-	40	107	1000		257	C/H	25	YL
5255	C	400	100	80	265	135	-	-	100	80	220		22	C/H	91	YL
5256	C	120	*	*	120	-	-	-	120	-			9	C/H	*	YL
5257	M	3391	23727	13	591	1000	1000	800	-	600	2791		768	C/H	*	YL
5258	C	1345	*	*	645	300	400	-	-	925	420		228	C/H	19	YL
5259	C	965	*	*	640	325	-	-	200	765	-		37	C/H	3	YL
5260	C	2225	20000	10	325	1600	300	-	100	1825	300		96	C/H	100	YL
5261	C	634	*	*	434	200	-	-	-	634	-		84	C/H	100	YL
5262	M	327	*	*	-	110	200	17	-	207	120		31	C/H	3	YL
5265	C	2173	*	*	973	800	400	-	473	1500	200		384	C/H	100	YL
5266	M	160	3040	5	-	-	160	-	-	120	40		15	C/H	35	YL
5268	C	992	1488	40	680	312	-	-	600	192	200		36	C/H	0	YL
5269	C	80	240	25	-	80	-	-	-	80	-		15	C/H	40	YL
5271	M	480	*	*	50	200	120	110	-	280	200		126	C/H	400	YL
5272	C	80	*	*	20	60	-	-	-	60	20		12	C/H	100	YL
5273	C	424	*	*	74	150	200	-	-	224	200		80	C/H	400	YL
5274	C	1548	3612	30	628	920	-	-	210	1078	260		99	C/H	65	YL
5275	C	516	*	*	316	200	-	-	116	400	-		49	C/H	110	YL
5276	M	480	3080	13	-	-	200	280	-	280	200		54	C/H	280	YL
5277	C	1700	59014	3	300	900	400	100	200	1400	100		156	C/H	850	YL
5278	C	697	15898	4	202	225	260	10	-	297	400		104	C/H	325	YL
5279	M	373	15845	2	-	300	73	-	-	73	300		56	C/H	150	YL
5281	M	560	*	*	40	100	380	40	40	400	120		108	C/H	900	YL
5284	I	4173	1440	74	3140	1033	-	-	2000	1813	360		204	C/H	60	YL
5285	C	40	*	*	-	40	-	-	-	40	-		7	C/H	268	YL
5286	M	360	2460	13	-	60	300	-	100	160	100		19	C/H	25	YL
5287	C	277	4155	6	277	-	-	-	-	277	-		24	C/H	70	YL
5288	C	80	2121	4	-	80	-	-	-	-	80		12	C/H	40	YL
5290	C	360	55	87	120	240	-	-	120	140	100		24	C/H	20	YL

APPENDIX 1 (Continued p. 4)
ALLOTMENT SUMMARY DATA - BASIN AND RANGE

Allot. No.	Cat. M,I,C	BLM Acres	Other Acres	% BLM	BLM Acres/Cond. Class Poor	Fair	Good	Excel	BLM Acres/Apparent Trend Down	Static	Up	Acres Not Classified	BLM AUMS	Class Livstk	Herd Size	Season of Use
5291	C	453	0	100	50	203	200	-	100	153	200		51	C/H	0	YL
5292	C	341	42284	0.8	341	-	-	-	-	341	-		65	C/H	500	YL
5293	M	718	2642	21	-	118	-	600	-	718	-		24	C/H	100	YL
5294	C	1190	5140	19	390	500	300	-	280	300	610		216	C/H	100	YL
5295	C	2503	2285	52	1503	1000	-	-	-	-	2503		84	C/H	0	YL
6168	I	27230	20101	58	7939	13222	6015	54	4364	21473	1393		3060	C/H	392/10	YL
6067	M	15962	12887	55	622	9622	5446	272	166	14681	1115		1668	C	327	S/U
6032	M	10255	13760	43	1935	5229	2591	500	-	10255	-		588	C	280	YL
6132	C	4298	830	84	40	2580	1384	294	-	4298	-		564	C/H	70/5	YL
6197 2/	M	25553	*	*	469	23560	67	1457	60	24624	869		2964	C	500	YL
6120	M	21610	19657	52	918	12242	7870	580	-	16041	5569		2256	C	475	YL
6042 3/	M	15765	6148	72	1455	9269	5041	-	-	15765	-		1464	C	179	YL
6016	M	4610	5920	44	255	2611	1744	-	-	4610	-		718	C	70	YL
6060	C	1038	60	95	98	940	-	-	-	1038	-		108	C/H	9/2	YL
6244	M	14871	29263	34	263	12960	1648	-	-	13446	1425		1428	C	353	YL
6111	M	10883	22114	33	542	6383	3660	298	450	10433	-		1224	C	264	YL
6113	C	1688	320	84	-	1688	-	-	-	1688	-		168	C	0	YL
6014	C	2434	17820	12	-	2411	-	23	-	2434	-		324	C	200	YL
6226	C	255	60	81	-	255	-	-	-	255	-		12	H	3	YL
6097	C	376	13055	3	-	376	-	-	188	188	-		36	C/H	165/4	S/U
6082	C	1541	2580	37	-	1541	-	-	-	1541	-		300	C/H	108/2	YL
6050	C	889	*	*	163	726	-	-	163	726	-		94	C/H	126/3	YL
6125	M	8267	22116	27	47	3345	4688	187	-	8267	-		792	C/H	412/11	YL
6194 4/	C	5077	1698	75	-	3175	1902	-	-	5077	-		0	C	*	E
6175	C	1605	9348	15	-	1175	278	152	-	1605	-		156	C	204	YL
6162	C	3429	1533	69	-	535	1556	1338	-	3429	-		324	C	25	YL
SAN-TANS 5/	C	10099	*	*	-	2304	7697	98	-	9084	1015		0	C	0	E
6099	C	861	4124	17	-	-	-	-	-	-	-	861	120	C	40	YL
6100	C	2606	45560	5	-	229	2377	-	-	2606	-		144	C	*	YL
6003	C	1564	42885	3	-	78	1486	-	-	1564	-		324	C	1200	YL
6023	C	1780	6621	21	853	79	848	-	138	1007	635		336	C	400	YL
6191	C	693	21869	3	-	655	38	-	-	693	-		120	C	250	YL
6186	C	3766	4110	48	430	185	3151	-	430	1907	1429		780	C	*	YL

APPENDIX 1 (Continued p. 5)
ALLOTMENT SUMMARY DATA - BASIN AND RANGE

Allot. No.	Cat. M,I,C	BLM Acres	Other Acres	% BLM	BLM Acres/Cond. Class Poor	Fair	Good	Excel	BLM Acres/Apparent Trend Down	Static	Up	Acres Not Classified	BLM AUMS	Class Livstk	Herd Size	Season of Use
6198	C	2154	17220	11	-	76	2078	-	-	2154	-		252	C	650	YL
6199	C	520	*	*	-	24	496	-	-	520	-		96	C	*	YL
6015	C	586	3736	14	-	586	-	-	-	586	-		72	C	60	YL
6137	C	561	*	*	-	28	-	533	-	28	533		84	C	650	YL
6200	C	199	4533	4	167	32	-	-	150	49	-		33	C	*	YL
6030	C	2063	*	*	825	1238	-	-	722	1341	-		119	C	*	S/U
6133	C	1825	1993	48	1277	548	-	-	1186	639	-		167	C/H	30/1	YL
6115	C	222	405	35	11	211	-	-	-	222	-		24	C	15	YL
6031	C	331	20440	2	-	32	-	299	-	73	258		36	C	500	S/U
6059	C	1484	*	*	842	485	102	55	667	817	-		197	C	*	YL
6119	C	3082	122970	2	123	1118	1336	505	-	2956	126		408	C	1000	YL
6163	C	583	107805	05	-	25	558	-	-	583	-		84	C	2000	YL
6093	M	5083	5152	50	-	762	2542	1779	-	5083	-		384	C/H	120/4	YL
6085	C	408	14227	3	59	237	112	-	44	364	-		84	C	300	YL
6089	C	1455	2000	42	-	856	-	599	-	1455	-		240	C	120	YL
6001	C	4860	20938	19	1239	2731	723	167	410	3802	648		560	C	300	YL
6204	C	758	26436	3	-	758	-	-	-	758	-		72	C	300	YL
6040	M	7704	23452	25	-	5950	1754	-	-	7704	-		432	C	300	YL
6203	M	5552	1760	76	467	5085	-	-	-	5552	-		375	C	44	YL
6029	M	7268	2117	77		4276	2557	435	-	5619	1649		540	C	60	YL
6153	M	12737	23546	35	-	12737	-	-	-	12737	-		1432	C	121	YL
6144	M	24401	27934	47	-	24155	246	-	-	24401	-		2331	C	550	S/U
6083	M	12388	35878	26	-	11732	656	-	-	12388	-		1020	C	451	YL
6121	C	920	31748	3	-	881	-	39	-	920	-		84	C	400	YL
6126	M	16144	8587	65	973	13206	1915	50	-	16144	-		799	C	125	YL
6004	C	6994	89500	7	-	1236	4319	1439	-	6994	-		119	C	659	S/U
6072	M	28743	9883	74	2512	18275	7518	438	-	26748	1995		540	C	*	YL
6006	C	3759	34280	9	159	3566	34	-	-	3759	-		432	C	36	YL
6102	C	4471	51065	8	-	4471	-	-	-	4471	-		384	C	2000	YL
6151	C	5331	6611	45	-	5331	-	-	-	5331	-		0	C	*	E
6022	C	600	2200	21	-	248	352	-	-	600	-		72	C	400	YL
6025	C	194	5780	3	-	87	87	20	-	194	-		36	C	86	YL
6068	M	32127	51332	38	3695	15556	9440	3436	3419	28708	-		2259	C	540	YL

APPENDIX 1 (Continued p. 6)
ALLOTMENT SUMMARY DATA - BASIN AND RANGE

Allot. No.	Cat. M,I,C	BLM Acres	Other Acres	% BLM	BLM Acres/Cond. Class Poor	Fair	Good	Excel	BLM Acres/Apparent Trend Down	Static	Up	Acres Not Classified	BLM AUMS	Class Livstk	Herd Size	Season of Use
6177	C	363	*	*	-	363	-	-	-	363	-		18	C	115	YL
6212	C	600	*	*	-	-	600	-	-	600	-		0	C	*	E
6055	C	489	1920	20	-	489	-	-	-	489	-		31	C	60	YL
6054	C	35	*	*	-	35	-	-	-	35	-		2	C	1	S/U
6105	C	160	60	73	-	-	160	-	-	75	85		12	C	2	S/U
6075	M	4231	20	99	434	1436	2322	39	-	4231	-		240	C/H	20/3	YL
6020	I	8605	4640	65	2943	3296	2366	-	-	8605	-		528	C	75	YL
6039	M	14369	25128	36	2443	11332	594	-	1154	13215	-		1488	C	450	YL
6010	C	2318	11134	17	-	2138	180	-	-	2318	-		200	C	25	YL
6062	C	40	13554	0.3	-	40	-	-	-	40	-		12	C	*	YL
6183	I	14419	2280	86	4978	8758	683	-	-	14419	-		1356	C	110	YL
6167	C	958	3218	23	-	-	-	-	-	-	-	958	72	C	*	YL
6122	C	700	92	88	-	700	-	-	-	700	-		96	C	21	YL
6215	M	27389	32346	46	-	19585	7073	731	-	26803	586		4104	C	600	YL
6150	C	640	1275	33	-	640	-	-	-	640	-		72	C	15	YL
6044	M	12610	32467	18	141	10649	1412	408	141	12469	-		936	C	190	YL
6026	M	7238	9098	44	-	7238	-	-	-	7238	-		1104	C	295	YL
6245	C	1344	560	71	-	492	852	-	-	1344	-		101	C	8	YL
6027	C	846	2747	24	-	846	-	-	326	43	477		158	C	40	YL
6139	C	1455	*	*	56	1399	-	-	351	1104	-		224	C/H	28/3	YL
6094	C	1170	2070	36	534	611	-	25	534	636	-		180	G	1000	YL
6201	C	3185	1272	71	123	2793	110	159	1149	2036			600	C	70	YL
6229	C	92	31	75	-	92	-	-	92	-	-		12	C	*	YL
6181	C	110	455	19	-	110	-	-	-	110	-		24	C	9	YL
6057	C	481	1215	28	165	316	-	-	165	316	-		84	C	168	YL
6135	C	1578	*	*	586	916	-	76	968	610	-		276	C	*	YL
6213	C	350	*	*	35	280	28	7	35	315	-		66	C	90	YL
6235	C	1617	67199	2	-	1617	-	-	-	1617	-		216	C	450	YL
6011	C	1233	*	*	60	1160	-	13	283	950	-		240	C/H	190/4	YL
6012	C	120	621	16	-	120	-	-	30	90	-		24	C	10	YL
6128	M	13122	*	*	1150	6883	4423	26	384	12098	-	640	1747	C	951	YL
6103	I	18171	9980	65	3501	12645	1544	481	1714	16457	-		1824	C	550	YL
6219	C	1325	*	*	-	1245	27	53	-	1325	-		96	C	23	YL

APPENDIX 1 (Continued p. 7)
ALLOTMENT SUMMARY DATA - BASIN AND RANGE

Allot. No.	Cat. M,I,C	BLM Acres	Other Acres	% BLM	BLM Acres/Cond. Class Poor	Fair	Good	Excel	BLM Acres/Apparent Trend Down	Static	Up	Acres Not Classified	BLM AUMS	Class Livstk	Herd Size	Season of Use
6013	C	3328	16478	17	33	2363	932	-	-	3328	-		564	C	210	YL
6063	M	2965	10216	15	88	1281	1514	82	252	2713	-		504	C	184	YL
6005 6/	M	8763	5846	63	719	7598	40	406	1770	6993	-		816/434	C/S	68/2000	YL
6161	M	12832	39433	25	1572	8654	1964	642	1278	11554	-		1992	C/H	690/16	YL
6243	M	6789	7577	47	-	6251	-	538	-	6789	-		924	C/H	153/20	YL
6104	M	9091	11275	35	-	4316	3505	1270	-	7820	1271		679	C/H	83/20	YL
5013 7/	M	13144	*	*	1728	7958	3130	328	2073	9906	1165		2220	C	*	YL
6035	C	40	850	4	-	40	-	-	-	40	-		12	C	700	YL
6227	M	6345	1577	80	-	2450	3895	-	-	6345	-		1068	C/H	111/2	YL
6056	C	1880	9079	17	-	737	1143	-	-	1880	-		0	S	*	E
6222	M	16805	5716	75	-	12485	4320	-	-	16805	-		1803	C/H	*	YL
6109	C	742	28911	3	-	396	346	-	22	720	-		56	C	29	YL
6142	C	1622	2301	41	-	1570	-	52	-	1622	-		252	H/C	0/65	YL
6021	C	345	840	29	69	276	-	-	69	276	-		60	C	20	YL
6045	C	1275	8680	13	-		1211	64	-	1275	-		240	C/H	113/10	YL
6169	I	2423	1396	63	121	363	1866	73	122	2228	73		322	C/H	54/2	YL
6246	C	960	*	*	-	864	96	-	-	960	-		96	C	*	YL
6223	M	7860	25187	24	-	3918	3623	319	1747	6113	-		1032	C	330	YL
6048	C	256	54080	0.4	-	238	18	-	13	225	18		48	C	613	YL
6143	C	414	*	*	-	414	-	-	77	337	-		75	C	15	YL
6095	I	30712	16008	66	3222	18708	8731	51	52	29937	723		1570	C	300	YL
6066	C	226	4000	5	-	113	113	-	-	226	-		36	C	3	YL
6147	C	120	160	43	114	6	-	-	-	120	-		12	C	3	YL
6239	I	11062	7370	60	6970	3650	442	-	10620	-	442		1941	C	300	YL
6065	C	2135	50250	4	182	1882	-	71	680	1183	272		408	C	550	YL
6182	C	40	99	29	-	40	-	-	-	40	-		12	C	15	YL
6238	C	77	60189	0.1	-	77	-	-	-	77	-		15	C	785	YL
6206	C	1035	*	*	-	362	466	207	-	1035	-		60	C	9	YL
6046	C	65	38725	0.2	-	65	-	-	-	65	-		12	C	50	YL
6002	C	320	13600	2	-	-	-	-	-	-	-	320	24	C	290	YL
6123	C	964	66384	1	-	-	-	-	-	-	-	964	192	C	1000	YL
6116	C	160	3741	4	-	-	-	-	-	-	-	160	0	C	12	E
6080	C	498	17443	3	-	-	-	-	-	-	-	498	48	C	7	YL

