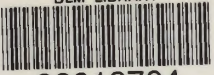


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San Juan Resource Management Plan

**DRAFT
RESOURCE MANAGEMENT PLAN
ENVIRONMENTAL IMPACT STATEMENT**

May 1986

**U.S. Department of the Interior
Bureau of Land Management
San Juan Resource Area, Moab District**

FOREWORD

American citizens, through the Federal Government, own about one-third of the land in the United States. This land is managed by various government agencies, one of which is the Bureau of Land Management (BLM). Land managed by the BLM is called "public land."

In the West, the BLM is administered in state organizations; the public lands in each state are divided into districts, and then into smaller resource areas. The San Juan Resource Area (SJRA), located in southeast Utah, manages about 1.8 million acres of public land.

The public lands are managed for multiple use--that is, for the many and varied public uses and interests. Individuals, companies, or other government agencies may want to

- use the land surface: build a road, put in a pipeline, buy land to expand agricultural areas;
- use what the land has: pan for gold, drill for oil or water, cut firewood, graze cattle;
- study the land and its resources: measure water quality, test geologic structures, excavate archaeological ruins, examine rare cactus;
- or simply enjoy the land: photograph the red cliffs, raft down the San Juan River, drive through the backcountry, or hike across the mesa tops.

The BLM managers need to know where any of these uses would conflict. Sometimes they must choose among conflicting uses or decide which resources should be produced or protected. In other cases, many different kinds of uses can occur side by side without special rules or designations. This draft resource management plan/environmental impact statement (RMP/EIS) describes resources and opportunities present in the SJRA and shows five different alternatives for managing those resources. It explains what the BLM land managers expect would happen if the public lands were managed in those different ways, and which way they believe is best.

Alternative A describes current management. Alternative B shows how the different uses would be regulated if production of minerals and livestock were emphasized. Alternative C emphasizes management for recreational opportunities; alternative D, natural ecosystems. Alternative E shows the BLM managers' preference, with most of the actions selected from the other four alternatives.

After analyzing the public comments received on this draft and making any needed changes, the BLM will publish a proposed RMP and final EIS. That document will contain the changes necessary to reflect public concerns. After it is reviewed, the final RMP will be printed, and BLM will start to use the new plan to guide the use of your public lands and resources. (You should keep this draft RMP/EIS to have a complete record.)

Your participation is an important part of BLM's planning process. While you are not being asked to "vote" for a particular alternative, the BLM needs to know how you think the public lands should be used. You may want to pay particular attention to alternative E, the agency's preferred alternative. The most effective comments will be those that present information about the basic resources described in chapter 3, or give reasons to support or challenge the conclusions presented in chapter 4.



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Moab District

May 1986

Dear Reader:

The draft resource management plan/environmental impact statement (RMP/EIS) for the San Juan Resource Area, Moab District, Bureau of Land Management (BLM) has been prepared for your review and comment. The draft RMP/EIS outlines five alternatives for managing about 1.8 million acres of public land and resources in San Juan County, Utah.

We invite you to review this document and provide us with your comments. To be most useful, your comments should focus on the merits of the alternatives analyzed, described in chapter 2; the factual basis for the description of the affected environment, found in chapter 3; or the results of the impact analysis in chapter 4.

All comments will be considered in the final EIS. Written comments will be printed in that document, along with the BLM's response. The final EIS may be printed in an abbreviated format; accordingly you may wish to keep this draft document for future reference.

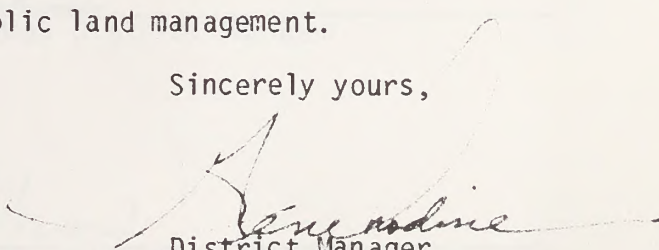
A public meeting will be held from 2 to 8 p.m., July 16, 1986 at the San Juan Resource Area office, Monticello, Utah to discuss and explain the alternatives and analysis presented in this draft RMP/EIS.

To be considered in the final EIS, written comments should be postmarked no later than Friday, September 5, 1986. Please address comments to:

Ed Scherick, San Juan Resource Area Manager
Bureau of Land Management
P.O. Box 7, Monticello UT 84535
Attn: RMP
Telephone: (801) 537-2201

Thank you for your interest in public land management.

Sincerely yours,


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FOR THE SAN JUAN RESOURCE AREA

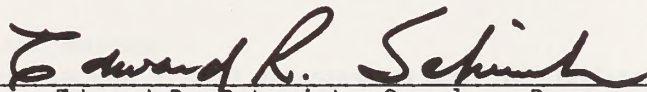
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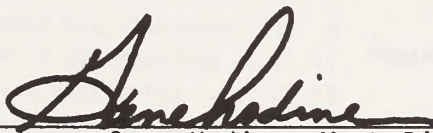
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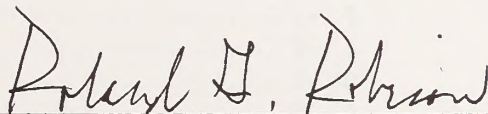
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Edward R. Scherick, San Juan Resource Area Manager



Gene Nodine, Moab District Manager



Roland G. Robison, Utah State Director

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RESOURCE MANAGEMENT PLAN/ENVIRONMENTAL IMPACT STATEMENT
FOR THE SAN JUAN RESOURCE AREA, MOAB DISTRICT, UTAH

(X) Draft

() Final

Lead Agency

U.S. Department of the Interior, Bureau of Land Management

Type of Action

Administrative (X)

Legislative ()

Abstract

This draft resource management plan and environmental impact statement addresses alternatives for managing approximately 1.8 million acres of public land administered by the San Juan Resource Area, Moab District, Bureau of Land Management, in San Juan County, Utah.

The document describes and analyzes the environmental consequences that would be expected to result from implementing each of the five alternatives. Each alternative has a different management emphasis and contains different land use prescriptions.

When the resource management plan is published in final form, it will provide comprehensive multiple use guidance for allocating and managing public resources throughout the San Juan Resource Area.

Comments

Comments on the alternatives or the analysis of impacts presented in this document are requested from the public and from federal, state and local agencies and Indian tribes. To be considered in the final document, comments should be postmarked no later than Friday, September 5, 1986. Address comments to:

Ed Scherick, San Juan Resource Area Manager
Bureau of Land Management
Box 7, Monticello UT 84535
Attention: RMP

TABLE OF CONTENTS

SUMMARY

Introduction.....	S- 1
Planning Documents.....	S- 1
Planning Issues.....	S- 1
Management Opportunities.....	S- 1
Management Common to All Alternatives..	S- 1
Alternatives Assessed.....	S- 1
Mitigation.....	S- 4
Special Designations.....	S- 4
Environmental Consequences.....	S- 4
Public Review and Comment.....	S- 13

INTRODUCTION

Purpose and Need.....	I- 1
The Planning Process.....	I- 1
The Resource Area.....	I- 10

CHAPTER 1 - PLANNING ISSUES AND CRITERIA

Overview.....	1- 1
Planning Assumptions.....	1- 1
Planning Issues.....	1- 2
Management Concerns.....	1- 6
Planning Criteria.....	1- 6

CHAPTER 2 - PLAN ALTERNATIVES

Introduction.....	2- 1
Management Guidance Common to All Alternatives.....	2- 1
Alternatives Assessed.....	2- 9
Alternatives Considered but Eliminated.....	2- 9
Detailed Description of Alternatives...	2- 11
RMP Implementation and Monitoring.....	2- 19
Comparison of Alternatives and Impacts.....	2- 50

CHAPTER 3 - AFFECTED ENVIRONMENT

Introduction.....	3- 1
Mineral Components.....	3- 1
Oil and Gas.....	3- 1
Coal.....	3- 10
Tar Sand.....	3- 17
Mineral Materials.....	3- 17

CHAPTER 3 (Concluded)

Mineral Components (Concluded)	
Locatable Minerals.....	3- 18
Other Nonenergy Leasable Minerals.....	3- 27
Biotic Components.....	3- 27
Air.....	3- 27
Soils.....	3- 28
Water.....	3- 33
Vegetation.....	3- 37
Wildlife.....	3- 41
Human Uses.....	3- 53
Grazing.....	3- 53
Cultural Resources.....	3- 58
Recreation.....	3- 66
Visual Resources.....	3- 80
Lands.....	3- 82
Economic Considerations.....	3- 87
Demographics.....	3- 91
Employment and Income.....	3- 91
Community Infrastructure.....	3- 94
Fiscal Conditions.....	3- 94
Minerals.....	3- 94
Soil and Water.....	3- 97
Livestock.....	3- 98
Recreation.....	3-100
Other Land Uses.....	3-101
Social Conditions.....	3-102

CHAPTER 4 - ENVIRONMENTAL CONSEQUENCES

Introduction.....	4- 1
Alternative A.....	4- 2
Assumptions.....	4- 7
Mineral Components.....	4- 7
Biotic Components.....	4- 10
Human Uses.....	4- 15
Economic Considerations.....	4- 19
Social Conditions.....	4- 21
Alternative B.....	4- 21
Assumptions.....	4- 21
Mineral Components.....	4- 22

CHAPTER 4 (Concluded)

Alternative B (Concluded)
 Biotic Components..... 4- 23
 Human Uses..... 4- 27
 Economic Considerations..... 4- 29
 Social Conditions..... 4- 32
 Alternative C..... 4- 32
 Assumptions..... 4- 33
 Mineral Components..... 4- 33
 Biotic Components..... 4- 36
 Human Uses..... 4- 40
 Economic Considerations..... 4- 44
 Social Conditions..... 4- 48
 Alternative D..... 4- 48
 Assumptions..... 4- 48
 Mineral Components..... 4- 49
 Biotic Components..... 4- 52
 Human Uses..... 4- 55
 Economic Considerations..... 4- 58
 Social Conditions..... 4- 61
 Alternative E..... 4- 61
 Assumptions..... 4- 61
 Mineral Components..... 4- 62
 Biotic Components..... 4- 64
 Human Uses..... 4- 68
 Economic Considerations..... 4- 72
 Social Conditions..... 4- 75

CHAPTER 5 - CONSULTATION AND COORDINATION

Overview..... 5- 1
 Consultation..... 5- 1
 Consistency with Other Plans..... 5- 2
 Coordination..... 5- 8
 Public Participation..... 5- 9
 Distribution..... 5- 10
 List of Preparers..... 5- 13