APPENDIX 1 (Continued p. 8)
ALLOTMENT SUMMARY DATA - BASIN AND RANGE

Allot. No.	Cat. M,I,C	BLM Acres	Other Acres	% BLM	BLM Acres/Cond. Class Poor	Fair	Good	Excel	BLM Acres/Apparent Trend Down	Static	Up	Acres Not Classified	BLM AUMS	Class Livstk	Herd Size	Season of Use
6008	C	40	13673	0.3	-	-	-	-	-	-	-	40	12	C/d	300/10	YL
6188	C	65	2400	5	-	65	-	-	-	65	-		12	C/d	50/4	YL
6090	C	65	*	*	-	-	-	-	-	-	-	65	6	C	1	YL
6078	C	722	13760	5	-	-	-	-	-	-	-	722	84	C	*	YL
6174	C	4387	5159	46	-	-	-	-	-	-	-	4387	0	C	*	E
6216	C	241	160	60	-	-	-	-	-	-	-	241	24	C	20	YL
6124	C	320	12026	3	-	-	-	-	-	-	-	320	36	C	225	YL
6130	C	103	19322	0.5	-	-	-	-	-	-	-	103	24	C	220	YL
6118	C	414	4890	8	-	-	-	-	-	-	-	414	48	C	120	YL
6185	C	380	*	*		-	189	69	122	-	380	-	12	C	15	YL
6187	C	281	600	32	-	-	-	-	-	-	-	281	48	C	93	YL
6018	C	200	10502	2	-	-	-	-	-	-	-	200	42	C	110	YL
6041	C	994	1970	34	-	-	-	-	-	-	-	994	0	C	*	E
6053	C	249	*	*	-	-	-	-	-	-	-	249	24	C	75	YL
6173	C	509	4528	10	-	-	-	-	-	-	-	509	0	C	*	E
6189	C	3200	645	83	-	-	-	-	-	-	-	3200	0	C	*	E
6220	C	631	39200	2	-	-	-	-	-	-	-	631	84	C	450	YL

1/ Includes Allotment 4414
2/ Includes 2250 acres of USFS land
3/ Includes allotment 6251
4/ Includes allotment 6248
5/ No allotment number - not presently leased
6/ Also leased to Arizona Wool Products
7/ Cooper allotment - administered by Lower Gila Resource Area
* Data Not Available

APPENDIX 2

ALLOTMENT SUMMARY DATA - COLORADO PLATEAU

Bureau of Land Management - Phoenix and Safford Districts

Allot. No.	Cat. M,I,C	BLM Acres	Other Acres	% BLM	BLM Acres/Cond. Class Poor	Fair	Good	Excel	BLM Acres/Apparent Trend Down	Static	Up	Acres Not Classified	BLM AUMS	Class Livstk	Herd Size	Season of Use
6234	C	640	960	40	-	640	-	-	-	640	-	-	120	C	35	YL
6058	C	3855	37981	9	-	-	3855	-	-	3855	-	-	648	C	2521	SU
6202	C	118	624	16	-	-	118	-	-	118	-	-	12	C/d	5/5	YL
6024	C	120	64694	0.2	-	-	120	-	-	120	-	-	24	C	800	YL
6028	C	320	47466	0.7	-	320	-	-	-	320	-	-	60	C	700	YL
6036	C	1880	16320	10	-	-	1880	-	-	1880	-	-	324	C	192	YL
6230	C	3080	8560	26	-	-	3080	-	-	3080	-	-	491	C	347	SU
6076	C	835	3646	19	-	-	835	-	-	835	-	-	132	C	182	YL
6224	C	440	6493	6	-	280	40	120	-	440	-	-	84	C	800	YL
6088	C	676	1240	35	-	254	422	-	-	676	-	-	120	C	100	YL
6061	C	4090	*	*	-	-	4090	-	-	4090	-	-	624	C	*	YL
6158	C	7080	7940	47	-	2741	4339	-	-	7080	-	-	1008	C	*	YL
6110	M	18124	23040	44	-	2188	15936	-	-	18124	-	-	1488	C	375	YL
6159	C	5773	38802	13	-	1840	2673	620	-	5133	-	640	600	C	375	YL
6164	C	200	2280	8	-	-	200	-	-	200	-	-	24	C	45	YL
6207	C	320	1780	15	-	-	320	-	-	320	-	-	48	C	190	YL
6165	C	280	3035	8	-	280	-	-	-	280	-	-	36	C	40	S/U
6166	C	280	2500	10	-	280	-	-	-	280	-	-	45	C	33	S/U
6096	C	40	1680	2	-	40	-	-	-	40	-	-	12	C	80	YL
6033	C	1273	15200	8	-	195	1078	-	-	1273	-	-	216	C	200	YL
6051	C	5104	21309	19	-	1378	2807	919	664	4440	-	-	780	C	488	YL
6098	C	160	1400	10	-	160	-	-	-	160	-	-	12	C	*	YL
6087	C	3233	30720	10	-	1763	1470	-	112	3121	-	-	432	H/C	25/1150	YL
6071	C	1448	8860	14	-	-	1448	-	-	1448	-	-	276	C	150	YL
6112	C	320	1500	18	-	-	320	-	-	320	-	-	60	C	100	S/U
6141	C	240	420	36	-	-	240	-	-	240	-	-	48	C	21	YL
6009	C	595	22398	3	-	515	80	-	-	595	-	-	98	C	*	YL
6081	C	1120	18360	8	-	432	688	-	-	1120	-	-	192	C	200	S/U
6136	C	1880	2610	42	447	434	999	-	221	1659	-	-	360	C	30	YL
6160	C	640	1360	32	-	-	640	-	-	640	-	-	120	C	35	YL

* Data Not Available

APPENDIX 2 (Continued p. 2)
ALLOTMENT SUMMARY DATA - COLORADO PLATEAU

Allot. No.	Cat. M,I,C	BLM Acres	Other Acres	% BLM	BLM Acres/Cond. Class Poor	Fair	Good	Excel	BLM Acres/Apparent Trend Down	Static	Up	Acres Not Classified	BLM AUMS	Class Livstk	Herd Size	Season of Use
6232	C	960	190	83	-	-	960	-	-	960	-	-	140	C/H	65/2	S/U
6070	C	636	14700	4	-	121	515	-	-	636	-	-	84	C	200	YL
6190	C	880	7041	11	-	-	832	48	-	880	-	-	168	C	187	YL
6155	C	4986	37120	12	-	311	4560	115	-	4986	-	-	756	C	300	YL
6134	C	1280	1920	40	-	640	640	-	-	1280	-	-	288	C	37	YL
6170	C	3418	54520	6	25	662	1661	1070	-	3418	-	-	660	C	550	YL
6176	C	1600	29200	5	-	1185	415	-	-	1600	-	-	276	C	500	YL
6140	C	3200	640	83	-	1232	1968	-	-	3200	-	-	696	C/H	81/7	YL
6231	C	360	3411	10	-	-	360	-	-	360	-	-	72	C	85	YL
6252	C	1307	5762	18	-	-	1307	-	-	1307	-	-	214	C	*	YL
6084	C	135	1280	10	-	-	135	-	-	135	-	-	14	H/C	5/30	S/U
6069	C	320	7004	4	-	-	320	-	-	320	-	-	36	C	88	YL
6184	C	4481	41616	10	-	950	3531	-	-	4481	-	-	408	C	500	YL
6037	C	2576	16640	13	-	259	2317	-	-	2576	-	-	444	C/H	250/9	YL
6148	C	2375	51231	4	-	262	1614	499	262	2113	-	-	420	C	500	YL
6108	C	1159	8520	12	-	244	683	232	-	1159	-	-	156	C/H	60/4	YL
6114	C	1286	25600	5	-	206	1016	64	167	1119	-	-	180	C	100	YL
6241	C	5892	58108	9	-	766	1474	3652	-	5892	-	-	1116	C	200	YL
6214	C	2080	5900	26	-	624	1456	-	-	2080	-	-	198	C	150	S/U
6092	C	334	97800	0.3	-	-	301	33	-	334	-	-	36	C	800	YL
6091	C	1890	54850	3	-	-	587	1303	-	1890	-	-	180	C/H	400/20	YL
6007	C	8018	27843	22	-	1284	4970	1764	1284	5371	1363	-	600	C	250	YL
6180	C	4347	11868	27	-	1348	2782	217	391	3956	-	-	660	C	80	YL
6086	C	595	*	*	-	149	296	150	149	356	90	-	108	C	*	YL
6052	M	2400	16490	13	-	624	1776	-	-	2400	-	-	456	C	200	YL
6074	C	5123	5650	48	-	513	4047	563	52	5071	-	-	480	C/S	150/200	YL
6038	C	120	*	*	-	54	60	6	-	120	-	-	24	C	2	YL
6079	C	40	26552	0.2	-	40		-	-	40	-	-	12	C	150	YL
6019	C	548	*	*	-	302	246	-	-	548	-	-	72	C	6	YL
6210	C	80	14600	0.5	-	64	12	4	-	80	-	-	12	C	150	YL

APPENDIX 2 (Continued p. 3)
ALLOTMENT SUMMARY DATA - COLORADO PLATEAU

Allot. No.	Cat. M,I,C	BLM Acres	Other Acres	% BLM	BLM Acres/Cond. Class Poor	Fair	Good	Excel	BLM Acres/Apparent Trend Down	Static	Up	Acres Not Classified	BLM AUMS	Class Livstk	Herd Size	Season of Use
6225	C	117	658	15	-	53	58	6	29	88	-	-	24	C	138	YL
6064	C	15716	165322	9	-	3142	11316	1258	1414	14302	-	-	2364	C	1450	YL
6017	C	354	2330	13	-	35	290	29	35	319	-	-	60	C	32	YL
6172	C	440	2919	13	-	-	308	132	-	440	-	-	60	C	225	YL
6242	C	3062	39000	7	-	-	3062	-	-	3062	-	-	408	C	120	YL
6106	C	3950	35580	10	-	-	3950	-	-	3950	-	-	744	C	400	YL
6156	M	18853	36960	34	626	7052	11175	-	947	14970	2936	-	2796	C	*	YL
6047 8/	M	11129	23814	32	-	2304	8825	-	-	11129	-	-	1416	C	410	YL
6127	C	6309	32548	16	1433	2896	1980	-	-	6309	-	-	924	C	1000	YL
6205	C	1916	152000	1	19	1495	402	-	-	1916	-	-	336	C	1800	YL
6192	C	436	*	*	-	262	174	-	262	174	-	-	72	C	*	YL
6073	C	6703	25793	21	-	2237	3457	1009	1001	5702	-	-	756	C	330	YL
6195	M	18780	55000	25	-	1764	14219	2797	2193	14811	1776	-	1932	C	650	YL
6157 9/	C	12466	26885	32	-	2225	10241	-	1534	9024	1908	-	1884	C	*	YL
6149	C	280	3520	7	-	80	40	160	60	100	120	-	36	C/H	40/3	YL
6117	C	14	3	82	-	-	-	-	-	-	-	14	3	C	0	S/U
6196	C	59	400	13	-	-	-	-	-	-	-	59	5	H/C	1/30	S/U
6077	C	80	1352	6	-	-	-	-	-	-	-	80	24	C/H	20/2	YL
6107	C	186	142	57	-	-	-	-	-	-	-	186	24	C	15	YL
6178	C	880	1680	34	-	-	-	-	-	-	-	880	168	C	40	YL
6034	C	240	*	*	-	-	-	-	-	-	-	240	36	C	3	YL
6218	C	160	*	*	-	-	-	-	-	-	-	160	24	C	*	YL
6049	C	120	24205	0.5	-	-	-	-	-	-	-	120	12	C	230	YL
6228	C	1040	17021	6	-	-	-	-	-	-	-	1040	84	C	325	YL
0101	C	8066	*	4	-	-	-	-	-	-	-	8066	1200	C	*	YL
0102	C	1259	*	6	-	-	-	-	-	-	-	1259	192	C	*	YL
0104	C	1274	*	11	-	-	-	-	-	-	-	1274	240	C	*	YL
0106	C	40	*	0.1	-	-	-	-	-	-	-	40	5	C	*	YL
0114	C	80	*	0.4	-	-	-	-	-	-	-	80	12	C	*	YL
0003	C	80	*	0.2	-	-	-	-	-	-	-	80	12	C	*	YL

8/ F Bar Ranch All Allotments - 6047, 6145, 6146, 6152, 6154 and 6250

9/ Includes Allotment 6157

APPENDIX 3

SELECTIVE MANAGEMENT CATEGORIES
Bureau of Land Management - Phoenix and Safford Districts

The following criteria pertain to the three selective management categories. It is not necessary for allotments in any of the categories to meet all criteria set forth.

1. Maintain Category Criteria

a. Present range condition is satisfactory.
b. Allotments have moderate or high resource production potential, and are producing near their potential (or trend is moving in that direction).
c. No serious resource-use conflicts/controversy exists.
d. Opportunities may exist for positive economic return from public investments.
e. Present management appears satisfactory.

2. Improve Category Criteria

a. Present range condition is unsatisfactory.
b. Allotments have moderate to high resource production potential and are producing at low to moderate levels.
c. Serious resource-use conflicts/controversy exists.
d. Opportunities exist for positive economic return from public investments.
e. Present management appears unsatisfactory.

3. Custodial Category Criteria

a. Present range condition is not a factor.
b. Allotments have low resource production potential, or are producing near their potential.
c. Limited resource-use conflicts/controversy may exist.
d. Opportunities for positive economic return on public investments do not exist or are constrained by technological or economic factors.
e. Present management appears satisfactory or is the only logical practice under existing resource conditions.

APPENDIX 4

CULTURAL RESOURCE COMPLIANCE PROCEDURES
Bureau of Land Management Phoenix and Safford Districts

To comply with the *National Historic Preservation Act of 1966*, 36 CFR 800, and *Executive Order 11593*, all areas where ground is to be disturbed by range developments are to be inventoried for prehistoric and historic features. Where feasible, all significant sites found by this inventory are to be avoided. National Register determinations of eligibility will be made in consultation with the Arizona State Historic Preservation Officer (SHPO) for all cultural resources identified within areas of potential impact.

If sites are found to be eligible for the National Register and cannot be avoided, a determination of the effect of the project on the site(s), including appropriate mitigating measures if necessary, will be done in consultation with the SHPO and the Advisory Council on Historic Preservation (ACHP). No action affecting the site is to be taken until the ACHP has had opportunity to comment in accordance with the programmatic memorandum of agreement between the Bureau of Land Management, the SHPO and the ACHP signed March 26, 1985.

If buried cultural remains are encountered during construction, the operator is to temporarily discontinue construction until the BLM evaluates the discovery and determines the appropriate action.

APPENDIX 5

VISUAL RESOURCE MANAGEMENT CLASSES
Bureau of Land Management - Phoenix and Safford Districts

The VRM classes, their objectives and required management are as follows:

Class I - Class I provides primarily for natural ecological changes only. It is applied to wilderness areas, some natural areas and similar areas where management activities are to be very limited. Any contrast in the characteristic landscape must not attract attention.

Class II - Changes in any of the basic landscape elements (form, line, color or texture) caused by a management activity should not be evident in the characteristic landscape. Contrasts are seen, but must not attract attention.

Class III - Changes caused by a management activity may be evident in the characteristic landscape, but the changes should remain subordinate to the visual strength of the existing landscape.

Class IV - Changes caused by a management activity attracts attention and may be a dominant feature of the landscape in terms of scale, but the changes should repeat the form, line, color and texture of the characteristic landscape.

Class V - Change is needed. This class applies to areas where the natural character has been disturbed to a point where rehabilitation is needed to bring it back into character with the surrounding countryside.

APPENDIX 6

CULTURE HISTORY OF EIS STUDY AREA
Bureau of Land Management - Phoenix and Safford Districts, Arizona

BASIN AND RANGE

The earliest cultural remains in southeast Arizona are from Paleo-Indians dependent on the megafauna of the late Pleistocene (ending circa 10,000 years ago). Known Paleo Indian sites occur in the upper San Pedro Valley along tributary arroyos between the Mexican border, north to Lewis Springs. These sites are 11,500 to 11,000 years old and are the bulk of the known sites of this antiquity in the United States. Additional Paleo-Indian sites have recently been discovered near the Willcox Playa area in the Sulphur Springs Valley (Amerind Foundation, personal communication).

The Paleo Indian culture is materially simple and uniform throughout the region. There is little, if any, regional cultural variation. Sites are usually subsurface, and discovered due to erosion or construction. Sites are characterized by diagnostic Clovis points, often in association with megafauna remains.

The Desert Archaic period (10,000 to 2300 years ago), named the Cochise culture in southeast Arizona is another relatively homogenous culture and reflects an overall adaptation to a drier and warmer climate. As the megafauna became extinct, the Cochise people increased their dependence on smaller game and a variety of plants. The latter is evidenced by the appearance of ground stone: the mano and metate, to process grains. This culture is represented throughout the EIS area. Sites may be surface artifact scatters including diagnostic ground stone and projectile points, early pit houses and no pottery. Sites exhibiting an apparent transition from the earlier Paleo Indian culture to the Cochise culture are known to occur in the Sulphur Springs Valley along Whitewater Draw and near Lewis and Murray Springs in the Upper San Pedro Valley (Professional Analysts 1982).

Regional cultural variation within the EIS area becomes obvious with the advent of agriculture (approximately 2300 years ago). The trend towards continuous occupation allowed for the development of diverse architectural styles. Other developments included agricultural terraces, irrigation systems, and diverse and diagnostic ceramic traditions.

The two major agricultural groups to emerge in the southeast Arizona region are the Mogollon and the Hohokam. Both cultures are exceedingly complex and exhibit temporal and regional intracultural variation. Generally, the Mogollon (2300–800 years ago) dominated the San Bernardino, the Sulphur Springs (south of Willcox), and the upper San Pedro Valleys. The Hohokam occupied the middle Sulphur Springs and San Pedro Valleys. In addition there were areas where cultural traits from both the Mogollon and Hohokam overlapped (Professional Analysts 1982).