LIST OF APPENDIXES

A Mitigation Requirements for Land Use
 Activities..... A- 1
 B RMP Monitoring Plan..... A- 29
 C List of Applicable Laws..... A- 39
 D Grazing Allotment Category Criteria.... A- 47
 E Conditions and Implementation for
 ORV Use Categories..... A- 49
 F Recreation Opportunity Spectrum
 Classes..... A- 55
 G Visual Resource Management Classes.... A- 59
 H Preliminary and Potential Special
 Management Designations..... A- 61

LIST OF APPENDIXES (Concluded)

I Management Prescriptions for Special
 Designation Areas..... A- 75
 J Range Monitoring Procedures..... A- 89
 K Budget Costs of Implementing Each
 Alternative..... A- 91
 L Oil and Gas Leasing Categories..... A- 99
 M Vegetation Zones and Associations..... A-101
 N Habitat Management Plan Status..... A-105
 O Grazing Allotment Summary..... A-109
 P Grazing Allotment Management Plan
 Status..... A-121
 Q Isolated Tracts Identified for
 Disposal..... A-125
 R Economic Analysis Methodologies..... A-139
 S Comparison of Mineral Potential and
 Alternatives..... A-147
 T Ecological Condition of Grazing
 Allotments, by Alternative..... A-155
 U Management Actions, by Allotment..... A-167
 V Air Quality Standards..... A-181
 W Vegetation Impact Analysis Assumptions. A-185
 X Livestock Forage Impact Analysis
 Assumptions..... A-191
 Y Cultural Resource Impact Analysis
 Assumptions..... A-195
 Z Visual Resource Impact Analysis
 Assumptions..... A-197

GLOSSARY..... B- 1

ACRONYMS..... B- 15

LIST OF REFERENCES CITED..... B- 17

INDEX..... B- 23

LIST OF TABLES

<u>Number</u>	<u>Title</u>	<u>Page</u>
S-1	Generalized Management Zones, by Alternative.....	S- 2
I-1	Existing Land Use Plans, San Juan Resource Area.....	I- 2
I-2	Summary of Management Opportunities Identified.....	I- 6
I-3	Land Surface Administration.....	I- 17
I-4	Management of Mineral Resources...	I- 18

LIST OF TABLES (Continued)

<u>Number</u>	<u>Title</u>	<u>Page</u>
I-5	Management of Grazing and Recreation Resources.....	1- 21
1-1	Wilderness Review Areas in the San Juan Resource Area.....	1- 4
2-1	Identified Natural Succession Areas, Alternative D.....	2- 14
2-2	Alternative Management of Cultural Resources.....	2- 20
2-3	Alternative Recreation Management Areas.....	2- 49
2-4	Summary of Estimated Management Costs, by Alternative.....	2- 51
2-5	Alternative Management Objectives, by Program.....	2- 52
2-6	Special Management Designations, by Alternative.....	2- 60
2-7	Alternative Management Actions, by Program.....	2- 62
2-8	Off-Road Vehicle Designations, by Alternative.....	2- 74
2-9	Alternative Planning Decisions, by Planning Issue.....	2- 76
2-10	Summary Comparison of Impacts, by Alternative.....	2- 92
3-1	General and Specific Environmental Indicators.....	3- 2
3-2	Oil and Gas Leasing Category Areas.....	3- 4
3-3	Known Geologic Structures and Oil and Gas Field Production Statistics.....	3- 8
3-4	Areas Not Open to Mineral Entry...	3- 22
3-5	General Soil Map Units.....	3- 34
3-6	Riparian and Aquatic Habitat Areas.....	3- 50
3-7	Grazing Allotments with Potential for Special Management.....	3- 59
3-8	Cultural Resource Properties and Archaeologic Districts.....	3- 63
3-9	Proposed Cultural Resource Use Zones.....	3- 64
3-10	Recreation Opportunity Spectrum Class Criteria.....	3- 69
3-11	Recreation Opportunity Spectrum Classes, by Area.....	3- 70
3-12	1984 Recreation Visitor Use Data..	3- 72
3-13	Existing and Potential Developed Recreation Sites.....	3- 75

LIST OF TABLES (Continued)

<u>Number</u>	<u>Title</u>	<u>Page</u>
3-14	Visual Resource Management Classes	3- 81
3-15	Classifications and Segregations..	3- 88
3-16	1983 Employment for Utah and San Juan County.....	3- 92
3-17	1983 Industry Earnings for Utah and San Juan County.....	3- 93
3-18	Taxing District Revenues, by Source.....	3- 95
3-19	Local Employment and Income, by Economic Activity.....	3- 96
3-20	Sediment Removal Cost.....	3- 97
3-21	Dependency on San Juan Resource Area Forage.....	3- 99
3-22	Aggregate Revenues, Costs, Returns Herd Size, and Hired Labor.....	3- 98
3-23	Estimated Total Wildlife Use.....	3-101
4-1	Thresholds of Significance for Environmental Impacts.....	4- 3
4-2	Anticipated Changes in Ecological Condition, Alternative A.....	4- 13
4-3	Annual Sediment and Salinity Related Cost, Alternative A.....	4- 20
4-4	Anticipated Changes in Ecological Condition, Alternative B.....	4- 25
4-5	Annual Sediment and Salinity Related Cost, Alternative B.....	4- 30
4-6	Number and Degree of Livestock Operator Impacts, Alternative B...	4- 31
4-7	Aggregate Economic Impacts to Livestock Operators, Alternative B...	4- 31
4-8	Anticipated Changes in Ecological Condition, Alternative C.....	4- 37
4-9	Annual Sediment and Salinity Related Cost, Alternative C.....	4- 45
4-10	Number and Degree of Livestock Operator Impacts, Alternative C...	4- 46
4-11	Aggregate Economic Impacts to Livestock Operators, Alternative C....	4- 46
4-12	Anticipated Changes in Ecological Condition, Alternative D.....	4- 53
4-13	Annual Sediment and Salinity Related Cost, Alternative D.....	4- 58
4-14	Number and Degree of Livestock Operator Impacts, Alternative D...	4- 59
4-15	Aggregate Economic Impacts to Livestock Operators, Alternative D....	4- 59
4-16	Anticipated Changes in Ecological Condition, Alternative E.....	4- 66

LIST OF TABLES (Concluded)

<u>Number</u>	<u>Title</u>	<u>Page</u>
4-17	Annual Sediment and Salinity Related Cost, Alternative E.....	4- 72
4-18	Number and Degree of Livestock Operator Impacts, Alternative E...	4- 73
4-19	Aggregate Economic Impacts to Livestock Operators, Alternative E....	4- 73
5-1	Agencies Consulted.....	5- 3

LIST OF FIGURES

<u>Number</u>	<u>Title</u>	<u>Page</u>
S-1	Generalized Land Use Management Plan, Alternative B.....	S- 5
S-2	Generalized Land Use Management Plan, Alternative C.....	S- 7
S-3	Generalized Land Use Management Plan, Alternative D.....	S- 9
S-4	Generalized Land Use Management Plan, Alternative E.....	S- 11
I-1	Vicinity Map, San Juan Resource Area.....	I- 3
I-2	Prescribed Resource Management Planning Actions.....	I- 11
I-3	Relationship Between Planning Documents.....	I- 12
I-4	San Juan Resource Area.....	I- 13
I-5	Surface Ownership.....	I- 15
I-6	Minerals Ownership.....	I- 23
1-1	Areas Under Wilderness Review.....	1- 7
2-1	Identified Natural Succession Areas, Alternative D.....	2- 17
2-2	Special Management Designations, Alternative A.....	2- 21
2-3	Special Management Designations, Alternative B.....	2- 23
2-4	Special Management Designations, Alternative C.....	2- 25
2-5	Special Management Designations, Alternative D.....	2- 27
2-6	Special Management Designations, Alternative E.....	2- 29
2-7	Cultural and Recreation Resources Management, Alternative A.....	2- 31

LIST OF FIGURES (Concluded)

<u>Number</u>	<u>Title</u>	<u>Page</u>
2-8	Cultural and Recreation Resources Management, Alternative B.....	2- 33
2-9	Cultural and Recreation Resources Management, Alternative C.....	2- 35
2-10	Cultural and Recreation Resources Management, Alternative D.....	2- 37
2-11	Cultural and Recreation Resources Management, Alternative E.....	2- 39
2-12	Potential Land Treatments, Alternative A.....	2- 41
2-13	Potential Land Treatments, Alternative B.....	2- 43
2-14	Potential Land Treatments, Alternative C.....	2- 45
2-15	Potential Land Treatments, Alternative E.....	2- 47
3-1	Oil and Gas Leasing Categories...	3- 5
3-2	Oil and Gas Potential.....	3- 11
3-3	Geologic Formations of South-eastern Utah.....	3- 13
3-4	Favorable Coal Area.....	3- 15
3-5	Favorable Mineral Materials Areas.	3- 19
3-6	Areas Not Open to Mineral Entry...	3- 23
3-7	Favorable Locatable Minerals Areas	3- 25
3-8	Favorable Potash Area.....	3- 29
3-9	Sensitive Soil Areas.....	3- 31
3-10	Vegetation Zones and Special Use Areas.....	3- 39
3-11	Wildlife Habitat: Desert Bighorn Sheep and Antelope.....	3- 43
3-12	Wildlife Habitat: Deer and Riparian/Aquatic.....	3- 45
3-13	Habitat Management Plans.....	3- 47
3-14	Grazing Allotments.....	3- 55
3-15	Cultural Resources.....	3- 61
3-16	Recreation Opportunity Spectrum Classes.....	3- 67
3-17	Existing and Potential Recreation Management Areas.....	3- 73
3-18	Visual Resource Management Classes	3- 83
3-19	Major Transportation and Utility Rights-of-Way.....	3- 85
3-20	Classifications and Withdrawals...	3- 89

SUMMARY

INTRODUCTION

The first part of the summary discusses the general situation of the country at the present time. It mentions the political and economic conditions and the state of the population. It also touches upon the social and cultural aspects of the country.

The second part of the summary deals with the internal situation of the country. It discusses the political and economic conditions and the state of the population. It also touches upon the social and cultural aspects of the country.

CONCLUSION

The summary concludes by stating that the country is in a state of transition. It mentions the challenges and opportunities that the country faces and the role of the population in the development of the country.

REFERENCES

The summary is based on the following sources: [List of references]

SUMMARY

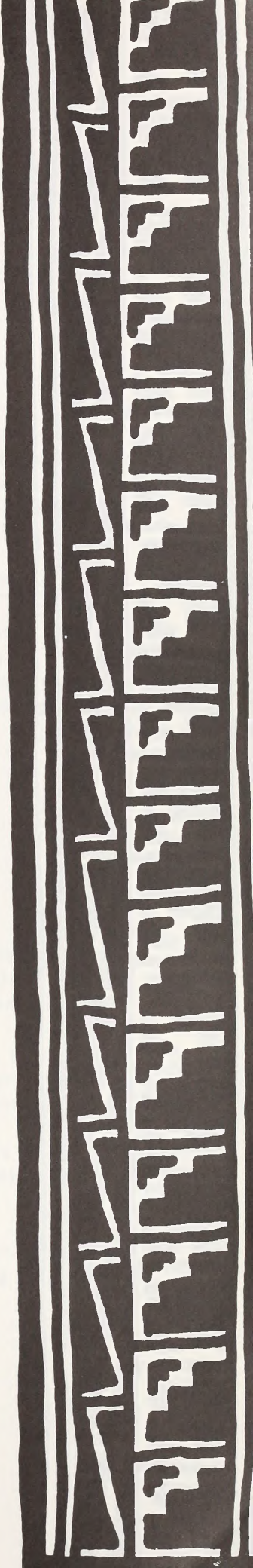
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The summary is based on the following sources: [List of references]



SUMMARY

INTRODUCTION

The San Juan Resource Management Plan (RMP) is being prepared as required by the Federal Land Policy and Management Act of 1976 (FLPMA) in accordance with the Bureau of Land Management (BLM) planning regulations (43 CFR 1600). The RMP is also being prepared to meet a court-ordered requirement for preparation of a grazing environmental impact statement (EIS) for the San Juan Resource Area (SJRA).

The RMP will guide management of all public lands and resources administered by the SJRA. The SJRA is part of the Moab District and covers the southern two-thirds of San Juan County, Utah. SJRA manages certain resources on lands administered by the U.S. Forest Service, the National Park Service, and the Bureau of Indian Affairs on the Navajo Indian reservation.

PLANNING DOCUMENTS

Five documents are prepared to document the RMP process. The preplanning analysis was completed in September 1984. The management situation analysis (MSA) was completed in September 1985. This draft EIS was prepared early in 1986. The final EIS and proposed RMP is scheduled for publication in September 1986. The final RMP is scheduled for publication in January 1987.

PLANNING ISSUES

A total of five planning issues or resource management questions were identified. They concern management of livestock; wilderness study areas if not designated as wilderness; vegetation resources; wildlife habitat; and recreation.

MANAGEMENT OPPORTUNITIES

The MSA analyzed the adequacy of current management and identified opportunities to improve management. These were either administrative changes or opportunities to be developed through the RMP/EIS.

MANAGEMENT COMMON TO ALL ALTERNATIVES

Management practices that were determined to be adequate, based on the analysis in the MSA, will not be changed. Some administrative changes will be made based on the management opportunities identified in the MSA. Together, these are management actions common to all alternatives and are considered to be part of every alternative.

ALTERNATIVES ASSESSED

The alternatives analyzed in this draft EIS present different ways of answering the questions raised by the planning issues. These answers were used to formulate specific management actions under each alternative.

Five alternative plans are considered in detail in this EIS. Each plan presents guidance for all resource programs managed by the SJRA. Except for alternative A, each plan presents generalized zones or levels of management that would be applied to all public land uses (table S-1).

Alternative A (the no action alternative for both the RMP and the grazing EIS)

- represents continuation of current management; and

TABLE S-1

Generalized Management Zones, by Alternative

Management Zone	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
Standard surface use	Standard conditions: 1,774,600 ac.	Standard conditions: 387,110 ac.	Standard conditions: 0 ac.	Standard conditions: 596,310 ac.
Limited surface use	Special conditions: 2,040 ac.	Special conditions: 680,850 ac.	Special conditions: 510,550 ac.	Special conditions: 930,900 ac.
	Surface restriction to protect: -floodplains, riparian/aquatic areas -existing land leases	Surface restrictions to protect: -big game habitat -five identified mesa tops -floodplains, riparian/aquatic areas -sensitive soils -SPM ROS class -Lockhart Basin ACEC -Alkali Ridge ACEC -North Abajo ACEC -existing land leases	Surface restrictions to protect: -floodplains, riparian/aquatic areas -sensitive soils -vegetation resources -existing land leases -Shay Canyon ACEC -most SPNM ROS class -existing land leases	Surface restrictions to protect: -floodplains, riparian/aquatic areas -sensitive soils -Cajon Pond ACEC -Alkali Ridge ACEC
	Seasonal restrictions to protect: -bighorn sheep lambing and rutting areas -antelope fawning area -deer winter range	Seasonal restrictions to protect: -bighorn sheep lambing and rutting areas -antelope fawning area -deer winter range	Seasonal restrictions to protect: -bighorn sheep lambing and rutting areas -antelope fawning area -deer winter range	

No surface occupancy	2,550 ac.	711,230 ac.	213,770 ac.	251,980 ac.
	Exclude surface disturbance to protect: -Bridger Jack Mesa RNA -Lavender Mesa RNA -developed recreation sites	Exclude surface disturbance to protect: -SPNM ROS class -P ROS class -Bridger Jack Mesa ACEC -Lavender Mesa ACEC -Grand Gulch ACEC -developed recreation sites	Exclude surface disturbance to protect: -Lockhart Basin ACEC -Alkali Ridge ACEC -Hovenweep ACEC -developed recreation sites	Exclude surface disturbance to protect: -P ROS class -Bridger Jack Mesa RNA -Lavender Mesa RNA -Grand Gulch ACEC -San Juan River SRMA, SPM ROS class -Pearson Canyon SRMA -Hovenweep NM -developed recreation sites
No grazing use	2,550 ac.	75,560 ac.	11,760 ac.	138,120 ac.
	Exclude grazing use to protect: -Bridger Jack Mesa RNA -Lavender Mesa RNA	Exclude grazing use to protect: -Floodplains, riparian/ aquatic areas -Bridger Jack Mesa RNA -Lavender Mesa ACEC -Grand Gulch (partial) -developed recreation sites	Exclude grazing use to protect: -Floodplains, riparian/ aquatic areas -Bridger Jack Mesa RNA -Lavender Mesa RNA -Grand Gulch ACEC -developed recreation sites	Exclude grazing use to protect: -upper Indian Creek riparian area -five identified mesa tops -Bridger Jack Mesa RNA -Lavender Mesa RNA -Grand Gulch ACEC (partial) -Dark Canyon ACEC -Pearson Canyon SRMA -developed recreation sites
No permanent resource use or production	No permit or lease: 0 ac.	No permit or lease: 0 ac.	No permit or lease: 1,054,870 ac.	No permit or lease: 0 ac.

To protect:
-identified natural
succession areas

NOTE: All acreages are approximate and are rounded to the nearest 10 acres.

- provides a baseline for comparing the other alternatives and the effects of their implementation.

Alternative B (figure S-1) provides for

- production of mineral resources; and
- production of forage and use of public lands for grazing;

Alternative C (figure S-2) provides for

- use of the public lands for recreation by maintaining the spectrum of recreational opportunities now present;
- production of wildlife habitat and protection of specialized wildlife habitats; and
- preservation of watershed values through protection of certain soils resources.

Alternative D (figure S-3) provides for

- preservation of natural succession of plant communities by minimizing surface disturbance, particularly in four areas;
- protection of cultural resources beyond the requirements of law; and
- increasing the extent of areas available for primitive uses.

Alternative E (the preferred alternative for both the RMP and the grazing EIS; figure S-4) provides for

- continuation of livestock grazing at current use levels;
- protecting the opportunity for primitive and semiprimitive recreational uses in certain areas;
- protection of certain wildlife habitat areas;
- preservation of watershed values through protection of certain soils resources, and
- making public lands available for the production of mineral resources.

MITIGATION

Mitigation measures were developed as part of each alternative, to alleviate the adverse effects of resource development. Under alternative A, it was assumed that existing lease conditions would be applied, and that stipulations and special conditions would be developed and applied to projects on a case-by-case basis. These standard operating procedures were used as a basis of comparison.

Special stipulations or conditions were developed for the other alternatives and are part of the alternatives as assessed in this draft EIS. Where no special stipulations were developed, it was assumed that the standard operating procedures would be applied.

Standard operating procedures and special stipulations or conditions are given in appendix A.

SPECIAL DESIGNATIONS





Special management designations were applied under different alternatives to recognize special values on public lands. Under alternative A, it was assumed that special management would continue for the Dark Canyon and Grand Gulch Primitive Areas, whether or not the actual primitive area designation remained. Special management of cultural sites named to the National Register of Historic Places would continue. Different combinations of special designations and special management were applied under all other alternatives.

ENVIRONMENTAL CONSEQUENCES

This draft EIS analyzes the impacts to the human environment that would be expected to occur by the year 2000 if management actions identified under the different alternatives were implemented.

All alternatives would meet the requirements of the National Environmental Policy Act (NEPA) and other environmental quality related laws, regulations, and policies. However, because the alternatives are quite different, each presents a result that would be environmentally preferable for different components of the human environment.