Sites of either culture may include architecture either above the ground or subsurface. Although most frequently discovered on the surface, sites may have considerable depth. Painted ceramics, diagnostic ground and chipped stone, rock alignments, above ground masonry architecture and ball courts are some of the predominate features. Sites may occur on flood plains as well as on the terraces overlooking major drainages, and frequently along secondary drainages. Mogollon sites also occur at higher elevations in mountainous country where rock shelters were frequently used.

The transition from the earlier preceramic Cochise to the Mogollon has been demonstrated by continuous occupation sites in the San Simon Valley and it is predicted that similar sites occur within this EIS area. There is some evidence for a homologous transition from a preceramic culture to the earliest Hohokam phases in the Upper San Pedro Valley in the Babocomari Wash area. However, there are several conflicting theories regarding the origin of the Hohokam, and the early Hohokam sites should be regarded as particularly significant (Professional Analysts 1982).

An abandonment of both Hohokam and Mogollon cultural traits occurred around 800 years ago (1200 A.D.), making way for the ubiquitous Salado culture which dominated this region until 1400–1450 A.D. An equally unexplained second abandonment then occurred.

The only distinct culture to occupy the region between the cessation of a Salado life style in the early 1400's and the first European contact (1540) are the Sobaipuri, a Piman group that inhabited the lower terraces along the San Pedro, Santa Cruz and Gila River Valleys. Sobaipuri occupation continued into the historic period which begins with the first European contact in 1540. The Apache are thought to have forced the Sobaipuri out of San Pedro Valley in the late 1700's.

Salado and the later Sobaipuri sites are characterized by surface architecture, characteristic pottery types, and

ground and chipped stone. They are surface sites and may overlie previous, older occupations including a later historic component (Professional Analysts 1982).

Apache Indians occupied the southeastern Arizona area from about 1500. They and the Navajo are Athabascans who migrated into the Southwest from the northwestern United States in the 16th century. The Apache were nomadic hunter-gatherers, practicing limited agriculture, and relying on a trade-raid relationship with the Puebloan Sobaipuri and later European immigrants. They made very little impact on their natural environment and Apache site identification is very difficult. They are notorious for having reused sites and artifacts from previous cultural groups. Scrapers made from manufactured glass lie side by side similar tools made of stone by the ancient Mogollon people. Apache rock art has been identified in rock shelters occupied by previous cultures.

Anglo occupation began with the Spanish conquest in the 1500's, but settlement was sparse, represented by missions with small communities. The Mexican government had political control from the 1820's until 1856 when the United States took control through to the Gadsen Purchase. Settlement by Mexican and early European immigrants was very limited due to Apache raiding, which in turn gave rise to U.S. Military forts in the 1860's and 1870's. These forts were abandoned in 1890's.

Colonization during the 1870's, 80's and 90's took the form of ranches, homesteads and towns. From the 1880's Mormon settlements became dominant. Historic sites include missions, towns, ranches, homesteads, mining operations and settlements, monuments, trails, fortifications, camp sites and other use areas, including remnants of the Butterfield State Route (Professional Analysts 1982).

The Santa Cruz and Salt-Gila regions in Central Arizona provide the setting for prehistoric Sonoran Desert adaptive peoples. Early evidence of man's utilization of central and southern Arizona is manifested by Archaic sites. These preceramic sites consist mainly of lithic (chipped stone artifacts) scatters, quarries, and rock alignments. The earliest Archaic sites date to at least 6000 B.C. Generally, identification of these early sites as Archaic is problematic. Later cultures such as the Hohokam, probably utilized the same areas (Brunson, et. al. 1984; Jennings 1964; Sayles and Andevs 1941; Berry and Marmaduke 1982).

Traditionally viewed, the Archaic ended around the time of Christ. About that time the agricultural-based Hohokam began to occupy the areas along major water courses in south central Arizona. Major Hohokam pithouse villages developed in this region. Hohokam sites exhibit irrigation agriculture, distinctive red on buff ceramics, ball courts, and after 1200 A.D., walled compound village units. The Hohokam, as an identifiable culture, perished in the fifteenth century A.D. There is evidence of widespread abandonment of these villages during this time (Haury 1976; Kelly 1978; Berry and Marmaduke 1982). Anthropologists generally agree that the contemporary Pima and Papago Indians are Hohokam descendants.

The historic era begins with the arrival of Father Eusebio Kino to the southern deserts of Arizona in 1683. The heritage left by the Spanish colonials/missionaries is seen today in the restored missions of the Tucson Area (e.g. San Xavier del Bac). The primary purpose of Spanish missions in Arizona was to proselytize Native American populations. Kino recorded visits to Piman villages (Pimeria Alta) along the Gila River and the Papago ("Papagueria") north and west of Tucson (Berry and Marmaduke 1982; Spicer 1962).

The mining industry holds an important niche in Arizona's heritage. Large communities along the middle Gila Valley (Globe, Miami, Superior) have developed around the extraction, processing and sale of copper, gold and silver. While Arizona was still owned by the Spaniards, gold mining was an important pursuit. During the Civil War, the market for gold and silver began a series of "bust and boom" cycles that have characterized minerals production in Arizona for the past 12 decades (Berry and Marmaduke 1982).

Establishment of a direct southerly route from the eastern United States to California left its mark on the Salt-Gila Region. Remnants of the notable Butterfield Stage Route are still visible (Berry and Marmaduke 1982) along the Gila River. By the early 1880's, the Southern Pacific Railroad was transporting people and products between Southern California and Texas and points east.

Agricultural pursuits in the Tucson Basin and Salt River Valley have constituted an important aspect of those major metropolitan areas. It was not until major water reclamation projects in the early 20th century provided for a dependable source of water for large scale farming and ranching in the Salt-Gila Basin (Berry and Marmaduke 1982). Tucson was originally a Spanish mission/presidio (fort), to which agriculture activities provided economic support (Professional Analysts 1982). Today Santa Cruz Valley agriculture derives its water supply from ground wells.

The Agua Fria River region in north central Arizona represents a transitional zone environmentally and culturally. The Archaic (pre-ceramic) period is sparsely represented along the middle and lower Agua Fria River (Dittert 1976; Sherman 1974; Henderson and Rodgers 1979) and is evident that Hohokam associated sites occurred along the Agua Fria and its principal tributaries by the eighth century A.D. Sites with the distinctive red-on-buff ceramics, agricultural development, ball courts and pithouse village units cluster of the northern periphery of present day Phoenix along the lower Agua Fria. "Colonial" Hohokam (700–900 A.D.) intrusion into the upper reaches of the Agua Fria (i.e. Dewey, Cordes Junction) are evident by the 10th century A.D. A different environmental adaptation than is evident in the Salt-Gila basin is exhibited by the presence of limited activity sites and seasonal camps. Prehistoric populations were exploiting

the abundant plant communities associated with upland environments. Sites along the Agua Fria (in addition to lowland Hohokam characteristics) consist of surface masonry compounds, mountain "look-outs", check dams and petroglyphs (Henderson and Rodgers 1979).

By 1200 A.D., site densities along the lower Agua Fria show a dramatic decrease. However, along the middle Agua Fria (Perry Mesa Archaeological District), a large complex of Pueblo-like communities were built. Villages in excess of 200 rooms occur along the major canyons of the Agua Fria and Squaw Creek (Gumerman et. al 1976). This movement into the "Mesa-Canyon" complex is contemporaneous with Hohokam retrenchment into the Salt-Gila and the Salado movement west, also into the Salt-Gila. Abandonment of the Mesa-Canyon complex occurs during the 15th century A.D., as was the case in the Hohokam core area (Gumerman et.al. 1976; Dittert 1976).

A localized branch (Prescott) of the Patayan occupied the upper Agua Fria region from 700–1200 A.D. (Sherman 1974; Jeter 1977). Patayan refers to a culture that ranged over western Arizona/Lower Colorado River. Sites generally consist of crude surface masonry, gray and brownware ceramics. Given the marginal environment, these hunter-gather-agriculturalist people lived in house groups (subvillages) closely associated with major drainages (Jeter: 1977).

Historically, land in the Agua Fria Valley was probably seasonally exploited by several Indian groups. Historical camps and artifact scatters traceable to Yavapai, Apache, Maricopa and Pima (Gumerman, et.al 1976; Henderson and Rodgers 1979). Anglo mining (gold, silver and copper) pursuits are evident in the Prescott area and surrounding Bradshaw Mountains. As in southern Arizona, the industry began in the mid-nineteenth century and has continued to the present.

The Phoenix-Prescott transportation corridor in pre-Interstate 17 days was through the precipitious Bradshaw Mountains. The old stagecoach stop of Gillette (now only foundations remain) attests to a vanished era.

Cattle and sheep ranching have been in the Prescott region since its days as "Fort Whipple", the first territorial capital of Arizona. The Black Canyon trails system was formerly a stock driveway between the winter pastures of southern Arizona and summer grazing of the Mogollon Rim Country.

Fort Whipple was established in the 1800's to provide protection for the ranchers in that region. Competition with the local Yavapais for land usage led to periodic raids. A military outpost was necessary to protect the incoming Anglo populations (Sherman 1974).

COLORADO PLATEAU

The Colorado Plateau high desert and pinyon-juniper forest include the Little Colorado and Silver Creek regions in northeast Arizona. Early human evidences include Folsom and Clovis projectile points in isolated scatters near the towns of Concho and Sanders. No faunal remains are associated with the finds believed to date as early as 11,000 B.C. Desert Culture (hunter-gatherer, 7000 B.C. – 1 A.D) traditions have been recorded in the Concho-Vernon region. These lithic scatters correlate stylistically to the Cochise Culture of southern Arizona. The Tolchaco Focus (Bartlett 1943) is a hypothesized lithic assemblage that is found along the terraces of the Little Colorado River, but no dates have been established for it (Coe and Fuller 1974).

Mogollon settlements occupied portions of the upper Little Colorado River Valley by 300 B.C. Sites include pithouse villages with associated storage cists, and (later) kivas. Brownware, redware and grayware ceramics are typically associated with these Mogollon sites. A wide array of lithic technology is evident – the inventory includes various metate types, projectile points, axes, and chipped stone knives, scrapers and borers (Martin and Plog 1973). Mogollon people as agriculturalist-hunter-gatherer groups adapted to the harsh mountain environments of eastern Arizona. Sites are usually found on valley floors, hills, and benches, mesa sides above the valley until the 11th century A.D. Archaeologists don't generally agree what happened to the Mogollon Culture in this area after 1000 A.D., but it is theorized that cultural "traits" blended with the pueblo-building Anasazi.

The Anasazi (Navajo word for "ancestors of our enemies") Culture had its beginnings around 1 A.D. in the four corners region. Early (Basketmaker) sites are found along the Little Colorado River and its major tributaries. Generally, they are in cave or pithouse situations and are non-ceramic. Artifacts consist mainly of basketry, and ground/chipped stone inventories. Surface masonry villages/house groups associated with pit structures appear after 700 A.D. Ceramics, including painted whitewares and graywares, are manufactured during this phase. By 1100 A.D. occupation is widespread along the Little Colorado, Silver Creek and their main tributaries. The village size is relatively small and the units are dispersed. Sites are associated with kivas – underground structures probably used for religious and social occasions (Martin and Plog 1973; MacGregor 1964; Coe and Fuller 1974).

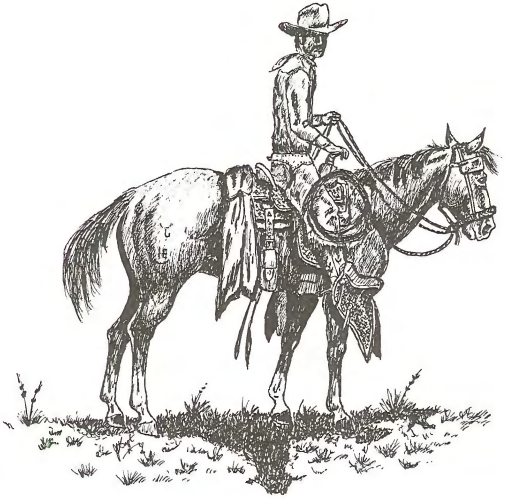
The Anasazi culture appeared to peak during 1300–1450 A.D. as large villages appear in the Winslow, Snowflake and Petrified Forest regions. These "great towns" were multi-storied villages with multiple kivas. Sites range from 1–20+ acres in size and contain 50–1000+ rooms. Various styles of polychrome ceramics, which were, prehistorically, widely traded in the southwestern United States, originated in these large villages.

The Anasazi were essentially an agriculturally based group. Abandonment of these large towns occurred during the fifteenth century A.D. Population movement trended towards the modern day Hopi and Zuni lands (Martin and Plog 1973; Coe and Fuller 1974).

As mentioned earlier, Athabascan populations (Navajo and Apache) moved into the Southwest probably during the 16th century A.D. There are no known sites in the Little Colorado-Silver Creek region, although their presence in the area have significantly influenced the lives of indigenous Indian and Anglo populations in historic times (Spicer 1962).

Spanish occupation of the Little Colorado-Silver Creek area began in 1540 with the arrival of Coronado. There are at least two known pre-1860 (colonial Spanish or Mexican) sites near Lyman Lake (Hoffman 1981).

Mexican and Mormon pioneers settled along the Little Colorado during the 1870/80's. The communities of Joseph City, Concho, and St. Johns are modern outgrowths of these early encampments. Farming and livestock raising have been the economic bases. Likewise, the Silver Creek towns of Snowflake, Taylor and Shumway were originally settled by Mormon "colonists" from Utah during the 1870's. Culture (Abandoned masonry and wood cabins and the foundation of deserted towns are all that remain (e.g. Zeniff, Brigham City) in some portions of both regions (Coe and Fuller 1974).



APPENDIX 7

EMPLOYMENT BY COUNTY - June 1984
Bureau of Land Management - Phoenix and Safford Districts

	APACHE	COCHISE	COCONINO
Non-Farm Wage & Salary	12,550	21,225	30,675
Manufacturing	700	1,550	2,625
Mining 50	350	50	
Construction	1,525	925	1,125
Transp. & Public Utilities	1,650	1,350	2,225
Wholesale & Retail Trade 1,075	4,375	7,150	
Finance, Real Estate	150	625	600
Services 3,200	2,600	7,975	
Government	4,200	9,450	8,925
TOTAL EMPLOYED	11,825	26,025	32,450
Unemployed Number			
Rate (Seasonally Adjusted)	2,125	2,075	3,100
	14.5%	7.1%	8.2%

	GILA	GRAHAM	MARICOPA
Non-Farm Wage & Salary	9,800	4,000	734,600
Manufacturing	1,375	125	121,800
Mining 1,650	100	700	
Construction	500	125	63,600
Transp. & Public Utilities	250	150	38,200
Wholesale & Retail Trade 1,725	1,150	183,800	
Finance, Real Estate	225	100	54,200
Services 1,550	700	175,600	
Government	2,525	1,550	96,700
TOTAL EMPLOYED	12,150	6,450	845,800
Unemployed Number			
Rate (Seasonally Adjusted)	1,525	625	34,300
	11.1%	8.4%	3.7%

APPENDIX 7 (Continued p. 2)
EMPLOYMENT BY COUNTY - June 1984

	MOJAVE	NAVAJO	PIMA
Non-Farm Wage & Salary	14,875	16,675	207,800
Manufacturing	2,200	1,950	28,900
Mining 250	1,075	3,800	
Construction	925	625	18,800
Transp. & Public Utilities	950	1,600	9,200
Wholesale & Retail Trade 4,325	3,100	43,900	
Finance, Real Estate	725	275	9,700
Services 2,875	4,275	48,700	
Government	2,625	3,775	44,800
TOTAL EMPLOYED	19,450	21,225	240,300
Unemployed Number			
Rate (Seasonally Adjusted)	1,750	2,850	11,000
	7.9%	11.9%	4.1%

	PINAL	SANTA CRUZ	YAVAPAI
Non-Farm Wage & Salary	21,600	7,075	16,725
Manufacturing	2,550	875	2,075
Mining 3,875	25	325	
Construction	600	225	925
Transp. & Public Utilities	975	550	875
Wholesale & Retail Trade 3,750	2,775	4,600	
Finance, Real Estate	725	225	725
Services 2,100	1,050	3,250	
Government	7,025	1,350	3,950
TOTAL EMPLOYED	25,575	7,050	27,900
Unemployed Number			
Rate (Seasonally Adjusted)	3,150	1,325	2,125
	10.4%	14.8%	7.4%

APPENDIX 7 (Continued p. 3)
EMPLOYMENT BY COUNTY - June 1984

	COUNTY TOTAL
Non-Farm Wage & Salary	1,097,600
Manufacturing	166,725
Mining	12,250
Construction	89,900
Transp. & Public Utilities	57,975
Wholesale & Retail Trade	261,725
Finance, Real Estate	68,275
Services	253,875
Government	186,875
TOTAL EMPLOYED	1,282,200
Unemployed Number	
Rate (Seasonally Adjusted)	65,960