FIGURE S - 1
Generalized Land Use Management Plan, Alternative B

-  No Grazing Use (2,550 acres)
-  No Surface Occupancy (2,550 acres)
-  Limited Surface Use (2,040 acres)
-  Standard Surface Use (1,774,600 acres)

SAN JUAN RESOURCE AREA

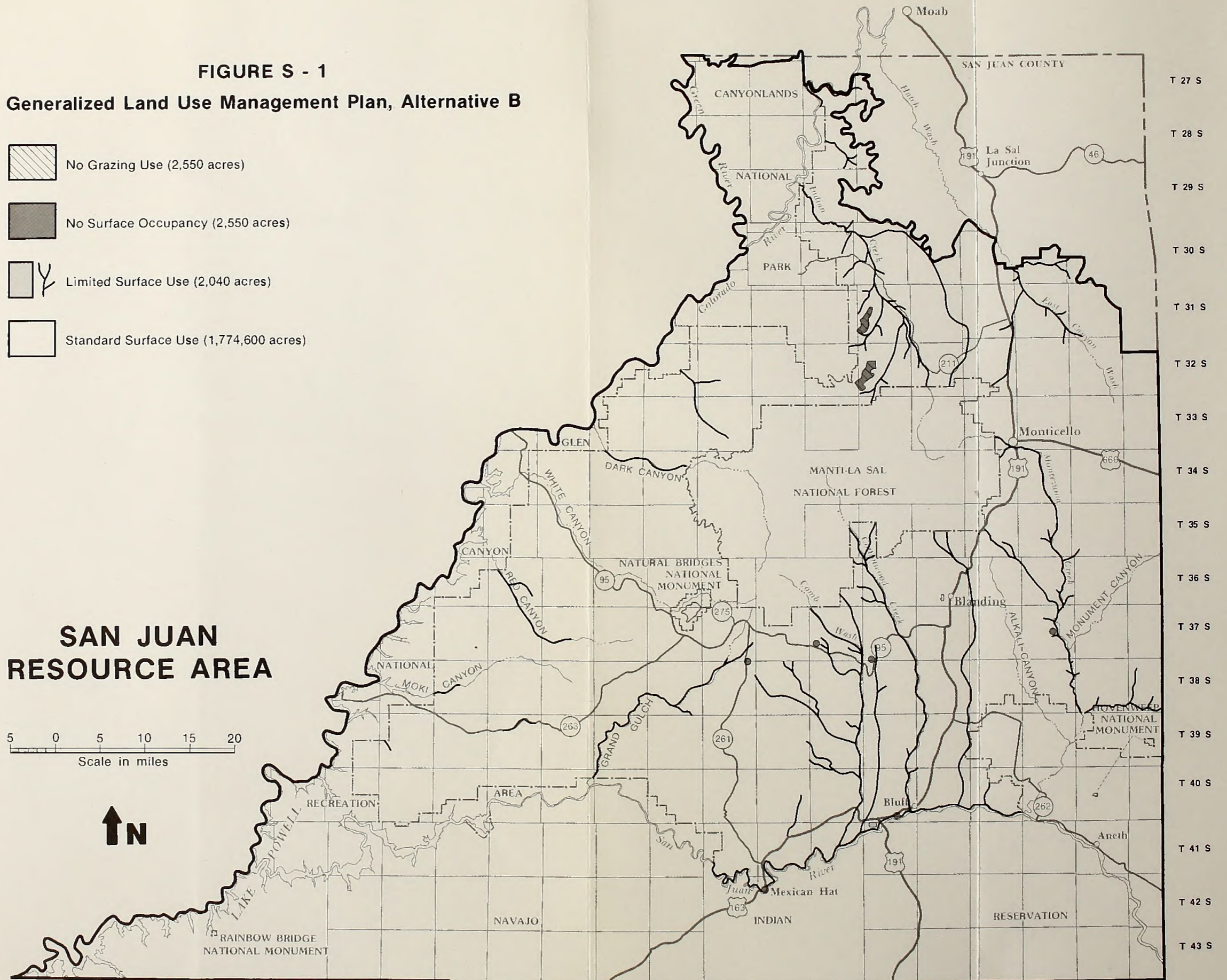
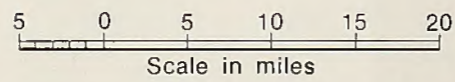


FIGURE S - 1

Generalized Land Use Management Plan, Alternative B

A R I Z O N A

C O L O R A D O






Figure 2
Geological Land Use Management Plan, Alternative 2

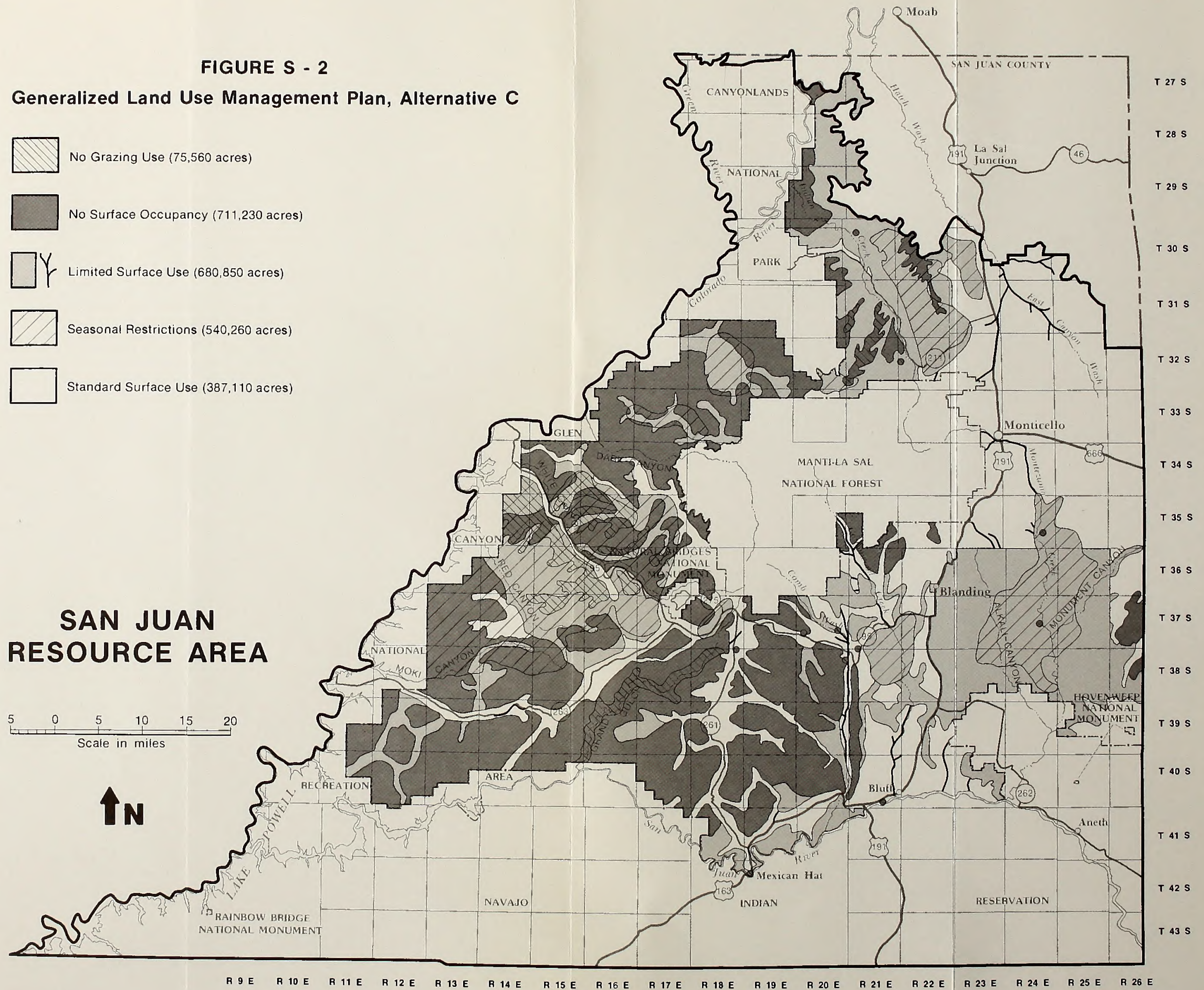


SAN JUAN
RESOURCE AREA

Figure 3
Geological Land Use Management Plan, Alternative 3

FIGURE S - 2
Generalized Land Use Management Plan, Alternative C

-  No Grazing Use (75,560 acres)
-  No Surface Occupancy (711,230 acres)
-  Limited Surface Use (680,850 acres)
-  Seasonal Restrictions (540,260 acres)
-  Standard Surface Use (387,110 acres)



**SAN JUAN
 RESOURCE AREA**

5 0 5 10 15 20
 Scale in miles



C O L O R A D O

A R I Z O N A

FIGURE S - 2
Generalized Land Use Management Plan, Alternative C



SAN JUAN
RIVER





14

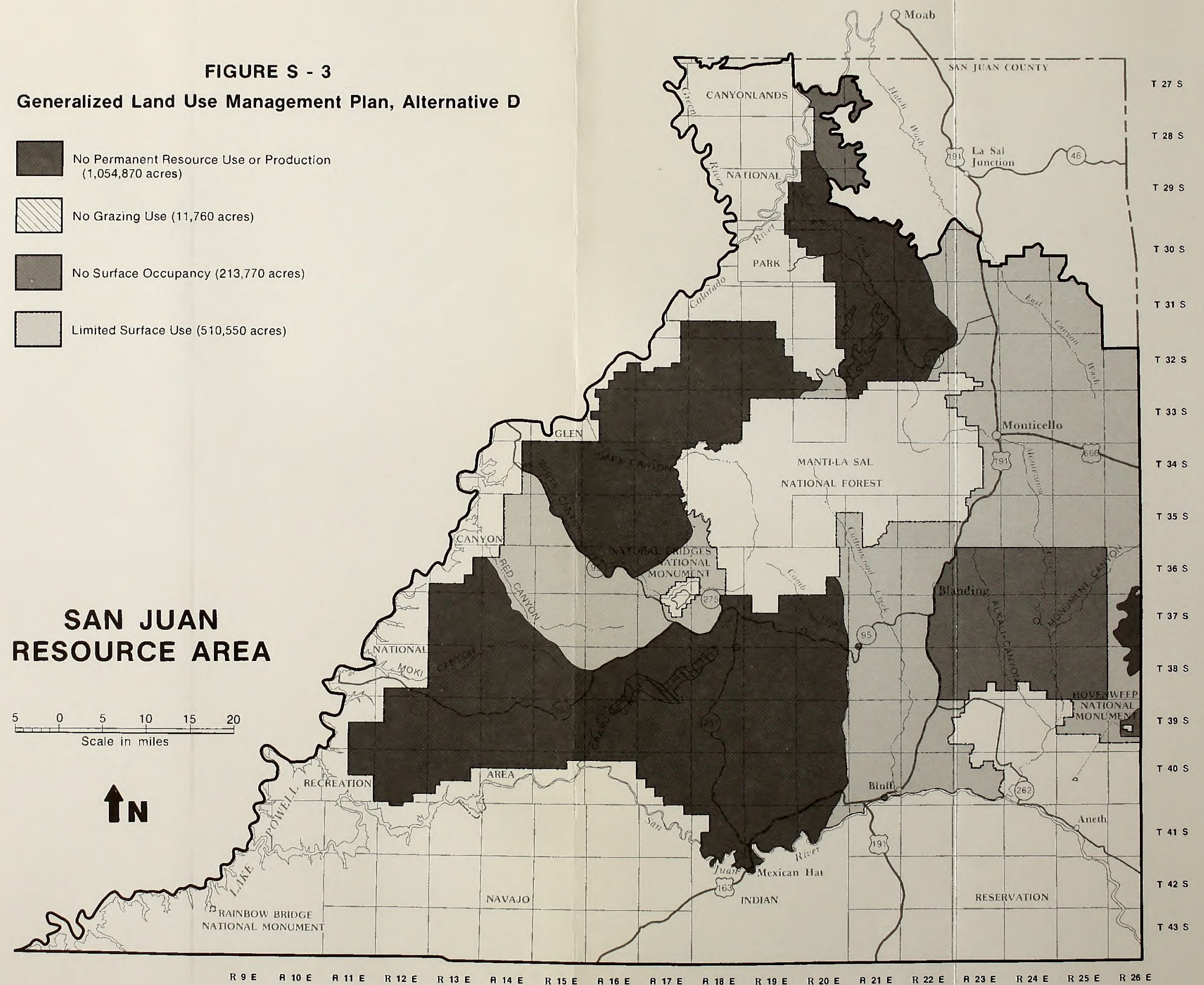
REGION A

Figure 8-2

Continued from the previous page

FIGURE S - 3
Generalized Land Use Management Plan, Alternative D

-  No Permanent Resource Use or Production (1,054,870 acres)
-  No Grazing Use (11,760 acres)
-  No Surface Occupancy (213,770 acres)
-  Limited Surface Use (510,550 acres)



**SAN JUAN
 RESOURCE AREA**

5 0 5 10 15 20
 Scale in miles



FIGURE S - 3

Generalized Land Use Management Plan, Alternative D

A R I Z O N A

C O L O R A D O






FIGURE 2-3
Geological Map of the San Juan Basin

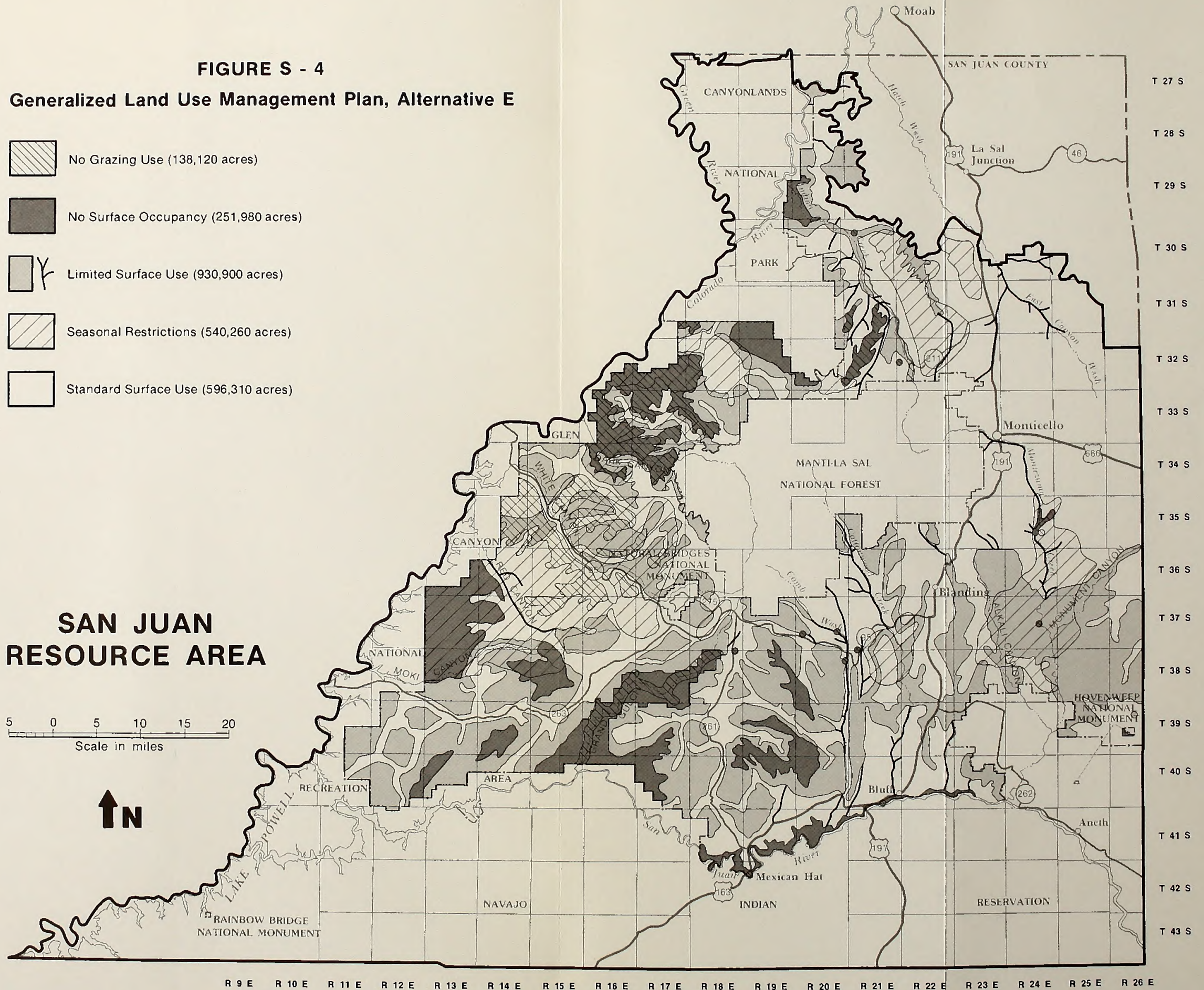


FIGURE 2-3

Geological Map of the San Juan Basin

FIGURE S - 4
Generalized Land Use Management Plan, Alternative E

-  No Grazing Use (138,120 acres)
-  No Surface Occupancy (251,980 acres)
-  Limited Surface Use (930,900 acres)
-  Seasonal Restrictions (540,260 acres)
-  Standard Surface Use (596,310 acres)



C O L O R A D O

FIGURE S - 4
Generalized Land Use Management Plan, Alternative E

A R I Z O N A

FIGURE 2 - 2

San Juan Resource Area



SAN JUAN RESOURCE AREA



FIGURE 2 - 1

San Juan Resource Area

A brief comparison of impacts from the different alternatives shows the following.

Alternative A (no action) would:

- make the most area available for minerals development and livestock use;
- provide for greatest use of woodland products;
- not change the existing economic conditions;
- be the least expensive to implement.

Alternative B would:

- favor extraction of mineral resources and livestock grazing;
- be the least restrictive to recreational off-road vehicle (ORV) use;
- result in the lowest water quality;
- offer the greatest employment and income, if coal is produced;
- offer the greatest economic benefit to livestock operators.

Alternative C would:

- favor recreational use, particularly primitive backcountry use;
- restrict minerals and livestock uses;
- provide for the highest big game populations;
- offer greatest economic benefit to recreation outfitters; and
- be expensive to implement.

Alternative D would:

- be the most restrictive to minerals and livestock use;
- be the most restrictive to ORV use;
- result in the highest water quality;

- offer the most protection for archaeological sites;
- result in the lowest rates of employment, income, and tax revenues;
- be the most expensive to implement.

Alternative E (preferred alternative) would:

- present a balance among different uses of the human environment;
- favor recreational use of the San Juan River and backcountry;
- provide for minerals uses about the same as alternative A;
- provide for a slight increase in livestock forage;
- provide for economic benefit to tour operators about the same as alternative C;
- cost slightly more to implement than alternative A.

PUBLIC REVIEW AND COMMENT

This draft EIS is being issued for formal review and comment of agencies, organizations, and individuals. The comment period will last for 90 days.

Comments should be sent to:

Area Manager Ed Scherick
San Juan Resource Area
PO Box 7
Monticello, UT 84535
ATTENTION: RMP

An open house will be held at the SJRA office on July 16, 1986 from 2 to 8 p.m., for interested parties to discuss this RMP/EIS with the BLM staff. For further information call (801) 587-2201.

Public comments will be printed in the proposed RMP and final EIS, along with the BLM's response. The proposed RMP and final EIS will

contain corrections and changes, but unless major revisions are required, the entire text will not be reprinted. Reviewers should retain this draft RMP/EIS to provide a complete record of the EIS process.

To be considered in the final EIS, comments should be postmarked by Friday, September 5, 1986.

INTRODUCTION

INTRODUCTION

The purpose of this introduction is to provide a general overview of the book. It is intended for students and teachers who are interested in the study of the history of the world. The book is divided into two main parts: the first part deals with the pre-historic period and the second part deals with the historical period. The book is written in a simple and clear style, and it is suitable for use in schools and colleges. It is hoped that this book will be of great help to the students and teachers who are studying the history of the world.

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INTRODUCTION

PURPOSE AND NEED

The purpose of the resource management plan (RMP) is to guide management of the public lands and resources in the San Juan Resource Area (SJRA) (figure I-1). Section 202 of the Federal Land Policy and Management Act of 1976 (FLPMA) directs the Secretary of the Interior to develop, maintain, and revise land use plans for management of the public lands and their resources. Accordingly, the Bureau of Land Management (BLM) is required to develop and implement an RMP for each resource area. The RMP will be reviewed at 5-year intervals and revised or amended as necessary.

The San Juan RMP is needed to replace and update the four existing management framework plans (MFPs) listed in table I-1. Land use plans are needed to provide direction to land managers and the public for responsible use of the public lands.

A second need for this plan is to meet the requirements for a site-specific grazing environmental impact statement (EIS) ordered by the United States District Court, District of Columbia, in Natural Resource Defense Council Inc. v. Morton, 388 F.Supp. 829 (1974). In Natural Resource Defense Council Inc. v. Andrus, 448 F.Supp. 802 (D.D.C. 1978) the court called for completion of all grazing EISs by 1988. The SJRA grazing EIS will be incorporated into the RMP/EIS; livestock management is identified as a required issue for impact analysis. The grazing EIS is needed to determine management of forage and other livestock needs, to provide for wise allocation of public lands and resources for grazing use.

The court-ordered grazing EIS for SJRA is scheduled for completion by September 30, 1986. Three of the four MFPs listed in table I-1 are more than 10 years old and need to be revised. Combining the grazing EIS with the RMP at this time will be more cost-effective than preparing of two separate EISs. Upon approval, the RMP (including grazing management) will be implemented in phases over a 10-year period (see appendix B).

FLPMA requires the BLM to seek public involvement at several steps in the development of the RMP. This draft affords the public an opportunity to review the thinking and rationale behind the many decisions leading to the RMP. Through public involvement it is hoped that the RMP will be sensitive to the many uses of the public land in SJRA and to the concerns of its many users.