Source: Arizona Statistical Review, Valley National Bank of Arizona, 1984

APPENDIX 8

REPRESENTATIVE RANCH BUDGETS* -- COLORADO PLATEAU
Bureau of Land Management - Phoenix and Safford Districts

Production	SMALL SIZE RANCH CLASS -- 38 COWS TYPICAL* Quantity	Weight	Price (CWT)	Value	Value/Cow
Steer Calves	14	420	$65.67	$3,861	$ 99.00
Heifer Calves	8	365	56.00	1,635	41.92
Cull Cows	4	875	37.71	1,650	42.31
TOTAL GROSS REVENUE				$7,146	$183.23

Cash Costs	Units	Number of Units	Price	Value	Value/Cow
BLM Grazing	AUMs	102	$1.86	$ 190	$ 4.87
Private Grazing	AUMs	251	0.0	0	0.0
Public Grazing - State	AUMs	151	1.02	154	3.95
Salt & Mineral	CWT	15	4.88	73	1.87
Veterinary Medicine	$	234	1.00	234	6.00
Trucking	$	74	1.00	74	1.90
Marketing	$	220	1.00	220	5.64
Hired Labor	HRS	249	4.82	1,200	30.77
Machinery (Fuel & Lube)				609	15.62
Machinery Repair				234	6.00
Equipment Repair				146	3.74
Interest on Operating Capital				232	5.95
Total Cash Costs				$3,366	$86.31
Net Revenue				$3,780	$96.92
Family Labor				2,164	55.49
Net Income				$1,616	$41.43

APPENDIX 8 (Continued p. 2)
REPRESENTATIVE RANCH BUDGETS* -- COLORADO PLATEAU

MEDIUM SIZE RANCH CLASS -- 151 COWS TYPICAL*					
Production	Quantity	Weight	Price (CWT)	Value	Value/Cow
Steer Calves	54	420	$65.67	$14,894	$ 98.64
Heifer Calves	31	365	56.00	6,336	41.96
Cull Cows	16	875	37.71	5,279	34.96
TOTAL GROSS REVENUE				$26,509	$175.56

Cash Costs	Units	Number of Units	Price	Value	Value/Cow
BLM Grazing	AUMs	182	$1.86	$ 339	$ 2.25
Private Grazing	AUMs	972	0.0	0	0.0
State Grazing	AUMs	790	1.02	806	5.34
Salt & Mineral	CWT	49	4.88	239	1.58
Veterinary Medicine	$	440	1.00	440	2.91
Trucking	$	60	1.00	60	.40
Marketing	$	461	1.00	461	3.05
Hired Labor	HRS	1,100	4.82	5,302	35.11
Machinery (Fuel & Lube)				1,036	6.86
Machinery Repair				412	2.73
Equipment (Fuel & Lube)				80	.53
Equipment Repair				638	4.23
Interest on Operating Capital				914	6.05
Total Cash Costs				$10,727	$71.04
Net Revenue				$15,782	$104.52
Family Labor				12,000	79.47
Net Income				$3,782	$25.05

APPENDIX 8 (Continued p. 3)
REPRESENTATIVE RANCH BUDGETS* -- COLORADO PLATEAU

LARGE SIZE RANCH CLASS -- 546 COWS TYPICAL*					
Production	Quantity	Weight	Price (CWT)	Value	Value/Cow
Steer Calves	179	380	$67.00	$45,573	$83.47
Heifer Calves	98	360	56.00	19,757	36.18
Cull Cows	49	850	37.71	15,706	28.77
TOTAL GROSS REVENUE				$84,562	$148.42

Cash Costs	Units	Number of Units	Price	Value	Value/Cow
BLM Grazing	AUMs	592	$1.86	$1,101	$ 2.02
Private Grazing	AUMs	4,190	0.0	0	0.0
State Grazing	AUMs	2,202	1.02	2,246	4.11
Salt & Mineral	CWT	190	4.88	927	1.70
Veterinary Medicine	$	2,104	1.00	2,104	3.85
Trucking	$	1,387	1.00	1,387	2.54
Marketing	$	1.420	1.00	1,420	2.60
Hired Labor	HRS	4,250	4.82	20,485	37.52
Machinery (Fuel & Lube)				1,844	3.38
Machinery Repair				672	1.23
Equipment (Fuel & Lube)				87	.16
Equipment Repair				1,545	2.83
Interest on Operating Capital			0.15	4,384	8.03
Total Cash Costs				$38,204	$69.97
Net Revenue				$46,358	$78.45
Family Labor				12,600	23.08
Net Income				$33,758	$55.37

* Herd size (Small) -- 39 cows: 79 percent calf crop, 5 percent calf loss birth to weaning, 5 percent annual cow loss, 17 percent replacement rate, 14 cows per bull.
Herd size (Medium) -- 151 cows: 76 percent calf crop, 5 percent calf loss birth to weaning, 5 percent annual cow loss, 16 percent replacement rate, 14 cows per bull.
Herd size (Large) -- 546 cows: 70 percent calf crop, 6 percent calf loss birth to weaning, 4 percent annual cow loss, 15 percent replacement rate, 15 cows per bull.

SOURCE: Economic Research Services

APPENDIX 8 (Continued p. 4)
REPRESENTATIVE RANCH BUDGETS* -- BASIN AND RANGE

SMALL SIZE RANCH CLASS -- 546 COWS TYPICAL*					
Production	Quantity	Weight	Price (CWT)	Value	Value/Cow
Steer Calves	14	420	$65.67	$3,861	$101.61
Heifer Calves	8	365	56.00	1,635	43.03
Cull Cows	5	875	37.71	1,320	34.74
TOTAL GROSS REVENUE				$6,816	$179.38

Cash Costs	Units	Number of Units	Price	Value	Value/Cow
BLM Grazing	AUMs	132	$1.86	$ 246	$ 6.47
Private Grazing	AUMs	65	0.0	0	0.0
Public Grazing - State	AUMs	295	1.02	301	7.92
Salt & Mineral	CWT	15	4.88	73	1.92
Veterinary Medicine	$	234	1.00	234	6.16
Trucking	$	74	1.00	74	1.95
Marketing	$	220	1.00	220	5.79
Hired Labor	HRS	249	4.82	1,200	31.58
Machinery (Fuel & Lube)				609	16.03
Machinery Repair				234	6.16
Equipment Repair				146	3.84
Interest on Operating Capital				232	6.11
Total Cash Costs				$3,569	$93.93
Net Revenue				$3,247	$85.45
Family Labor				2,164	56.95
Net Income				$1,083	$28.50

APPENDIX 8 (Continued p. 5)
REPRESENTATIVE RANCH BUDGETS* -- BASIN AND RANGE

MEDIUM SIZE RANCH CLASS -- 131 COWS TYPICAL*					
Production	Quantity	Weight	Price (CWT)	Value	Value/Cow
Steer Calves	47	420	$65.67	$12,963	$ 98.95
Heifer Calves	27	365	56.00	5,519	42.13
Cull Cows	14	875	37.71	4,619	35.26
TOTAL GROSS REVENUE				$23,101	$176.34

Cash Costs	Units	Number of Units	Price	Value	Value/Cow
BLM Grazing	AUMs	375	$1.86	$ 698	$ 5.33
Private Grazing	AUMs	279	0.0	0	0.0
State Grazing	AUMs	1008	1.02	1,028	7.85
Salt & Mineral	CWT	49	4.88	239	1.82
Veterinary Medicine	$	440	1.00	440	3.36
Trucking	$	60	1.00	60	.46
Marketing	$	461	1.00	461	3.52
Hired Labor	HRS	1,100	4.82	5,302	40.47
Machinery (Fuel & Lube)				1,036	7.91
Machinery Repair				412	3.15
Equipment (Fuel & Lube)				80	.61
Equipment Repair				638	4.87
Interest on Operating Capital				914	6.98
Total Cash Costs				$11,308	$86.33
Net Revenue				$11,793	$ 90.01
Family Labor				12,000	91.60
Net Income				$(-207)	$(-1.59)

APPENDIX 8 (Continued p. 6)
REPRESENTATIVE RANCH BUDGETS* -- BASIN AND RANGE

	LARGE SIZE RANCH CLASS -- 504 COWS TYPICAL*				
Production	Quantity	Weight	Price (CWT)	Value	Value/Cow
Steer Calves	166	380	$67.00	$42,264	$83.86
Heifer Calves	90	360	56.00	18,144	36.00
Cull Cows	56	850	37.71	17,950	35.62
TOTAL GROSS REVENUE				$78,358	$155.48

Cash Costs	Units	Number of Units	Price	Value	Value/Cow
BLM Grazing	AUMs	582	$1.86	$1,083	$ 2.15
Private Grazing	AUMs	1,355	0.0	0	0.0
State Grazing	AUMs	4,519	1.02	4,609	9.14
Salt & Mineral	CWT	181	4.88	886	1.76
Veterinary Medicine	$	2,004	1.00	2,004	3.98
Trucking	$	1,321	1.00	1,321	2.62
Marketing	$	1.352	1.00	1,352	2.68
Hired Labor	HRS	4,048	4.82	19,511	38.71
Machinery (Fuel & Lube)				1,756	3.48
Machinery Repair				672	1.27
Equipment (Fuel & Lube)				87	.16
Equipment Repair				1,545	2.92
Interest on Operating Capital			0.15	4,384	8.28
Total Cash Costs				$38,893	$77.15
Net Revenue				$39,465	$78.45
Family Labor				12,000	23.81
Net Income				$27,465	$54.52

*Herd size (Small) -- 38 cows: 79 percent calf crop, 5 percent calf loss birth to weaning, 5 percent annual cow loss, 17 percent replacement rate, 14 cows per bull.
Herd size (Medium) -- 131 cows: 76 percent calf crop, 5 percent calf loss birth to weaning, 5 percent annual cow loss, 16 percent replacement rate, 14 cows per bull.
Herd size (Large) -- 504 cows: 70 percent calf crop, 6 percent calf loss birth to weaning, 4 percent annual cow loss, 15 percent replacement rate, 15 cows per bull.

SOURCE: Economic Research Services

APPENDIX 9

RANCH BUDGET SUMMARY

Bureau of Land Management - Phoenix and Safford Districts

Item	Small-Size Ranch		Medium-Size Ranch		Large-Size Ranch	
	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
Reduced Livestock Grazing						
Colorado Plateau						
Revenue	$ 7,146	$ 7,146	$26,500	$26,500	$84,562	$84,562
Cash Costs	3,366	3,366	10,727	10,727	38,204	38,204
Net Revenue	3,780	3,780	15,782	15,782	46,358	46,358
Less Family Labor	2,164	2,164	12,000	12,000	12,600	12,600
Net Income	1,616	1,616	3,782	3,782	33,758	33,758
Basin and Range						
Revenue	$ 6,816	$ 6,816	$22,620	$23,377	$77,071	$78,560
Cash Costs	3,569	3,569	11,241	11,353	38,737	38,848
Net Revenue	3,247	3,247	11,379	12,024	38,334	39,712
Less Family Labor	2,164	2,164	12,000	12,000	12,000	12,000
Net Income	1,083	1,083	(-621)	+24	26,334	27,712
No Grazing						
Colorado Plateau						
Revenue	$ 5,455	$ 5,455	$23,983	$23,983	$77,071	$77,071
Cash Costs	3,176	3,176	10,388	10,388	37,103	37,103
Net Revenue	2,279	2,279	13,595	13,595	39,968	39,968
Less Family Labor	2,050	2,050	12,000	12,000	12,600	12,600
Net Income	229	229	1,595	1,595	27,369	27,369
Basin and Range						
Revenue	$ 5,100	$ 5,100	$17,647	$17,647	$70,748	$70,648
Cash Costs	3,001	3,001	10,610	10,610	37,810	37,810
Net Revenue	2,099	2,099	7,037	7,037	32,938	32,838
Less Family Labor	1,972	1,972	12,000	12,000	12,000	32,939
Net Income	127	127	(-4,963)	(-4,963)	20,738	20,738

APPENDIX 9 (Continued p. 2)
RANCH BUDGET SUMMARY

Item	Small-Size Ranch		Medium-Size Ranch		Large-Size Ranch	
	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
Rangeland Improvement						
Colorado Plateau						
Revenue	$ 7,146	$ 7,146	$26,500	$26,500	$84,562	$84,562
Cash Costs	3,366	3,366	10,727	10,727	38,204	38,204
Net Revenue	3,780	3,780	15,782	15,782	46,358	46,358
Less Family Labor	2,164	2,164	12,000	12,000	12,600	12,600
Net Income	1,616	1,616	3,782	3,782	33,758	33,758
Basin and Range						
Revenue	$ 6,816	$ 6,816	$23,101	$23,377	$78,358	$78,560
Cash Costs	3,569	3,569	11,308	11,353	38,983	38,848
Net Revenue	3,247	3,247	11,793	11,793	39,465	39,712
Less Family Labor	2,164	2,164	12,000	12,000	12,000	12,000
Net Income	1,083	1,083	(-207)	+24	27,465	27,712
No Action						
Colorado Plateau						
Revenue	$ 7,146	$ 7,146	$26,500	$26,500	$84,562	$84,562
Cash Costs	3,366	3,366	10,727	10,727	38,204	38,204
Net Revenue	3,780	3,780	15,782	15,782	46,358	46,358
Less Family Labor	2,164	2,164	12,000	12,000	12,600	12,600
Net Income	1,616	1,616	3,782	3,872	33,758	33,758
Basin and Range						
Revenue	$ 6,816	$ 6,816	$23,101	$23,101	$78,354	$78,354
Cash Costs	3,569	3,569	11,308	11,308	38,893	38,893
Net Revenue	3,247	3,247	11,793	11,793	39,465	39,465
Less Family Labor	2,164	2,164	12,000	12,000	12,000	12,000
Net Income	1,083	1,083	(-207)	(-207)	27,465	27,465

APPENDIX 10

LONG TERM TREND IN RANGELAND CONDITION - BASIN AND RANGE
Bureau of Land Management - Phoenix and Safford Districts

Allotment Number	Alternative A	Alternative B	Alternative C	Alternative D	Allotment Number	Alternative A	Alternative B	Alternative C	Alternative D
5201	Improve	Improve	Improve	Improve	5226	Static	Static	Improve	Improve
5202	Static	Static	Improve	Improve	5227	Static	Static	Improve	Improve
5203	Static	Static	Improve	Improve	5228	Static	Static	Improve	Improve
5204	Static	Static	Improve	Improve	5229	Static	Static	Static	Static
5205	Static	Static	Static	Improve	5230	Static	Static	Improve	Improve
5206	Improve	Improve	Improve	Improve	5231	Static	Static	Static	Static
5207	Improve	Improve	Improve	Improve	5232	Static	Static	Improve	Improve
5208	Static	Static	Improve	Improve	5233	Static	Static	Improve	Improve
5209	Improve	Improve	Improve	Improve	5234	Static	Static	Static	Static
5210	Static	Static	Improve	Improve	5235	Decline	Decline	Improve	Improve
5211	Improve	Improve	Improve	Improve	5237	Static	Static	Static	Static
5213	Static	Static	Improve	Improve	5238	Improve	Improve	Improve	Improve
5214	Static	Static	Improve	Improve	5239	Static	Static	Improve	Improve
5215	Static	Static	Improve	Improve	5240	Static	Static	Static	Improve
5216	Decline	Decline	Improve	Improve	5241	Improve	Improve	Improve	Improve
5217	Improve	Improve	Improve	Improve	5242	Static	Static	Improve	Improve
5218	Static	Static	Static	Improve	5243	Static	Static	Improve	Improve
5219	Decline	Decline	Improve	Improve	5244	Improve	Improve	Improve	Improve
5220	Static	Static	Static	Improve	5246	Improve	Improve	Improve	Improve
5221	Improve	Improve	Improve	Improve	5247	Static	Static	Static	Improve
5222	Improve	Improve	Improve	Improve	5249	Static	Static	Static	Improve
5223	Improve	Improve	Improve	Improve	5250	Static	Static	Static	Improve
5224	Static	Static	Improve	Improve	5251	Static	Static	Improve	Improve
5225	Improve	Improve	Improve	Improve					

APPENDIX 10 (Continued p. 2)
LONG TERM TREND IN RANGELAND CONDITION - BASIN AND RANGE

Allotment Number	Alternative A	Alternative B	Alternative C	Alternative D	Allotment Number	Alternative A	Alternative B	Alternative C	Alternative D
5252	Decline	Decline	Improve	Improve	5281	Decline	Decline	Improve	Improve
5254	Improve	Improve	Improve	Improve	5284	Static	Static	Static	Improve
5255	Improve	Improve	Improve	Improve	5285	Static	Static	Static	Improve
5256	Decline	Decline	Improve	Improve	5286	Static	Static	Improve	Improve
5257	Improve	Improve	Improve	Improve	5287	Improve	Improve	Improve	Improve
5258	Static	Static	Improve	Improve	5288	Static	Static	Improve	Improve
5259	Static	Static	Improve	Improve	5290	Static	Static	Improve	Improve
5260	Static	Static	Improve	Improve	5291	Static	Static	Improve	Improve
5261	Static	Static	Improve	Improve	5292	Static	Static	Improve	Improve
5262	Static	Static	Static	Improve	5293	Static	Static	Static	Improve
5265	Static	Static	Improve	Improve	5294	Static	Static	Improve	Improve
5266	Static	Static	Static	Improve	5295	Improve	Improve	Improve	Improve
5268	Decline	Decline	Improve	Improve					
5269	Static	Static	Improve	Improve					
5271	Static	Static	Improve	Improve					
5272	Static	Static	Improve	Improve					
5273	Static	Static	Improve	Improve					
5274	Static	Static	Improve	Improve					
5275	Static	Static	Improve	Improve					
5276	Static	Static	Static	Improve					
5277	Static	Static	Improve	Improve					
5278	Static	Static	Improve	Improve					
5279	Improve	Improve	Improve	Improve					
4401	Static	Static	Improve	Improve					