THE PLANNING PROCESS

BLM planning is described as issue-driven, meaning that planning is undertaken to answer questions about specific land management opportunities or problems, called issues. The issues, identified at the outset of the RMP process, are posed as questions regarding use or management of the public lands.

The different ways of answering these questions serve as the alternatives considered in the EIS, and the RMP finally decided upon is shaped by the manager's answers to those questions. However, the RMP is written to provide program-specific guidance to cover management of all resources throughout the entire SJRA.

Under the planning regulations at 43 CFR 1610.4, an RMP is prepared and implemented in nine steps

TABLE I-1

Existing Land Use Plans, San Juan Resource Area


<u>Plan Name</u>	<u>Resource Area Coverage</u>	<u>Approximate BLM Acres</u>	<u>Plan Date</u>
South San Juan MFP	Southwest	^a 1,275,340	^b June 1973
Indian Creek-Beef Basin MFP	Northwest	^a 173,280	^b August 1973
Montezuma MFP	Southeast	436,790	^b November 1974
Indian Creek-Dry Valley MFP	North-central	^c 286,440	December 1977

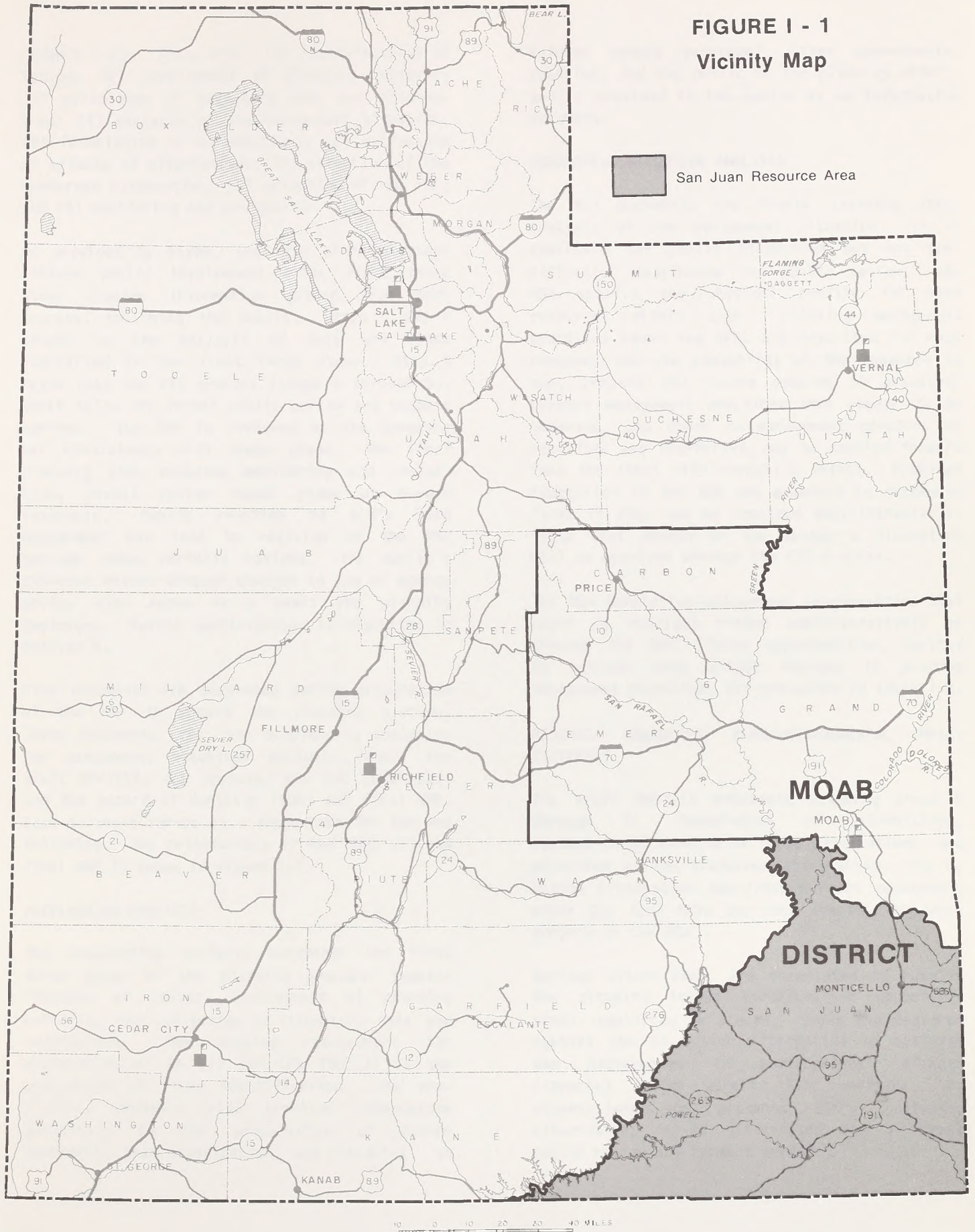
^aPredates formation of Glen Canyon National Recreation Area (NRA).

^bPredates formation of the BLM's Moab District.

^cIncludes part of Grand Resource Area, Moab District.

FIGURE I - 1
Vicinity Map

 San Juan Resource Area



(figure I-2). These are: (1) identification of issues; (2) development of planning criteria; (3) collection of inventory data and information; (4) analysis of the management situation; (5) formulation of alternatives; (6) estimation of effects of alternatives; (7) selection of the preferred alternative; (8) selection of the RMP; and (9) monitoring and evaluation.

As provided by FLPMA, the nine planning steps include public involvement. The first three steps require information gained from many sources, including the public. Steps 4 and 5 depend on the analysis of data and needs identified in the first three steps. Step 5 leads into the EIS process (steps 5 through 8), which calls for formal public review and comment periods. The RMP is reviewed by the Governor for consistency with state plans. The final planning step requires monitoring and evaluation; formal review takes place at 5-year intervals. Public reaction to BLM's land management can lead to revision of the RMP through these periodic reviews. The public's concerns voiced through changes in law or agency policy also serve as a basis for planning decisions. Public participation is discussed in chapter 5.

Five documents are completed during preparation of the RMP to record the planning process. These documents are: the preplanning analysis; the management situation analysis (MSA); the draft RMP/EIS; the proposed RMP and final EIS; and the record of decision (ROD) and final RMP. Each document serves as a foundation for the one following. The relationship of the MSA, EIS and final RMP is shown in figure I-3.

PREPLANNING ANALYSIS

The preplanning analysis documents the first three steps of the planning process: identification of issues, development of planning criteria, and collection of inventory data and information. The scoping requirement for preparation of an EIS (40 CFR 1501.7) is the equivalent of issue identification. The preplanning analysis also provides information pertaining to the preparation of future documents, team organization, and schedules. It

informs agency personnel, other governmental agencies, and the public of the planning effort, and is provided to the public as an information document.

MANAGEMENT SITUATION ANALYSIS

The MSA documents the fourth planning step: analysis of the management situation. It is available for public inspection but not specifically distributed for public review. The MSA details the physical profile for base resources within SJRA. Existing management practices under the MFPs are described for each program, and the capability of the resource to meet present and future demands is assessed. Current management practices that appear to be adequate, and where no management concerns or conflicts are identified, may be carried forward into the final plan virtually intact. Problems identified in the MSA are examined to determine first if they can be resolved administratively. Those that depend on the manager's discretion will be resolved through the EIS process.

The MSA identified management opportunities that could be resolved either administratively or through the RMP. These opportunities, revised to conform with slight changes in program management direction, are presented in table I-2.

RESOURCE MANAGEMENT PLAN/ENVIRONMENTAL IMPACT STATEMENT

The draft RMP/EIS documents planning steps 5 through 7: formulation of alternatives, estimation of effects of those alternatives, and selection of the preferred alternative. The no action alternative describes current management under the four MFPs for each specific resource program in the MSA.

Various alternatives are formulated to resolve the planning issues (problems or opportunities) identified in step 1. These are measured against the no action alternative to estimate the differences in environmental effects (impacts). The draft EIS analyzes the alternatives and presents BLM's preferred alternative; it is distributed for a formal public review and comment period.

TABLE I-2

Summary of Management Opportunities Identified

<u>Resource Management Program</u>	<u>To Be Resolved Through RMP</u>	<u>To Be Resolved Administratively</u>
4111 Oil and Gas Leasing (Public Lands)	Evaluate and adjust lands in existing oil and gas leasing categories.	Review known geologic structures (KGSS). Designate additional KGSS where appropriate.
4113 Geothermal Resources Management	Identify lands to be closed to or remain open for geothermal lease (defer until public interest in leasing develops).	None identified.
4121 Coal Leasing	Identify lands to be closed to or remain open for coal leasing. Prepare coal leasing unsuitability study (defer until public interest develops).	None identified.
4122 Tar Sand Leasing	Evaluate and adjust lands in combined hydrocarbon lease (CHL) categories.	None identified.
4131 Mineral Materials	Identify areas to be closed to or remain open for extraction of mineral materials, and areas to remain open for free use of petrified wood.	Rehabilitate existing unreclaimed abandoned sites.
4132 Mining Law Administration	Identify potential mineral withdrawals or areas not to be withdrawn from mineral entry.	Establish additional community pits. Rehabilitate existing unreclaimed abandoned uranium workings.
4133 Mineral Leasing	Identify lands to be closed to or remain open for mineral lease.	Identify and designate additional known potash leasing areas (KPLAs).
4211 Rights-of-Way	Define areas not to be used for transportation and utility corridors.	Designate transportation and utility corridors.
4212 Lands	Identify parcels for disposal and public purposes.	Propose alternative lands actions where disposal or other long-range actions are precluded. Propose alternative lands actions to resolve unauthorized use or trespass.