APPENDIX 10 (Continued p. 3)

LONG TERM TREND IN RANGELAND CONDITION - BASIN AND RANGE

Allotment Number	Alternative A	Alternative B	Alternative C	Alternative D	Allotment Number	Alternative A	Alternative B	Alternative C	Alternative D
4402	Static	Static	Static	Improve					
4403	Static	Static	Improve	Improve					
4404	Improve	Improve	Improve	Improve					
4405	Static	Static	Improve	Improve					
4406	Improve	Improve	Improve	Improve					
4407	Improve	Improve	Improve	Improve					
4408	Improve	Improve	Improve	Improve					
4409	Improve	Improve	Improve	Improve					
4410	Improve	Improve	Improve	Improve					
4411	Improve	Improve	Improve	Improve					
4412	Improve	Improve	Improve	Improve					
4413	Improve	Improve	Improve	Improve					
4415 1/	Improve	Improve	Improve	Improve					
4416	Improve	Improve	Improve	Improve					
4418	Improve	Improve	Improve	Improve					
4419	Improve	Improve	Improve	Improve					
4420	Static	Static	Static	Improve					
4421	Improve	Improve	Improve	Improve					
6168	Improve**	Decline	Improve**	Improve					
6067	Static	Static	Static	Improve					
6032	Decline*	Decline	Improve*	Improve					

1/ Includes Allotment No. 4414

APPENDIX 10 (Continued p. 4)
LONG TERM TREND IN RANGELAND CONDITION - BASIN AND RANGE

Allotment Number	Alternative A	Alternative B	Alternative C	Alternative D	Allotment Number	Alternative A	Alternative B	Alternative C	Alternative D
6132	Static	Static	Static	Improve					
6197 2/	Static	Static	Static	Improve					
6120	Static	Static	Static	Improve					
6042 3/	Static	Static	Static	Improve					
6016	Static	Static	Static	Improve					
6060	Static	Static	Static	Improve					
6244	Static*	Static	Static*	Improve					
6111	Static	Static	Static	Improve					
6113	Static	Static	Static	Improve					
6014	Static	Static	Static	Improve					
6226	Static	Static	Static	Improve					
6097	Static	Static	Static	Improve					
6082	Static	Static	Static	Improve					
6050	Decline	Decline	Improve	Improve					
6125	Static	Static	Static	Improve					
6194 4/	Static	Static	Static	Improve					
6175	Static	Static	Static	Improve					
6162	Static	Static	Static	Improve					
6099	Static	Static	Static	Improve					
SANTANS 5/	Static	Static	Static	Improve					
6100	Static	Static	Static	Improve	6040	Static	Static	Static	Improve

* Range Condition would not improve through seeding because species used may not be a component of climax plant community.
** Improvement in range condition would be due to reductions or by AMP development not by seedings.
2/ Includes 2250 acres USFS land.
3/ Includes allotment 6251
4/ Includes allotment 6248
5/ No allotment number - not presently leased

APPENDIX 10 (Continued p. 5)

LONG TERM TREND IN RANGELAND CONDITION - BASIN AND RANGE

Allotment Number	Alternative A	Alternative B	Alternative C	Alternative D	Allotment Number	Alternative A	Alternative B	Alternative C	Alternative D
6003	Static	Static	Static	Improve	6203	Static	Static	Static	Improve
6023	Decline	Decline	Improve	Improve	6029	Static	Static	Static	Improve
6191	Static	Static	Static	Improve	6153	Static*	Static	Static*	Improve
6186	Decline	Decline	Improve	Improve	6144	Static*	Static	Static*	Improve
6198	Static	Static	Static	Improve	6083	Static*	Static	Static*	Improve
6199	Static	Static	Static	Improve	6121	Static	Static	Static	Improve
6015	Static	Static	Static	Improve	6126	Static*	Static	Static*	Improve
6137	Static	Static	Static	Static	6004	Static	Static	Static	Improve
6200	Decline	Decline	Improve	Improve	6072	Static*	Static	Static*	Improve
6030	Decline	Decline	Improve	Improve	6006	Static	Static	Static	Improve
6133	Decline	Decline	Improve	Improve	6102	Static	Static	Static	Improve
6115	Static	Static	Static	Improve	6151	Static	Static	Static	Improve
6031	Static	Static	Static	Static	6022	Static	Static	Static	Improve
6059	Decline	Decline	Improve	Improve	6025	Static	Static	Static	Improve
6119	Static	Static	Static	Improve	6068	Decline*	Decline	Improve**	Improve
6163	Static	Static	Improve	Improve	6177	Static	Static	Static	Improve
6093	Static	Static	Static	Improve	6212	Static	Static	Static	Improve
6085	Static	Static	Static	Improve	6055	Static	Static	Static	Improve
6089	Static	Static	Static	Improve	6054	Static	Static	Static	Improve
6001	Decline	Decline	Improve	Improve	6105	Static	Static	Static	Improve
6204	Static	Static	Static	Improve	6075	Decline	Decline	Improve	Improve
6039	Decline*	Decline	Improve	Improve	6020	Improve**	Decline	Improve**	Improve
6010	Static	Static	Static	Improve					
6062	Static	Static	Static	Static					

APPENDIX 10 (Continued p. 6)

LONG TERM TREND IN RANGELAND CONDITION - BASIN AND RANGE

Allotment Number	Alternative A	Alternative B	Alternative C	Alternative D	Allotment Number	Alternative A	Alternative B	Alternative C	Alternative D
6183	Improve**	Decline	Improve**	Improve					
6167	Static	Static	Static	Improve					
6122	Static	Static	Static	Improve	6161	Decline	Decline	Improve	Improve
6215	Static	Static	Static	Improve	6243	Static	Static	Static	Improve
6150	Static	Static	Static	Improve	6104	Static	Static	Static	Improve
6044	Static	Static	Static	Improve	5013 7/	Decline	Decline	Improve	Improve
6026	Static	Static	Static	Improve	6035	Static	Static	Static	Improve
6245	Static	Static	Static	Improve	6227	Static	Static	Static	Improve
6027	Static	Static	Static	Improve	6056	Static	Static	Static	Improve
6139	Static	Static	Static	Improve	6222	Static	Static	Static	Improve
6094	Decline	Decline	Improve	Improve	6109	Static	Static	Static	Improve
6201	Static	Static	Static	Improve	6142	Static	Static	Static	Improve
6229	Static	Static	Static	Improve	6021	Static	Static	Static	Improve
6181	Static	Static	Static	Improve	6045	Static	Static	Static	Improve
6057	Decline	Decline	Improve	Improve	6169	Improve	Static	Improve	Improve
6135	Decline	Decline	Improve	Improve	6246	Static	Static	Static	Improve
6213	Decline	Decline	Improve	Improve	6223	Static	Static	Static	Improve
6235	Static	Static	Static	Improve	6048	Static	Static	Static	Improve
6011	Static	Static	Static	Improve	6143	Static	Static	Static	Static
6012	Static	Static	Static	Improve	6095	Improve	Decline	Improve	Improve
6128	Static	Static	Static	Improve	6066	Static	Static	Static	Improve
6103	Improve	Decline	Improve	Improve	6147	Decline	Decline	Improve	Improve
6219	Static	Static	Static	Improve	6239	Improve	Decline	Improve	Improve
6013	Static	Static	Static	Improve	6065	Static	Static	Static	Improve

7/ Cooper Allotment - Administered by Lower Gila Resource Area

APPENDIX 10 (Continued p. 7)
LONG TERM TREND IN RANGELAND CONDITION - BASIN AND RANGE

Allotment Number	Alternative A	Alternative B	Alternative C	Alternative D	Allotment Number	Alternative A	Alternative B	Alternative C	Alternative D
6063	Static	Static	Static	Improve	6182	Static	Static	Static	Improve
6005 6/	Static	Static	Static	Improve					
6238	Static	Static	Static	Improve					
6206	Static	Static	Static	Improve					
6046	Static	Static	Static	Improve					
6002	Static	Static	Static	Improve					
6123	Static	Static	Static	Improve					
6116	Static	Static	Static	Improve					
6080	Static	Static	Static	Improve					
6008	Static	Static	Static	Improve					
6188	Static	Static	Static	Improve					
6090	Static	Static	Static	Improve					
6078	Static	Static	Static	Improve					
6174	Static	Static	Static	Improve					
6216	Static	Static	Static	Improve					
6124	Static	Static	Static	Improve					
6130	Static	Static	Static	Improve					
6118	Static	Static	Static	Improve					
6185	Static	Static	Static	Improve					
6187	Static	Static	Static	Improve					
6018	Static	Static	Static	Improve					
6041	Static	Static	Static	Improve					
6053	Static	Static	Static	Improve					
6173	Static	Static	Static	Improve					
6189	Static	Static	Static	Improve					
6220	Static	Static	Static	Improve					

6/ Also leased to Arizona Wool Producers

APPENDIX 11

LONG TERM TREND IN RANGELAND CONDITION - COLORADO PLATEAU

Bureau of Land Management - Phoenix and Safford Districts

Allotment Number	Alternative A	Alternative B	Alternative C	Alternative D	Allotment Number	Alternative A	Alternative B	Alternative C	Alternative D
6234	Static	Static	Static	Improve	6112	Static	Static	Static	Improve
6058	Static	Static	Static	Improve	6141	Static	Static	Static	Improve
6202	Static	Static	Static	Improve	6009	Static	Static	Static	Improve
6024	Static	Static	Static	Improve	6081	Static	Static	Static	Improve
6028	Static	Static	Static	Improve	6136	Decline	Decline	Improve	Improve
6036	Static	Static	Static	Improve	6160	Static	Static	Static	Improve
6230	Static	Static	Static	Improve	6232	Static	Static	Static	Improve
6076	Static	Static	Static	Improve	6070	Static	Static	Static	Improve
6224	Static	Static	Static	Improve	6190	Static	Static	Static	Improve
6088	Static	Static	Static	Improve	6155	Static	Static	Static	Improve
6061	Static	Static	Static	Improve	6134	Decline	Decline	Improve	Improve
6058	Static	Static	Static	Improve	6170	Static	Static	Static	Improve
6110	Static	Static	Static	Improve	6176	Static	Static	Static	Improve
6159	Static	Static	Static	Improve	6140	Static	Static	Static	Improve
6164	Static	Static	Static	Improve	6231	Static	Static	Static	Improve
6207	Static	Static	Static	Improve	6252	Static	Static	Static	Improve
6165	Static	Static	Static	Improve	6084	Static	Static	Static	Improve
6166	Static	Static	Static	Improve	6069	Static	Static	Static	Improve
6096	Static	Static	Static	Improve	6184	Static	Static	Static	Improve
6033	Static	Static	Static	Improve	6037	Static	Static	Static	Improve
6151	Static	Static	Static	Improve	6148	Static	Static	Static	Improve
6098	Static	Static	Static	Improve	6108	Static	Static	Static	Improve
6087	Static	Static	Static	Improve	6114	Static	Static	Static	Improve
6071	Static	Static	Static	Improve	6241	Static	Static	Static	Improve

APPENDIX 11 (Continued p. 2)
LONG TERM TREND IN RANGELAND CONDITION - COLORADO PLATEAU

Allotment Number	Alternative A	Alternative B	Alternative C	Alternative C	Allotment Number	Alternative A	Alternative B	Alternative C	Alternative D
6214	Static	Static	Static	Improve	6195	Static	Static	Static	Improve
6092	Static	Static	Static	Improve	6157 9/	Static	Static	Static	Improve
6091	Static	Static	Static	Improve	6149	Static	Static	Static	Improve
6007	Static	Static	Static	Improve	6117	Static	Static	Static	Improve
6180	Static	Static	Static	Improve	6196	Static	Static	Static	Improve
6086	Static	Static	Static	Improve	6077	Static	Static	Static	Improve
6052	Static	Static	Static	Improve	6107	Static	Static	Static	Improve
6074	Static	Static	Static	Improve	6178	Static	Static	Static	Improve
6038	Static	Static	Static	Improve	6034	Static	Static	Static	Improve
6079	Static	Static	Static	Improve	6218	Static	Static	Static	Improve
6019	Static	Static	Static	Improve	6049	Static	Static	Static	Improve
6210	Static	Static	Static	Improve	6228	Static	Static	Static	Improve
6225	Static	Static	Static	Improve	0101	Static	Static	Static	Improve
6064	Static	Static	Static	Improve	0102	Static	Static	Static	Improve
6017	Static	Static	Static	Improve	0104	Static	Static	Static	Improve
6172	Static	Static	Static	Improve	0106	Static	Static	Static	Improve
6242	Static	Static	Static	Improve	0114	Static	Static	Static	Improve
6106	Static	Static	Static	Improve	0003	Static	Static	Static	Improve
6156	Static	Static	Static	Improve					
6047 8/	Static	Static	Static	Improve					
6127	Decline	Decline	Improve	Improve					
6205	Static	Static	Static	Improve					
6192	Static	Static	Static	Improve					
6073	Static	Static	Static	Improve					

8/ Includes allotments 6145, 6146, 6152, 6154 and 6250
9/ Includes allotment 6157

APPENDIX 12

CHANGES IN AUM PREFERENCE BY ALTERNATIVE - BASIN AND RANGE
Bureau of Land Management, Phoenix and Safford Districts

Allotment Number	AUMs Preference	Alternative A			Alternative B			Alternative C			Alternative D		
		Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term
4401	459	459	459	459	459	459	459	344	344	459	0	0	0
4402	30	30	30	30	30	30	30	30	30	30	0	0	0
4403	75	75	75	75	75	75	75	38	38	75	0	0	0
4404	300	300	300	300	300	300	300	225	225	300	0	0	0
4405	12	12	12	12	12	12	12	6	6	12	0	0	0
4406	223	223	223	223	223	223	223	167	167	223	0	0	0
4407	8	8	8	8	8	8	8	4	4	8	0	0	0
4408	192	192	306	439	192	192	192	192	306	439	0	0	0
4409	964	964	964	1060	964	964	964	723	723	1060	0	0	0
4410	96	96	96	96	96	96	96	96	96	96	0	0	0
4411	12	12	12	12	12	12	12	12	12	12	0	0	0
4412	63	63	63	63	63	63	63	63	63	63	0	0	0
4413	197	197	197	197	197	197	197	148	148	197	0	0	0
4415 1/	931	931	931	931	931	931	931	931	931	931	0	0	0
4416	168	168	168	168	168	168	168	168	168	168	0	0	0
4418	372	372	372	372	372	372	372	279	279	372	0	0	0
4419	12	12	12	12	12	12	12	12	12	12	0	0	0
4420	14	14	14	14	14	14	14	14	14	14	0	0	0
4421	84	84	84	84	84	84	84	42	42	84	0	0	0
5201	80	80	80	80	80	80	80	40	40	80	0	0	0
5202	8	8	8	8	8	8	8	4	4	8	0	0	0
5203	9	9	9	9	9	9	9	7	7	9	0	0	0
5204	72	72	72	72	72	72	72	54	54	72	0	0	0
5205	612	612	612	612	612	612	612	612	612	612	0	0	0
5206	11	11	11	11	11	11	11	11	11	11	0	0	0
5207	53	53	53	53	53	53	53	53	53	53	0	0	0
5208	122	122	122	122	122	122	122	61	61	122	0	0	0

APPENDIX 12 (Continued p. 2)

CHANGES IN AUM PREFERENCE BY ALTERNATIVE - BASIN AND RANGE

Allotment Number	AUMs Preference	Alternative A			Alternative B			Alternative C			Alternative D		
		Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term
5209	58	58	58	58	58	58	58	44	44	58	0	0	0
5210	24	24	24	24	24	24	24	24	24	24	0	0	0
5211	219	219	219	219	219	219	219	164	164	219	0	0	0
5213	92	92	92	92	92	92	92	92	92	92	0	0	0
5214	27	27	27	27	27	27	27	14	14	27	0	0	0
5215	7	7	7	7	7	7	7	4	4	7	0	0	0
5216	15	15	15	15	25	15	15	11	11	15	0	0	0
5217	213	213	213	213	213	213	213	160	160	213	0	0	0
5218	113	113	113	113	113	113	113	113	113	113	0	0	0
5219	24	24	24	24	24	24	24	12	12	24	0	0	0
5220	3	3	3	3	3	3	3	3	3	3	0	0	0
5221	48	48	48	48	48	48	48	48	48	48	0	0	0
5222	22	22	22	22	22	22	22	11	11	22	0	0	0
5223	12	12	12	12	12	12	12	12	12	12	0	0	0
5224	20	20	20	20	20	20	20	10	10	20	0	0	0
5225	60	60	60	60	60	60	60	30	30	60	0	0	0
5226	105	105	105	105	105	105	105	53	53	105	0	0	0
5227	636	636	636	636	636	636	636	318	318	636	0	0	0
5228	126	126	126	126	126	126	126	126	126	126	0	0	0
5229	12	12	12	12	12	12	12	6	6	12	0	0	0
5230	72	72	72	72	72	72	72	54	54	72	0	0	0
5231	17	17	17	17	17	17	17	17	17	17	0	0	0
5232	127	127	127	127	127	127	127	64	64	127	0	0	0
5233	42	42	42	42	42	42	42	21	21	42	0	0	0
5234	9	9	9	9	9	9	9	9	9	9	0	0	0
5235	131	131	131	131	131	131	131	98	98	131	0	0	0
5237	14	14	14	14	14	14	14	14	14	14	0	0	0
5238	39	39	39	39	39	39	39	39	39	39	0	0	0
5239	24	24	24	24	24	24	24	12	12	24	0	0	0
5240	18	18	18	18	18	18	18	18	18	18	0	0	0