4220 Withdrawal Processing and Review	Identify potential withdrawals or areas not to be withdrawn.	None identified.
4311 Forest Management	Define areas for use of various forest products.	Consider alternative means to achieve land treatments to enhance aesthetic values. Consider sequential use of proposed chaining areas. Consider potential for unconventional forest products. Consider forest development projects in areas where forest products are sold. Consider adjustment of allotment boundaries.
4312 Forest Development	None identified.	
4322 Grazing Management	Adjust livestock management levels after completion of monitoring (within 5 years after RMP/EIS ROD) or in response to resource conflicts identified in the RMP. Identify allotments for development of allotment management plans (AMPs). Summarize problem areas within specific allotments in RPS, following completion of RMP. Identify, evaluate, and designate areas for special management as areas of critical environmental concern (ACECs) or research natural areas (RNAs) to protect relict plant communities.	
4331 Natural History/Cultural Resources Management	Identify, evaluate, and designate areas for special management as ACECs, national natural areas, outstanding natural areas (ONAs), RNAs, national natural landmarks, or National Register cultural properties and archaeological districts to protect areas with natural history, paleontological, or cultural resource values. Develop and implement cultural resource management plans using management prescriptions developed in the RMP.	Reorganize staffing, funding, procurement, and program emphases to enhance, protect, and preserve cultural resources. Conduct an area-wide natural history/paleontological/cultural resource inventory and mapping program. Communicate with Indian tribes to safeguard tribal sacred, religious, and cultural sites.
4332 Wilderness Management	Determine how wilderness study areas (WSAs) and instant study areas (ISAs) will be managed if not designated wilderness and dropped from the wilderness review by Congress.	None identified.

TABLE I-2 (Concluded)

Resource Management Program	To Be Resolved Through RMP	To Be Resolved Administratively
4333 Recreation Management/ Visual Resources Management	Develop and implement management plans for all SPMAs after completion of RMP, and identify areas to be maintained in each ROS class. Identify and designate additional developed recreation sites.	Reorganize staffing and funding for management of SRMAs. Monitor use and develop facilities within SRMAs.
4341 Soil, Water, and Air	Designate all of the SJRA as open, limited, or closed to off-road vehicle (ORV) use. Identify, evaluate, and approve visual resource management (VRM) classes. Identify areas that could benefit from projects aimed at improving watershed conditions, in cooperation with other resource management programs, through activity plans, AMPs, etc. developed after completion of the RMP. Identify sensitive soils or watershed areas and develop special conditions or watershed management activity plans after completion of RMP.	Support the National Park Service (NPS) study of the San Juan River under the Wild and Scenic Rivers Act. Use VRM system in project planning and design. Collect inventory data to support watershed and air quality studies.
4342 Hazardous Waste Management	None identified.	Conduct an inventory to identify hazardous waste sites, and develop means to meet agency policy regarding rehabilitation of these sites.
4351 Habitat Management (Wildlife)	Identify areas needing special protection and develop special conditions to be applied to other resource use activities. Identify, evaluate, and designate areas for special management to protect significant wildlife habitat values. Identify areas that would benefit from habitat management plans (HMPs), and develop HMP following completion of RMP.	Inspect and maintain existing wildlife facilities.

4352 Endangered Species Management

None identified.

Conduct inventories to determine and map the presence and extent of threatened and endangered (T/E) species populations and habitats.

4360 Fire Management

Identify fire suppression areas.

Conduct actions in specific areas to reduce fire hazard.

Develop action plans to set parameters for different suppression areas, after completion of RMP.

After the public comments are analyzed, the proposed RMP and final EIS will be written. The proposed RMP, which may differ from the earlier preferred alternative, will be reviewed by the Governor for consistency with state plans. The proposed RMP and final EIS will be subject to public protest through a formal procedure (explained at 43 CFR 1610.5-2).

RECORD OF DECISION/FINAL RESOURCE MANAGEMENT PLAN

To complete the documentation of the RMP/EIS, an ROD will be published with the final RMP. This completes step 8. The ROD is not ordinarily subject to public review, but may be if the final RMP is changed substantially from the proposed RMP, due to resolution of a protest or as a result of the Governor's review. The final RMP provides the BLM field office with resource management guidance, by program, that is taken either directly from the current management described in the MSA or from resolution of the planning issues through the EIS. Monitoring and evaluation of the final RMP, step 9, will follow a set schedule (appendix B), and will be documented through plan supplements, amendments, or addenda. BLM policy requires a rangeland program summary (RPS) to brief the public on range management decisions described in the final RMP and ROD and monitoring by grazing allotment. To streamline procedures and reduce paperwork, the RPS will be combined with the ROD and final RMP.

THE RESOURCE AREA

The SJRA, within the Moab District, is responsible for management of BLM administered lands in the majority of San Juan County in south-

eastern Utah (figure I-4). The SJRA is bordered by the Colorado state line on the east, the Arizona state line on the south, the Colorado River on the west, and Canyonlands National Park and the BLM's Grand Resource Area on the north. Monticello and Blanding are the two main communities within the resource area.

The SJRA is also responsible for management of some resources on lands administered by other federal agencies. Management of the San Juan River is administered jointly by the SJRA and the NPS. The BLM manages grazing and minerals on NPS administered land, federal minerals on U.S. Forest Service (USFS) administered land, and certain federal minerals on Indian Reservation land, administered by the Bureau of Indian Affairs and Indian tribal councils. The SJRA administers grazing allotments that extend into the Grand Resource Area on the north and the Montrose, Colorado BLM District's San Juan Resource Area on the east.

Within the SJRA boundaries, however, the BLM's Grand Resource Area administers a small area of grazing; the Farmington Resource Area, Albuquerque District, New Mexico, shares administration of certain aspects of oil and gas resource management on a small area of BLM and Indian reservation lands; and the San Juan Resource Area, Montrose District, Colorado, administers grazing on certain allotments and federal minerals under a small area of Indian allotments.

Land surface administration is shown in table I-3 and in figures I-4 and I-5. Tables I-4 and I-5 and figures I-4 and I-6 show the management responsibility for grazing, minerals, and other resources.