APPENDIX 12 (Continued p. 3)
CHANGES IN AUM PREFERENCE BY ALTERNATIVE - BASIN AND RANGE

Allotment Number	AUMs Preference	Alternative A			Alternative B			Alternative C			Alternative D		
		Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term
5241	16	16	16	16	16	16	16	16	16	16	0	0	0
5242	176	176	176	176	176	176	176	88	88	176	0	0	0
5243	75	75	75	75	75	75	75	56	56	75	0	0	0
5244	64	64	64	64	64	64	64	64	64	64	0	0	0
5246	12	12	12	12	12	12	12	12	12	12	0	0	0
5247	15	15	15	15	15	15	15	15	15	15	0	0	0
5249	70	70	70	70	70	70	70	70	70	70	0	0	0
5250	5	5	5	5	5	5	5	5	5	5	0	0	0
5251	84	84	84	84	84	84	84	42	42	84	0	0	0
5252	1080	1080	1080	1080	1080	1080	1080	540	540	1080	0	0	0
5257	768	768	768	768	768	768	768	569	569	768	0	0	0
5258	228	228	228	228	228	228	228	114	114	228	0	0	0
5259	37	37	37	37	37	37	37	19	19	37	0	0	0
5260	96	96	96	96	96	96	96	72	72	96	0	0	0
5261	84	84	84	84	84	84	84	42	42	84	0	0	0
5262	31	31	31	31	31	31	31	31	31	31	0	0	0
5265	384	384	384	384	384	384	384	192	192	384	0	0	0
5266	15	15	15	15	15	15	15	15	15	15	0	0	0
5268	36	36	36	36	36	36	36	18	18	36	0	0	0
5269	15	15	15	15	15	15	15	15	15	15	0	0	0
5271	126	126	126	126	126	126	126	95	95	126	0	0	0
5254	257	257	257	257	257	257	257	257	257	275	0	0	0
5255	22	22	22	22	22	22	22	11	11	22	0	0	0
5256	9	9	9	9	9	9	9	5	5	9	0	0	0
5272	12	12	12	12	12	12	12	8	8	12	0	0	0
5273	80	80	80	80	80	80	80	60	60	80	0	0	0
5274	99	99	99	99	99	99	99	50	50	99	0	0	0
5275	49	49	49	49	49	49	49	25	25	49	0	0	0
5276	54	54	54	54	54	54	54	54	54	54	0	0	0
5277	156	156	156	156	156	156	156	117	117	156	0	0	0

APPENDIX 12 (Continued p. 4)
CHANGES IN AUM PREFERENCE BY ALTERNATIVE - BASIN AND RANGE

Allotment Number	AUMs Preference	Alternative A			Alternative B			Alternative C			Alternative D		
		Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term
5278	104	104	104	104	104	104	104	52	52	104	0	0	0
5279	56	56	56	56	56	56	56	56	56	56	0	0	0
5281	108	108	108	108	108	108	108	108	108	108	0	0	0
5284	204	204	204	224	204	204	204	102	102	224	0	0	0
5285	7	7	7	7	7	7	7	4	4	7	0	0	0
5286	19	19	19	19	19	19	19	19	19	19	0	0	0
5287	24	24	24	24	24	24	24	24	24	24	0	0	0
5288	12	12	12	12	12	12	12	6	6	12	0	0	0
5290	24	24	24	24	24	24	24	24	24	24	0	0	0
5291	51	51	51	51	51	51	51	26	26	51	0	0	0
5292	65	65	65	65	65	65	65	49	49	65	0	0	0
5293	24	24	24	24	24	24	24	12	12	24	0	0	0
5294	216	216	216	216	216	216	216	216	216	216	0	0	0
5295	84	84	84	84	84	84	84	42	42	84	0	0	0
6168	3060	3060	3128	3502	3060	3060	3060	1530	1598	3502	0	0	0
6067	1668	1668	1668	1668	1668	1668	1668	1668	1668	1668	0	0	0
6032	588	588	634	680	588	588	588	441	487	680	0	0	0
6132	564	564	564	564	564	564	564	564	564	564	0	0	0
6197 2/	2964	2964	2964	2964	2964	2964	2964	2964	2964	2964	0	0	0
6120	2256	2256	2256	2256	2256	2256	2256	2256	2256	2256	0	0	0
6042 3/	1464	1464	1464	1464	1464	1464	1464	1464	1464	1464	0	0	0
6016	718	718	718	718	718	718	718	718	718	718	0	0	0
6060	108	108	108	108	108	108	108	108	108	108	0	0	0
6244	1428	1428	1524	1620	1428	1428	1428	1428	1524	1620	0	0	0
6111	1224	1224	1224	1224	1224	1224	1224	1224	1224	1224	0	0	0
6113	168	168	168	168	168	168	168	168	168	168	0	0	0
6014	324	324	324	324	324	324	324	324	324	324	0	0	0
6226	12	12	12	12	12	12	12	12	12	12	0	0	0
6097	36	36	36	36	36	36	36	36	36	36	0	0	0
6082	300	300	300	300	300	300	300	300	300	300	0	0	0

APPENDIX 12 (Continued p. 5)
CHANGES IN AUM PREFERENCE BY ALTERNATIVE - BASIN AND RANGE

Allotment Number	AUMs Preference	Alternative A			Alternative B			Alternative C			Alternative D		
		Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term
6050	94	94	94	94	94	94	94	71	71	94	0	0	0
6125	792	792	792	792	792	792	792	792	792	792	0	0	0
6194 4/	0	0	0	0	0	0	0	0	0	0	0	0	0
6175	156	156	156	156	156	156	156	156	156	156	0	0	0
6162	324	324	324	324	324	324	324	324	324	324	0	0	0
6099	120	120	120	120	120	120	120	120	120	120	0	0	0
SANTANS 5/	0	0	0	0	0	0	0	0	0	0	0	0	0
6100	144	144	144	144	144	144	144	144	144	144	0	0	0
6003	324	324	324	324	324	324	324	324	324	324	0	0	0
6023	336	336	336	336	336	336	336	168	168	336	0	0	0
6191	120	120	120	120	120	120	120	120	120	120	0	0	0
6186	780	780	780	780	780	780	780	585	585	780	0	0	0
6198	252	252	252	252	252	252	252	252	252	252	0	0	0
6199	96	96	96	96	96	96	96	96	96	96	0	0	0
6015	72	72	72	72	72	72	72	72	72	72	0	0	0
6137	84	84	84	84	84	84	84	84	84	84	0	0	0
6200	33	33	33	33	33	33	16	16	16	33	0	0	0
6030	119	119	119	119	119	119	119	59	59	119	0	0	0
6122	167	167	167	167	167	167	167	83	83	167	0	0	0
6155	24	24	24	24	24	24	24	24	24	24	0	0	0
6031	36	36	36	36	36	36	36	36	36	36	0	0	0
6059	197	197	197	197	197	197	197	98	98	197	0	0	0
6119	408	408	408	408	408	408	408	408	408	408	0	0	0
6163	84	84	84	84	84	84	84	63	63	84	0	0	0
6093	384	384	384	384	384	384	384	384	384	384	0	0	0
6085	84	84	84	84	84	84	84	84	84	84	0	0	0
6089	240	240	240	240	240	240	240	240	240	240	0	0	0
6001	560	560	560	560	560	560	560	280	280	560	0	0	0
6204	72	72	72	72	72	72	72	72	72	72	0	0	0
6040	432	432	432	432	432	432	432	432	432	432	0	0	0

APPENDIX 12 (Continued p. 6)
CHANGES IN AUM PREFERENCE BY ALTERNATIVE - BASIN AND RANGE

Allotment Number	AUMs Preference	Alternative A			Alternative B			Alternative C			Alternative D		
		Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term
6203	375	375	375	375	375	375	375	375	375	375	0	0	0
6029	540	540	540	540	540	540	540	540	540	540	0	0	0
615	1452	1452	1600	1748	1452	1452	1452	1452	1600	1748	0	0	0
6144	2331	2331	2569	2807	2331	2331	2331	2331	2569	2807	0	0	0
6083	1020	1020	1136	1252	1020	1020	1020	1020	1136	1252	0	0	0
6121	84	84	84	84	84	84	84	84	84	84	0	0	0
6126	799	799	833	867	799	799	799	799	833	867	0	0	0
6004	119	119	119	119	119	119	119	119	119	119	0	0	0
6072	540	540	560	580	540	540	540	540	560	580	0	0	0
6006	432	432	432	432	432	432	432	432	432	432	0	0	0
6102	384	384	384	384	384	384	384	384	384	384	0	0	0
6151	0	0	0	0	0	0	0	0	0	0	0	0	0
6022	72	72	72	72	72	72	72	72	72	72	0	0	0
6025	36	36	36	36	36	36	36	36	36	36	0	0	0
6068	2259	2259	2385	2511	2259	2259	2259	1694	1820	2511	0	0	0
6177	18	18	18	18	18	18	18	18	18	18	0	0	0
6212	0	0	0	0	0	0	0	0	0	0	0	0	0
6055	31	31	31	31	31	31	31	31	31	31	0	0	0
6054	2	2	2	2	2	2	2	2	2	2	0	0	0
6105	12	12	12	12	12	12	12	12	12	12	0	0	0
6075	240	240	240	240	240	240	240	180	180	240	0	0	0
6020	528	528	602	729	528	528	528	264	338	729	0	0	0
6039	1488	1488	1550	1612	1488	1488	1488	1116	1178	1612	0	0	0
6010	200	200	200	200	200	200	200	200	200	200	0	0	0
6062	12	12	12	12	12	12	12	12	12	12	0	0	0
6183	1356	1356	1432	1644	1356	1356	1356	678	754	1644	0	0	0
6167	72	72	72	72	72	72	72	72	72	72	0	0	0
6122	96	96	96	96	96	96	96	96	96	96	0	0	0
6215	4104	4104	4104	4104	4104	4104	4104	4104	4104	4104	0	0	0
6150	72	72	72	72	72	72	72	72	72	72	0	0	0

APPENDIX 12 (Continued p. 7)
CHANGES IN AUM PREFERENCE BY ALTERNATIVE - BASIN AND RANGE

Allotment Number	AUMs Preference	Alternative A			Alternative B			Alternative C			Alternative D		
		Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term
6044	936	936	936	936	936	936	936	936	936	936	0	0	0
6026	1104	1104	1104	1104	1104	1104	1104	1104	1104	1104	0	0	0
6245	101	101	101	101	101	101	101	101	101	101	0	0	0
6027	158	158	158	158	158	158	158	158	158	158	0	0	0
6139	224	224	224	224	224	224	224	224	224	224	0	0	0
6094	180	180	180	180	180	180	180	90	90	180	0	0	0
6201	600	600	600	600	600	600	600	600	600	600	0	0	0
6229	12	12	12	12	12	12	12	12	12	12	0	0	0
6181	24	24	24	24	24	24	24	24	24	24	0	0	0
6057	84	84	84	84	84	84	84	42	42	84	0	0	0
6135	276	276	276	276	276	276	276	138	138	276	0	0	0
6213	66	66	66	66	66	66	66	49	49	66	0	0	0
6235	216	216	216	216	216	216	216	216	216	216	0	0	0
6011	240	240	240	240	240	240	240	240	240	240	0	0	0
6012	24	24	24	24	24	24	24	24	24	24	0	0	0
6128	1747	1747	1747	1747	1747	1747	1747	1747	1747	1747	0	0	0
6103	1824	1824	1824	2006	1824	1824	1824	1368	1368	2006	0	0	0
6219	96	96	96	96	96	96	96	96	96	96	0	0	0
6013	564	564	564	564	564	564	564	564	564	564	0	0	0
6063	504	504	504	504	504	504	504	504	504	504	0	0	0
6005 6/	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	0	0	0
6161	1992	1992	1992	1992	1992	1992	1992	1992	1992	1992	0	0	0
6243	924	924	924	924	924	924	924	924	924	924	0	0	0
6104	679	679	679	679	679	679	679	679	679	679	0	0	0
5013 7/	2220	2220	2220	2220	2220	2220	2220	1666	1666	2220	0	0	0
6035	12	12	12	12	12	12	12	12	12	12	0	0	0
6227	1068	1068	1068	1068	1068	1068	1068	1068	1068	1068	0	0	0
6056	0	0	0	0	0	0	0	0	0	0	0	0	0
6222	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	0	0	0
6109	56	56	56	56	56	56	56	56	56	56	0	0	0

APPENDIX 12 (Continued p. 8)
CHANGES IN AUM PREFERENCE BY ALTERNATIVE - BASIN AND RANGE

Allotment Number	AUMs Preference	Alternative A			Alternative B			Alternative C			Alternative D		
		Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term
6142	252	252	252	252	252	252	252	252	252	252	0	0	0
6021	60	60	60	60	60	60	60	60	60	60	0	0	0
6045	240	240	240	240	240	240	240	240	240	240	0	0	0
6169	322	322	322	354	322	322	322	322	322	354	0	0	0
6246	96	96	96	96	96	96	96	96	96	96	0	0	0
6223	1032	1032	1032	1032	1032	1032	1032	1032	1032	1032	0	0	0
6048	48	48	48	48	48	48	48	48	48	48	0	0	0
6143	75	75	75	75	75	75	75	75	75	75	0	0	0
6095	1570	1570	1570	1727	1570	1570	1570	1177	1177	1727	0	0	0
6066	36	36	36	36	36	36	36	36	36	36	0	0	0
6147	12	12	12	12	12	12	12	6	6	12	0	0	0
6239	1941	1941	2011	2275	1941	1941	1941	970	1040	2275	0	0	0
6065	408	408	408	408	408	408	408	408	408	408	0	0	0
6182	12	12	12	12	12	12	12	12	12	12	0	0	0
6238	15	15	15	15	15	15	15	15	15	15	0	0	0
6206	60	60	60	60	60	60	60	60	60	60	0	0	0
6046	12	12	12	12	12	12	12	12	12	12	0	0	0
6002	24	24	24	24	24	24	24	24	24	24	0	0	0
6123	192	192	192	192	192	192	192	192	192	192	0	0	0
6116	0	0	0	0	0	0	0	0	0	0	0	0	0
6080	48	48	48	48	48	48	48	48	48	48	0	0	0
6008	12	12	12	12	12	12	12	12	12	12	0	0	0
6188	12	12	12	12	12	12	12	12	12	12	0	0	0
6090	6	6	6	6	6	6	6	6	6	6	0	0	0
6078	84	84	84	84	84	84	84	84	84	84	0	0	0
6174	0	0	0	0	0	0	0	0	0	0	0	0	0
6216	24	24	24	24	24	24	24	24	24	24	0	0	0
6124	36	36	36	36	36	36	36	36	36	36	0	0	0
6130	24	24	24	24	24	24	24	24	24	24	0	0	0
6118	48	48	48	48	48	48	48	48	48	48	0	0	0

APPENDIX 12 (Continued p. 9)
CHANGES IN AUM PREFERENCE BY ALTERNATIVE - BASIN AND RANGE

Allotment Number	AUMs Preference	Alternative A			Alternative B			Alternative C			Alternative D		
		Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term
6185	12	12	12	12	12	12	12	12	12	12	0	0	0
6187	48	48	48	48	48	48	48	48	48	48	0	0	0
6018	42	42	42	42	42	42	42	42	42	42	0	0	0
6041	0	0	0	0	0	0	0	0	0	0	0	0	0
6053	24	24	24	24	24	24	24	24	24	24	0	0	0
6173	0	0	0	0	0	0	0	0	0	0	0	0	0
6189	0	0	0	0	0	0	0	0	0	0	0	0	0
6220	84	84	84	84	84	84	84	84	84	84	0	0	0
BASIN AND RANGE TOTAL	80706	80706	81994	84777	80706	80706	80706	69671	70959	84477	0	0	0

1/ Includes allotment 4414
2/ Includes 2250 acres USFS land
3/ Includes allotment 6251
4/ Includes allotment 6248
5/ No allotment number - not presently leased
6/ Also leased to Arizona Wool Products
7/ Cooper Allotment - administered by Lower Gila Resource Area

APPENDIX 13
CHANGES IN AUM PREFERENCE BY ALTERNATIVE - COLORADO PLATEAU
Bureau of Land Management - Phoenix and Safford Districts

Allotment Number	AUMs Preference	Alternative A			Alternative B			Alternative C			Alternative D		
		Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term
6234	120	120	120	120	120	120	120	120	120	120	0	0	0
6058	648	648	648	648	648	648	648	648	648	648	0	0	0
6202	12	12	12	12	12	12	12	12	12	12	0	0	0
6024	24	24	24	24	24	24	24	24	24	24	0	0	0
6028	60	60	60	60	60	60	60	60	60	60	0	0	0
6036	324	324	324	324	324	324	324	324	324	324	0	0	0
6230	491	491	491	491	491	491	491	491	491	491	0	0	0
6076	132	132	132	132	132	132	132	132	132	132	0	0	0
6224	84	84	84	84	84	84	84	84	84	83	0	0	0
6088	120	120	120	120	120	120	120	120	120	120	0	0	0
6061	624	624	624	624	624	624	624	624	624	624	0	0	0
6158	1008	1008	1008	1008	1008	1008	1008	1008	1008	1008	0	0	0
6110	1488	1488	1488	1488	1488	1488	1488	1488	1488	1488	0	0	0
6159	600	600	600	600	600	600	600	600	600	600	0	0	0
6164	24	24	24	24	24	24	24	24	24	24	0	0	0
6207	48	48	48	48	48	48	48	48	48	48	0	0	0
6165	36	36	36	36	36	36	36	36	36	36	0	0	0
6166	45	45	45	45	45	45	45	45	45	45	0	0	0
6096	12	12	12	12	12	12	12	12	12	12	0	0	0
6033	216	216	216	216	216	216	216	216	216	216	0	0	0
6051	780	780	780	780	780	780	780	780	780	780	0	0	0
6098	12	12	12	12	12	12	12	12	12	12	0	0	0
6087	432	432	432	432	432	432	432	432	432	432	0	0	0
6071	276	276	276	276	276	276	276	276	276	276	0	0	0

APPENDIX 13 (Continued p. 2)
CHANGES IN AUM PREFERENCE BY ALTERNATIVE - COLORADO PLATEAU

Allotment Number	AUMs Preference	Alternative A			Alternative B			Alternative C			Alternative D		
		Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term
6112	60	60	60	60	60	60	60	60	60	60	0	0	0
6141	48	48	48	48	48	48	48	48	48	48	0	0	0
6009	98	98	98	98	98	98	98	98	98	98	0	0	0
6081	192	192	192	192	192	192	192	192	192	192	0	0	0
6136	360	360	360	360	360	360	360	270	270	360	0	0	0
6160	120	120	120	120	120	120	120	120	120	120	0	0	0
6232	140	140	140	140	140	140	140	140	140	140	0	0	0
6070	84	84	84	84	84	84	84	84	84	84	0	0	0
6190	168	168	168	168	168	168	168	168	168	168	0	0	0
6155	756	756	756	756	756	756	756	756	756	756	0	0	0
6134	288	288	288	288	288	288	288	288	288	288	0	0	0
6170	660	660	660	660	660	660	660	660	660	660	0	0	0
6176	276	276	276	276	276	276	276	276	276	276	0	0	0
6140	696	696	696	696	696	696	696	696	696	696	0	0	0
6231	72	72	72	72	72	72	72	72	72	72	0	0	0
6252	214	214	214	214	214	214	214	214	214	214	0	0	0
6084	14	14	14	14	14	14	14	14	14	14	0	0	0
6069	36	36	36	36	36	36	36	36	36	36	0	0	0
6184	408	408	408	408	408	408	408	408	408	408	0	0	0
6037	444	444	444	444	444	444	444	444	444	444	0	0	0
6148	420	420	420	420	420	420	420	420	420	420	0	0	0
6108	156	156	156	156	156	156	156	156	156	156	0	0	0
6114	180	180	180	180	180	180	180	180	180	180	0	0	0
6241	1116	1116	1116	1116	1116	1116	1116	1116	1116	1116	0	0	0

APPENDIX 13 (Continued p. 3)
CHANGES IN AUM PREFERENCE BY ALTERNATIVE - COLORADO PLATEAU

Allotment Number	AUMs Preference	Alternative A			Alternative B			Alternative C			Alternative D		
		Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term
6214	198	198	198	198	198	198	198	198	198	198	0	0	0
6092	36	36	36	36	36	36	36	36	36	36	0	0	0
6091	180	180	180	180	180	180	180	180	180	180	0	0	0
6007	600	600	600	600	600	600	600	600	600	600	0	0	0
6180	660	660	660	660	660	660	660	660	660	660	0	0	0
6086	108	108	108	108	108	108	108	108	108	108	0	0	0
6052	456	456	456	456	456	456	456	456	456	456	0	0	0
6074	480	480	480	480	480	480	480	480	480	480	0	0	0
6038	24	24	24	24	24	24	24	24	24	24	0	0	0
6079	12	12	12	12	12	12	12	12	12	12	0	0	0
6019	72	72	72	72	72	72	72	72	72	72	0	0	0
6210	12	12	12	12	12	12	12	12	12	12	0	0	0
6225	24	24	24	24	24	24	24	24	24	24	0	0	0
6064	2364	2364	2364	2364	2364	2364	2364	2364	2364	2364	0	0	0
6017	60	60	60	60	60	60	60	60	60	60	0	0	0
6172	60	60	60	60	60	60	60	60	60	60	0	0	0
6242	408	408	408	408	408	408	408	408	408	4008	0	0	0
6106	744	744	744	744	744	744	744	744	744	744	0	0	0
6156	2796	2796	2796	2796	2796	2796	2796	2796	2796	2796	0	0	0
6047 8/	1416	1416	1416	1416	1416	1416	1416	1416	1416	1416	0	0	0
6127	924	924	924	924	924	924	924	693	693	924	0	0	0
6205	336	336	336	336	336	336	336	336	336	336	0	0	0
6192	72	72	72	72	72	72	72	72	72	72	0	0	0
6073	756	756	756	756	756	756	756	756	756	756	0	0	0

8/ Includes allotments 6145, 6146, 6152, 6154 and 6250

APPENDIX 13 (Continued p. 4)
CHANGES IN AUM PREFERENCE BY ALTERNATIVE - COLORADO PLATEAU

Allotment Number	AUMs Preference	Alternative A			Alternative B			Alternative C			Alternative D		
		Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term	Initial	Short Term	Long Term
6195	1932	1932	1932	1932	1932	1932	1932	1932	1932	1932	0	0	0
6157 9/	1884	1884	1884	1884	1884	1884	1884	1884	1884	1884	0	0	0
6149	36	36	36	36	36	36	36	36	36	36	0	0	0
6117	3	3	3	3	3	3	3	3	3	3	0	0	0
6196	5	5	5	5	5	5	5	5	5	5	0	0	0
6077	24	24	24	24	24	24	24	24	24	24	0	0	0
6107	24	24	24	24	24	24	24	24	24	24	0	0	0
6178	168	168	168	168	168	168	168	168	168	168	0	0	0
6034	36	36	36	36	36	36	36	36	36	36	0	0	0
6218	24	24	24	24	24	24	24	24	24	24	0	0	0
6049	12	12	12	12	12	12	12	12	12	12	0	0	0
6228	84	84	84	84	84	84	84	84	84	84	0	0	0
0101	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	0	0	0
0102	192	192	192	192	192	192	192	192	192	192	0	0	0
0104	240	240	240	240	240	240	240	240	240	240	0	0	0
0106	5	5	5	5	5	5	5	5	5	5	0	0	0
0114	12	12	12	12	12	12	12	12	12	12	0	0	0
0003	12	12	12	12	12	12	12	12	12	12	0	0	0
COLORADO PLATEAU TOTAL	33313	33313	33313	33313	33313	33313	33313	32992	32992	33313	0	0	0

9/ Includes allotment 6157

GLOSSARY, REFERENCES AND INDEX

ABBREVIATIONS

The following abbreviations are used in this EIS. Those representing terms are defined in the glossary.

ACEC	area of critical environmental concern
AG&FD	Arizona Game and Fish Department
AMP	allotment management plan
AUM	animal unit month
BLM	Bureau of Land Management
EIS	environmental impact statement
FWS	Fish and Wildlife Service
HMA	herd management area
HMAP	herd management area plan
HMP	habitat management plan
MFP	management framework plan
PMOA	programmatic memorandum of agreement
ORV	off-road vehicle
SCS	Soil Conservation Service
SEP	social-economic profile
SHPO	State Historic Preservation Officer
SLD	Arizona State Land Department
SSF	soil surface factor
TDS	total dissolved solids
URA	unit resource analysis
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
VRM	visual resource management
WHIP	Wildlife Habitat Improvement Potential
WSA	wilderness study area

GLOSSARY

ANNUAL PLANT. A plant that completes its life cycle and dies in 1 year or less (Range term Glossary Committee, 1974).

ASSOCIATION, PLANT. Plant community named according to the dominant vegetation.

BAJADA. A long, sloping plain at the base of a mountain.

BOSQUE. A dense, forest-like stand of either primarily mesquite (*Prosopsis* spp.) or salt cedar (*Tamarix* sp) or both.

BROWSE. The tender shoots, twigs and leaves of trees, shrubs and woody vinesoften used as food by cattle, deer, elk and other animals.

CANDIDATE SPECIES. Species of plants and animals under study by FWS to determine the appropriateness for listing as threatened or endangered.

CLIMAX. The highest ecological development of a plant community capable of perpetuation under the prevailing climate and soil conditions.

COLOR. One of the four basic elements of visual resources, color is a phenomenon of light or visual perception that enables one to distinguish between otherwise identical objects, a hue as contrasted with black, white or gray. As perceived in the landscape, color is usually most predominant in the vegetation but may be expressed in the soil, rocks, or water and may vary which time of day, time of year and weather. (See Form, Line and Texture.)

COMMUNITY, PLANT. Naturally occurring group of different plants living together in a certain environment and interacting with each other.

CRITICAL WILDLIFE HABITAT. That part of the habitat of a federally protected wildlife species that is essential to its survival and perpetuation.

CRUCIAL WILDLIFE HABITAT. That part of the habitat of a wildlife species that is essential to its survival and perpetuation as a population.

CULTURAL RESOURCE INVENTORY CLASSES:

Class I - library, archival and literature research with consultation to identify known cultural resources.

Class II - a field inventory of an area, systematically designed to provide a predictive model of nature and distribution of the cultural resources in the area.

Class III - An intensive field search of all surface-evident cultural resources for an entire area.

CULTURAL PROPERTY (site). A physical locatio+ of past human activities or events. Sites vary in size, ranging from the location of a single cultural resource object to a cluster of cultural resource structures with associated objects and features.

CULTURAL RESOURCES. Those fragile and nonrenewable remains of human activity, occupation, or endeavor, reflected in districts, sites, structures, buildings, artifacts, ruins, works of art, architecture, and natural features, which were of importance in human events. These resources consist of (1) physical remains, (2) areas where significant human events occurred - even though evidence of the event no longer remains and (3) the environment immediately surrounding the actual resource.

ECOTONE. A transition line or strip of vegetation between two communities, having characteristics of both kinds of neighboring vegetation as well as characteristics of own (Soil Conservation Society of America, 1970).

EDGE EFFECT. The result of the presence of two adjoining communities on the kinds and numbers of animals in the immediate vicinity. The area between the two communities will provide more favorable habitat than either community by itself.

ENDANGERED SPECIES. Any plant or animal species in danger of extinction throughout all or a significant portion of its range. This definition excludes species of insects that the Secretary of the Interior determines to be pests and whose protection under the Endangered

Species Act of 1973 would present an overwhelming and overriding risk to man.

ENVIRONMENTAL IMPACT STATEMENT (EIS). An analytical document developed for use by decisionmakers to weigh the environmental consequences of a potential decision. An EIS should accurately portray potential impacts on the human environment of a particular course of action and its possible alternatives.

EXOTIC. A species that has evolved in a geographic location other than the EIS area.

EXCLOSURE. A small area set aside and protected from grazing either to preserve representative areas in excellent range condition or to allow observation of succession on depleted rangeland without grazing (Rangeland Reference Area Committee 1975).

FLOODPLAIN. Nearly flat plain along the course of a stream that is naturally subject to flooding at high water.

FORB. An herbaceous plant that is not a grass, sedge, or rush (Soil Conservation Society of America 1970).

FORM. One of the four basic elements of visual resources, form is generally considered to be the mass or shape of an object. It is most strongly expressed in the shape of the land surface. Form is usually the result of erosion, but it may also be reflected in the shape of the openings or changes in vegetation or in the structures on the landscape (See Color, Line and Texture.)

HABITAT. A specific set of physical conditions that surround the single species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover and living space.

HABITAT MANAGEMENT PLAN (HMP). A written and officially approved plan for a specific geographical area of public land that identifies wildlife habitat and related objectives, establishes the sequence of actions for achieving objectives and outlines procedures for evaluating accomplishments.

IMPRINTING. See Land Imprinter.

INTERIM MANAGEMENT POLICY (IMP). BLM's guidelines for managing lands under wilderness, review so as not to impair their suitability for preservation as wilderness. The IMP will apply to these lands until Congress determines whether or not they are to be wilderness.

INTERMITTENT. A stream which flows up to six months out of the year. Differs from ephemeral in maintaining a flow after flashflooding has ceased.

INTERDISCIPLINARY APPROACH. Specialists from each resource work together on a problem.

LAND IMPRINTER. A mechanical device that makes angular depressions (through downward acting forces) in the soil surface without soil inversion.

LINE. One of the four basis elements of visual resources, line in the natural landscape is usually the result of an abrupt contrast in form, texture or color. Lines may be found as ridges, skylines, structures, as changes in vegetation types or as individual trees or branches. (See Color, Form and Texture.)

MANAGEMENT FRAMEWORK PLAN (MFP). A public land use plan that provides a set of goals, objectives and constraints for a specific planning area. This plan guides the development of detailed plans for the management of each resource in the planning area.

NATIVE. A species that has evolved in the EIS geographic area or has moved into the area without the aid of man.

OFF-ROAD VEHICLE (ORV). Any motorized vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland or other natural terrain, excluding (1) any registered motorboat, (2) any fire, military, emergency, or law enforcement vehicle when used for emergencies and any combat or combat support vehicle when used for national defense and (3) any vehicle whose use is expressly authorized by the respective agency head under a permit, lease, license or contract.

PALEONTOLOGICAL RESOURCES. Organic remains of plants and animals (fossils) preserved in primarily sedimentary rock formations.

PERENNIAL PLANT. A plant that has a life cycle of three or more years (Range Term Glossary Committee 1974).

PERENNIAL STREAM. A stream that flows throughout the year.

PREY BASE. The kinds and numbers of animals a predator uses as food.

PUBLIC LAND. Federal lands administered by the Bureau of Land Management.

RIPARIAN. Situated on or pertaining to the bank of a river, stream, or other body of water. Riparian is normally used to refer to the plants of all types that grow along streams or around springs.

SAVORY GRAZING METHOD (Holistic Grazing Method). A method of grazing manage ment featuring intense, concentrated grazing for short periods of time after which the livestock are moved to another pasture.

SCOPING. An early and open process for determining the scope of issue to be addressed in an EIS and for identifying the significant issues related to a proposed action. Scoping may involve public meetings, field interviews with representatives of agencies and interest groups, discussions with resource specialists and managers, and written comments in response to news release, direct mailings and articles about the proposed action and scoping meetings.

SENSITIVE SPECIES. Species whose populations are consistently small and widely dispersed, or whose ranges are restricted to a few localities, such that any appreciable reduction in numbers, habitat availability, or habitat condition might lead toward extinction. Sensitive species also include species rare in one locality (such as Arizona) but abundant elsewhere.

SHRUB. A relatively low-growing, much branched, many-stemmed woody perennial plant.

STEER OPERATION. A seasonal livestock operation in which a herd of weened steers and heifers are grazed from three to nine months and then sold to feedlots or as breeding stock. Also called yearling operation.

SUCCESSION. An orderly process of biotic community development that involves changes in species, structure and community processes with time. It is reasonably directional and therefore predictable. Secondary succession is this process occurring after disturbance.

SUCCULENTS. A general term for cacti and other plants that take up and store water to sustain them through periods of drought.

TEXTURE. One of the four basic elements of visual resources, texture is the result of the size, shape and placement of parts; their uniformity and the distance from which they are observed. As perceived in the landscape, texture is usually the result of vegetation patterns but may also result from erosion patterns in rocks or soil. (See Line, Form and Color.)

THREATENED SPECIES. Any animal or plant species likely to become endangered within the foreseeable future throughout all or a significant part of its range. See Endangered Species.

VISUAL RESOURCE MANAGEMENT (VRM) CLASSES. Classification containing specific objectives for maintaining or enhancing visual resources, including the kinds of structures and modifications acceptable to meet established visual goals.

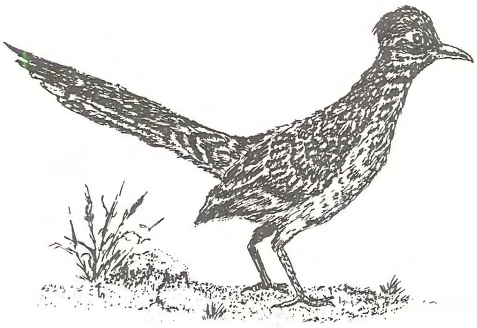
WILDERNESS. An uncultivated, uninhabited and usually roadless area set aside for preservation of natural conditions. According to Section 2(c) of the Wilderness Act of 1964, "A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an

area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the force of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value."

WILDERNESS AREA. An area formally designated by Congress as part of the National Wilderness Preservation System.

WILDERNESS STUDY AREA (WSA). A roadless area or island that has been inventoried and found to have wilderness characteristics as described in section 603 of the *Federal Land Policy and Management Act* and section 2(c) of the *Wilderness Act of 1964.*

WILDLIFE. All species of aquatic, marine, avian and terrestrial animals, both native and exotic, normally found in a wild state. Feral horses and burros are excluded.



BIBLIOGRAPHY

Amerind Foundation. 1985. Personal Communication (Carol Kriebell, Survey Supervisor, Willcox Playa Project).

Arizona Game and Fish Department. 1960. *About Quail and Quail Hunting*. By Steve Gallizioli.

Arizona Game and Fish Department. Phoenix. 1956. *The Desert Bighorn Sheep in Arizona*. By J.P. Russo.

Arizona Game and Fish Department. Phoenix. 1970. *Scaled Quail Habitat Evaluation*. Completion Report. By D.E. Brown.

Arizona Game and Fish Department. Phoenix. 1980a. *Big Game Strategic Plans 1980-1985*.

Arizona Game and Fish Department. Phoenix. 1980b. Personal Communication with Bill Silvey.

Arizona Game and Fish Department. Phoenix. 1982a. *Small Game Strategic Plans 1980-1985*.

Arizona Game and Fish Department. Phoenix. 1982b. "Critical Habitat Designation on Arizona State Lands in Region V." Memo.

Arizona State Museum. 1979. See U.S. Department of Interior - Bureau of Land Management. Safford.

Bartlett, Katherine. 1943. "A Primitive Stone Industry of the Little Colorado Valley, Arizona." *American Antiquity*. Vol. 8(3)-266-268.

Berry, Claudia F. and William J. Marmaduke. 1982. See U.S. Department of Interior - Bureau of Reclamation.

Berry, Kristin H. 1978. "Livestock Grazing and the Desert Tortoise." *The Desert Tortoise Council 1978*: Proceedings of 1978 Symposium. 136-156.

Brown, D.E. 1970. See Arizona Game and Fish Department.

Brown, D.E. and D.H. Ellis. 1984. See U.S. Department of Interior - Fish and Wildlife Service.

Brown, et al. 1980. See U.S. Department of Agriculture - Forest Service.

Brunson, et al. 1984a. See U.S. Department of Interior - Bureau of Land Management, Phoenix.

Coe, Carol A., and Steven L. Fuller. 1975c. See U.S. Department of Interior - Bureau of Land Management, Phoenix.

Debowski, Sharon S. and Gordon L. Fritz. 1974c. See U.S. Department of Interior - Bureau of Land Management, Phoenix.

Dittert, Alfred E. 1976. See U.S. Army Corps of Engineers.

Dodd, Norris. 1984. See U.S. Department of Interior - Bureau of Land Management, Safford.

Doelle, William and Gordon L. Fritz. 1975d. See U.S. Department of Interior - Bureau of Land Management.

Fuller, Steven L. 1974d. See U.S. Department of Interior - Bureau of Land Management, Phoenix.

Gallizioli, Steve. 1960. See Arizona Game and Fish Department.

Gumerman, George S., Carol S. Weed and John Hanson. 1976. *Adaptive Strategies in a Biological and Cultural Transition Zone: The Central Arizona Ecotone Project (An Interim Report)*. Carbondale: University Museum - Southern Illinois University.

Haury, Emil W. 1976. *The Hohokams: Desert Farmers and Craftsmen. Excavations at Snaketown 1964-1965*. Tucson: University of Arizona Press.

Helvie, J.B. 1971. "Bighorns and Fences." *Desert Bighorn Sheep Transactions*. 15: 53-62.

Henderson, T. Kathleen and James B. Rodgers. 1979. *Archaeological Investigations in the Cave Creek Area, Maricopa County, South-Central Arizona*. Anthropological Research Papers No. 17. Tempe: Arizona State University.

Hoffman, Charle; Rs A. 1981. "Little Colorado River Multiple Resource Area." Flagstaff: Department of Anthropology, Northern Arizona University.

Hungerford, C.R. 1960. *Factors Affecting the Breeding of Gambel's Quail (Lophorty gambelii) in Arizona*. Ann Arbor Michigan: Michigan University Press.

Jahn, L.R. and J.B. Trefethen. 1972. "Placing Channel Modification in Perspective." in *Watersheds in Transition*. Proceedings of a symposium sponsored by the American Water Resources Association and Colorado State University. pp. 15-21. Fort Collins: Colorado State University.

Jennings, Jesse D. 1964. "The Desert West" in *Prehistoric Man in the New World*. J.D. Jennings and Edward Norbeck (eds.) pp. 149-174. Chicago: University of Chicago Press.

Jeter, Marvin. 1977. *Archaeology in Copper Basin, Yavapai County, Arizona*. Anthropological Research Paper No. 11. Tempe: Arizona State University.

Jones, K.B. 1980. See U.S. Department of Interior - Bureau of Land Management, Phoenix.

Jones, K.B. 1981a. See U.S. Department of Interior - Bureau of Land Management, Phoenix.

Kelly, Isabel T., James Officer and Emil Haury. 1978. *The Hodges Ruin: A Hohokam Community in the Tucson Basin*. Tucson: University of Arizona Anthropological Papers 30.

Kelly W.A. 1960. "Bighorn Sheep Management Recommendations for the State of Arizona." *Desert Bighorn Sheep Transitions*. 4:41-44.

Kuchler, A.W. and R.W. Bailey. 1978. See U.S. Department of Agriculture - Forest Service.

Lindsay, Everett H. 1979b. See U.S. Department of the Interior - Bureau of Land Management, Safford.

Lowe, C.H. 1964. *Arizona's Natural Environment: Landscape and Habitats*. Tucson: University of Arizona Press.

Lowe, C.H. 1976. *The Vertebrates of Arizona*. Tucson: University of Arizona Press.

Luckenbach, Roger A. 1982. See U.S. Department of Interior - Fish and Wildlife Service.

MacGregor, John C. 1965. *Southeast Archaeology*. Chicago: University of Illinois Press.

Martin, Paul S. and Fred Plog. 1973. *The Archaeology of Arizona*. Garden City: Doubleday/Natural History Press.

Millsap, B.A. 1981b. See U.S. Department of Interior - Bureau of Land Management, Denver.

Phillips, Allan, Joe Marshall and Gale Monson. 1964. *The Birds of Arizona*. Tucson: University of Arizona Press.

Plog, Fred. 1981. See U.S. Department of Agriculture - Forest Service.

Professional Analysts. 1982. See U.S. Department of Interior - Bureau of Land Management, Safford.

Roney, John. 1977. See U.S. Department of Interior - Bureau of Land Management.

Rouse, C.H. 1954. See U.S. Department of Interior - Bureau of Land Management, Phoenix.

Russo, J.P. 1956. See Arizona Game and Fish Department.

Saunders, Jeffrey J. n.d. See U.S. Department of Interior - Bureau of Land Management, Phoenix.

Sayles, E.B. and Ernest Arteus. 1941. *The Cochise Culture*. Medallion Papers, 29.

Selle, Michael. In progress. See U.S. Department of Interior - Bureau of Land Management, Safford.

Sheppard, George. 1981. See U.S. Department of Interior - Bureau of Land Management, Safford.

Sherman, Peter. 1974b. See U.S. Department of Interior - Bureau of Land Management, Phoenix.

Spicer, Edward. 1961. *Cycles of Conquest.*

Terranova, Joy Lewis. 1980. See U.S. Department of Interior - Bureau of Land Management.

Thomas, J.W., C. Maser and J.E. Rodiek. 1978. "Edges in Managed Rangelands - Their Interspersion, Resulting Diversity, and its Measurement." In proposed publication Wildlife Habitats in Managed Rangelands - Southeastern Oregon. Sponsored by USDI-BLM, USDS-FS Pacific Northwest Forest and Range Experiment Station and Oregon Department of Fish and Wildlife. Available at Phoenix District.

Tootill, Elizabeth, ed. 1981. *Facts on File: Dictionary of Biology.* New York: Facts on File, Inc.

U.S. Congress. *The Federal Land Policy and Management of 1976.* Public Law 94-579. Section 603.

U.S. Congress. *The Wilderness Act of 1964.* Public Law 88-577, 788. Stat. 890, 16 U.S.C. 1131.

U.S. Department of Agriculture, Forest Service. 1980. *A Digitized Systematic Classification for Ecosystems with an Illustrated Summary of the Natural Vegetation of North America.* General Technical Report RM-73. By David E. Brown, Charles H. Lowe and Charles O. Pase.

U.S. Department of Agriculture, Forest Service. Springerville, Arizona. 1981. *Cultural Resources Overview: Little Colorado Area, Arizona.* By Fred Plog.

U.S. Department of Agriculture, Forest Service. Tucson. In preparation. Coronado National Forest Plan and Environmental Impact Statement.

U.S. Department of Agriculture, Forest Service. Washington, D.C. 1978. Ecosystems of the United States, RARE II Map B. By A.W. Kuchler and R.W. Bailey.

U.S. Army Corps of Engineers. Los Angeles. 1976. *An Archaeological Survey in Gila River Basin. New River and Phoenix City Streams. Arizona Project Area.* By Alfred E. Dittert, Arizona State University.

U.S. Department of Interior. Bureau of Land Management. 1977. "Livestock and Lithics: The Effects of Trampling." By John Roney. Available at the Phoenix District.

U.S. Department of Interior. Bureau of Land Management. Denver. 1981a. *Distribution, Ecology and Habitat Management of the Reptiles and Amphibians of the Hualapai Aquarius Planning Area. Mohave and Yavapai Counties.* Technical Note in TN 353. By K.B. Jones.

U.S. Department of Interior. Bureau of Land Management. Denver. 1981b. *Distribution Status of Falconiformes in West-Central Arizona with Notes on Ecology, Reproductive Success and Management.* Technical note TN 355. By B.A. Millsap.

U.S. Department of Interior. Bureau of Land Management. Phoenix. n.d. "Paleontological Site Inventory." By Jeffrey J. Saunders, Department of Geosciences, University of Arizona.

U.S. Department of Interior. Bureau of Land Management. Phoenix. 1954. "Antelope and Sheep Fences." By C.H. Rouse, U.S. Fish and Wildlife Service.

U.S. Department of Interior. Bureau of Land Management. Phoenix. 1974a. "Black Canyon Management Framework Plan (MFP)."

U.S. Department of Interior. Bureau of Land Management. Phoenix. 1974b. "The Archaeological Resources of the Black Canyon Planning Unit of the Bureau of Land Management." By Peter Sherman.

U.S. Department of Interior. Bureau of Land Management. Phoenix. 1974c. "The Archaeological Resources of the Middle Gila Planning Unit of the Bureau of Land Management." By Sharon S. Debowski and Gordon L. Fritz.

U.S. Department of Interior. Bureau of Land Management. Phoenix. 1974d. "The Archaeological Resources of the Bell Planning Unit of the Bureau of Land Management." By Steven L. Fuller.

U.S. Department of Interior. Bureau of Land Management. Phoenix. 1975a. "Middle Gila Management Framework Plan (MFP)."

U.S. Department of Interior. Bureau of Land Management. Phoenix. 1975b. "Silver Bell Management Framework Plan (MFP)."

U.S. Department of Interior. Bureau of Land Management. Phoenix. 1975c. "The Archaeological Resources of the Apache-Navajo Planning Unit of the Bureau of Land Management." By Carol A. Coe and Steven L. Fuller.

U.S. Department of Interior. Bureau of Land Management. Phoenix. 1975d. "The Archaeological Resources of the Central Arizona Planning Unit of the Bureau of Land Management." By William Doelle and Gordon L. Fritz.

U.S. Department of Interior. Bureau of Land Management. Phoenix. 1979. *Shivwits Proposed Grazing Management Draft Environmental Impact Statement.*

U.S. Department of Interior. Bureau of Land Management. Phoenix. 1980a. "Habitat Selection and Distribution Status of *Eumeces gilberti* in Western Arizona." By K.B. Jones. Paper presented at the April 1980 Meeting of the Southwest Association of Naturalists, Las Cruces, New Mexico. Available in Phoenix District Files.

U.S. Department of Interior. Bureau of Land Management. Phoenix. 1980b. "Paleontological Inventory of the Phoenix District Area." By Joy Lewis Terranova.

U.S. Department of Interior. Bureau of Land Management. Phoenix. 1980c. "Silver Bell-Baboquivari Habitat Management Plan (HMP)."

U.S. Department of Interior. Bureau of Land Management. Phoenix. 1981. "Middle Gila Habitat Management Plan (HMP)."

U.S. Department of Interior. Bureau of Land Management. Phoenix. 1982a. *Lower Gila North Draft Grazing Environmental Impact Statement.*

U.S. Department of Interior. Bureau of Land Management. Phoenix. 1982b. *Upper Sonoran Wilderness Environmental Impact Statement.*

U.S. Department of Interior. Bureau of Land Management. Phoenix. 1983. "Black Canyon Habitat Management Plan (HMP).

U.S. Department of Interior. Bureau of Land Management. Phoenix. 1984a. "Archaeological Survey of the Rainbow Valley Region: Navajo-Hopi Relocation Selections." By Judy Brunson, Jane Pike, Laura Bollenbach and William Gibson.

U.S. Department of Interior. Bureau of Land Management. Phoenix. 1984b. *Phoenix Draft Wilderness Environmental Impact Statement.*

U.S. Department of Interior. Bureau of Land Management. Phoenix. 1985. "Peebles Navajo Cactus Habitat Management Plan (HMP)."

U.S. Department of Interior. Bureau of Land Management. Safford, Arizona. In progress. "San Pedro Class II Survey Report." By Michael Selle.

U.S. Department of Interior. Bureau of Land Management. Safford, Arizona. 1979a. "Class I Records Search Inventory for the San Bernardino Geothermal Lease Environmental Assessment Report." By The Arizona State Museum.

U.S. Department of Interior. Bureau of Land Management. Safford, Arizona. 1979b. "Paleontological Inventory of the Safford District." By Everett H. Lindsay.

U.S. Department of Interior. Bureau of Land Management. Safford, Arizona. 1981. "Status Report of the Beaver Dam Slope Desert Tortoise Population." By George Sheppard.

U.S. Department of Interior. Bureau of Land Management. Safford, Arizona. 1981. *Final Draft Southeast Arizona Class I Inventory Unit, Vol. I.* By Professional Analysts.

U.S. Department of Interior. Bureau of Land Management. Safford, Arizona. 1984. "Effects of Cattle Grazing on Vegetation of Sympatric Desert Bighorn Range in Arizona." By Norris Dodd.

U.S. Department of Interior. Bureau of Land Management. Washington, D.C. 1979. *Interim Management Policy and Guidelines for Lands Under Wilderness Review.* Government Printing Office.

U.S. Department of Interior. Bureau of Land Management. Washington, D.C. 1981. *Wilderness Management Policy.* Government Printing Office.

U.S. Department of Interior. Bureau of Land Management. Washington, D.C. 1984. *Interim Guidance for Visual Resource Inventory.* BLM Manual 8410.

U.S. Department of Interior. Bureau of Reclamation. Phoenix. 1982. *The Middle Gila Basin: An Archaeological and Historical Overview.* By Claudia F. Berry and William S. Marmaduke.

U.S. Department of Interior. Fish and Wildlife Service. 1982. "Ecology and Management of the Desert Tortoise (*Gopherus agassizi*) in California." Pp. 1-37. in R.B. Bury, ed. *North American Tortoises: Conservation and Ecology.* USDI Fish and Wildlife Service Wildlife Research Report 12:126 pp. by Roger A. Luckenbach.

U.S. Department of Interior. Fish and Wildlife Service. Albuquerque. 1984. *Masked Bobwhite Recovery Plan.* By D.E. Brown and D.H. Ellis.

U.S. Department of Interior. Fish and Wildlife Service. Washington, D.C. 1980. "Endangered and Threatened Wildlife and Plants; Review of Plant Taxa for Listing as Endangered or Threatened Species." *Federal Register* 50 CFR Part 17, 45(242): 82480-82569.

U.S. Department of Interior. Fish and Wildlife Service. Washington, D.C. 1983. "Endangered and Threatened Wildlife and Plants; Supplement to Review of Plant Taxa for LIsting; Proposed Rule." *Federal Register* 50 CFR Part 17, 48(229): 53640-53670.

Yoakum, J.D. 1975. "Antelope and Livestock and Rangelands." *Journal of Animal Science.* 40(5):985-992.

Yoakum, J.D. 1978. "Pronghorn." In *Big Game of North America: Ecology and Management.* ed. J.L. Schmidt and D.L. Gilbert. Pp. 103-121.

Zimmerman, Dale A. 1975. Species Recorded From Guadalupe Canyon, Arizona and New Mexico 1950-1969. Western New Mexico University. Letter to BLM.

INDEX