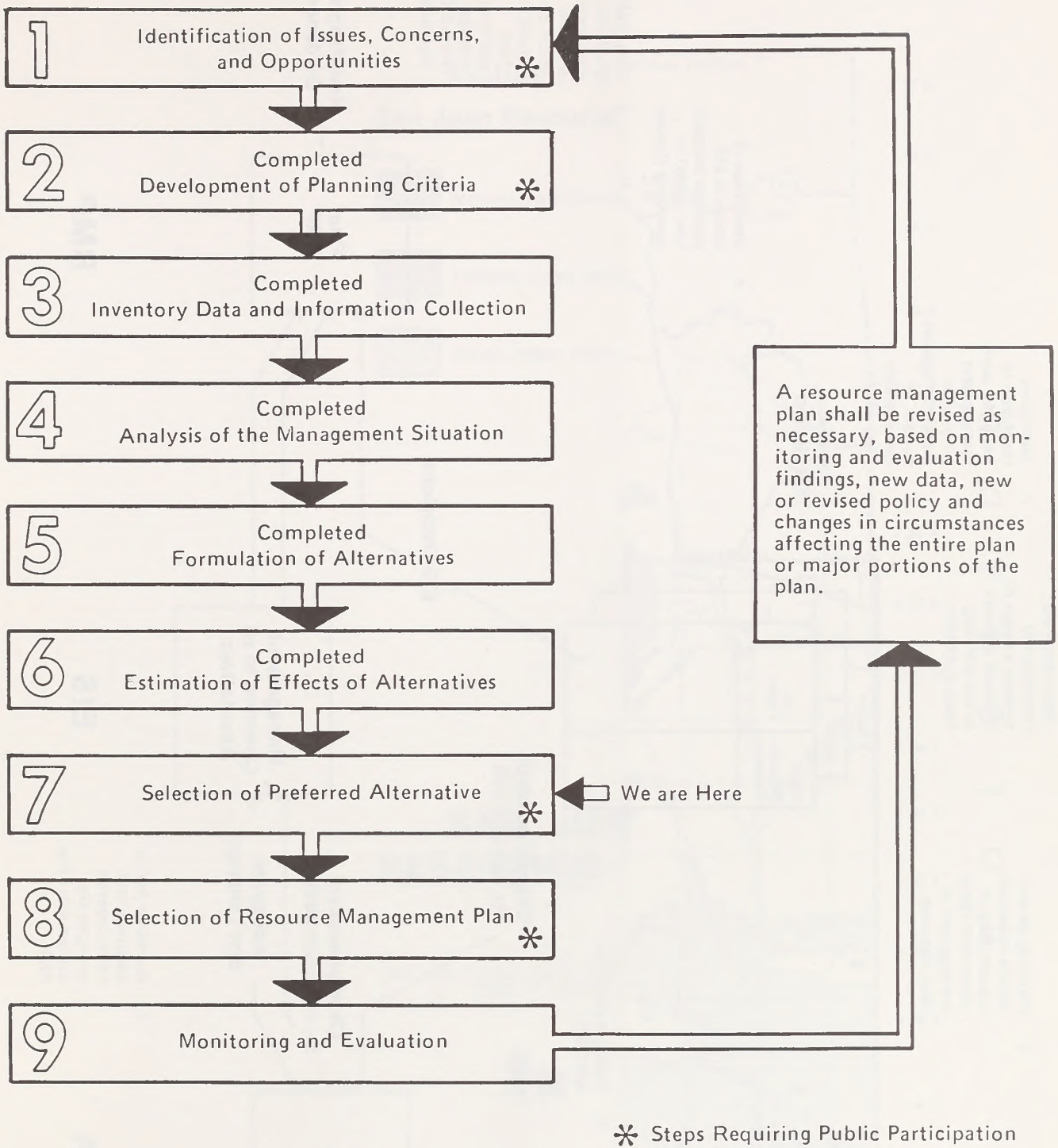


FIGURE I - 2
Prescribed Resource Management Planning Actions

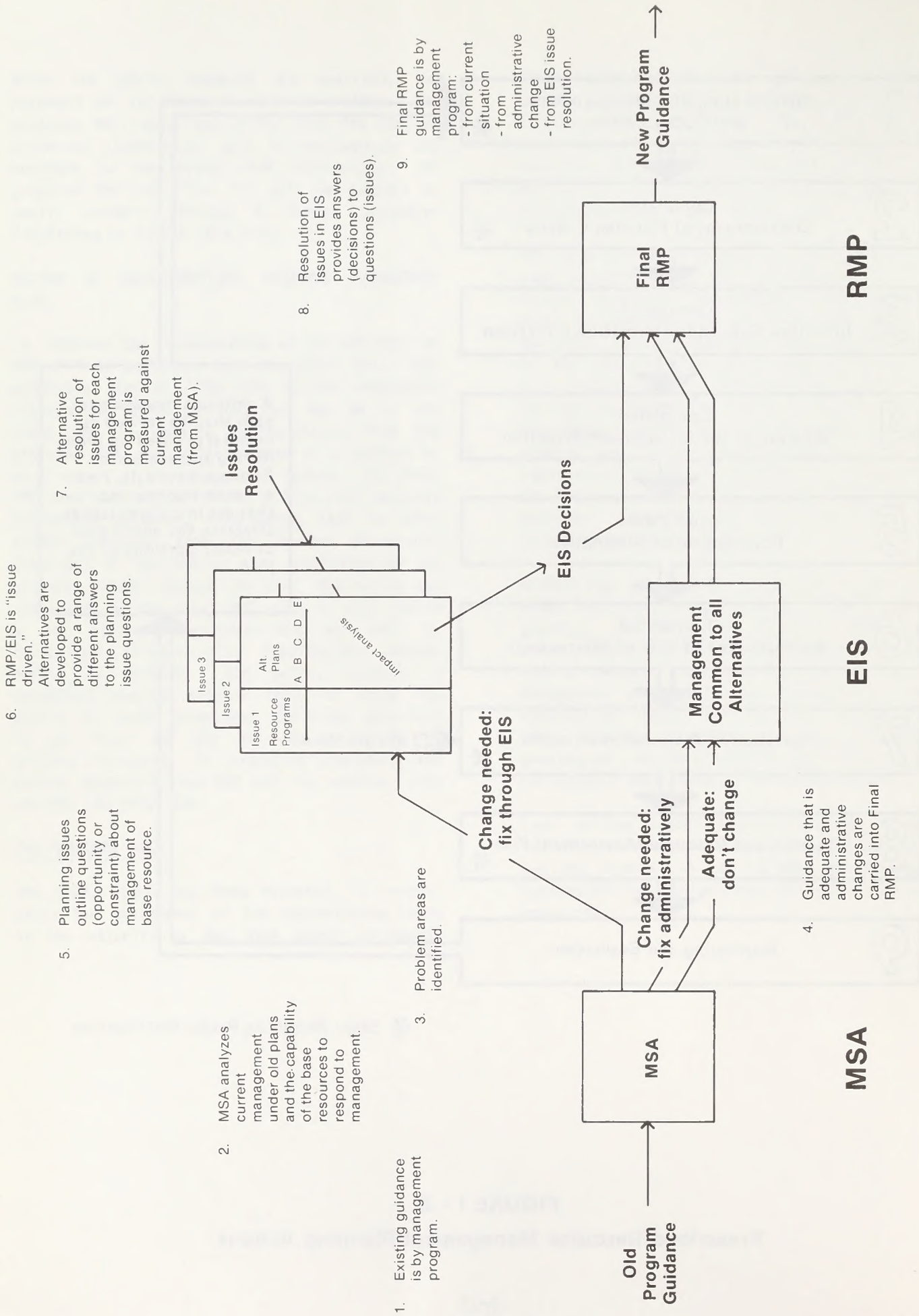


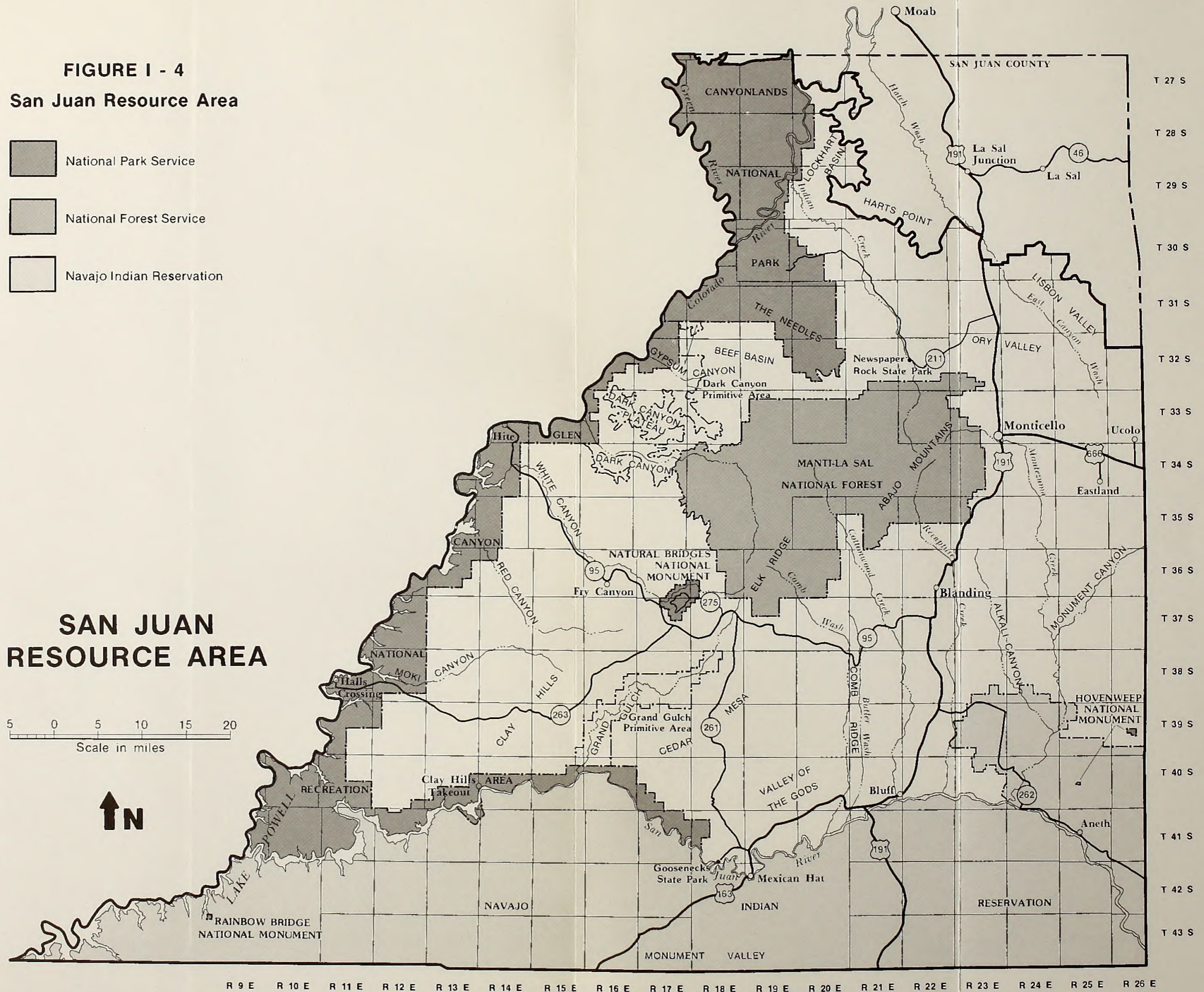


FIGURE I - 3
Relationships Between Planning Documents

FIGURE I - 4
San Juan Resource Area

-  National Park Service
-  National Forest Service
-  Navajo Indian Reservation



**SAN JUAN
RESOURCE AREA**

5 0 5 10 15 20
Scale in miles



FIGURE I - 4
San Juan Resource Area

A R I Z O N A

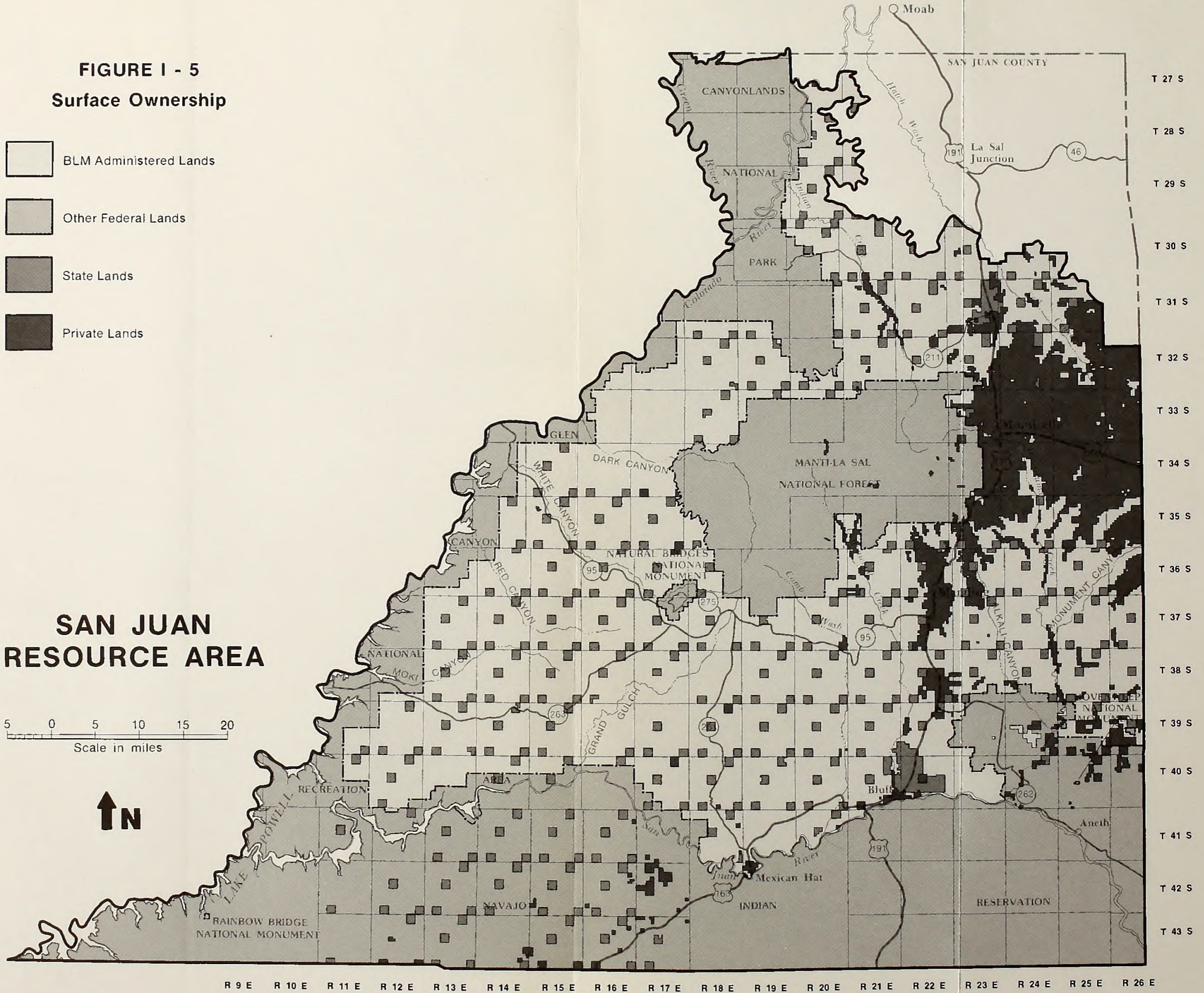
C O L O R A D O

FIGURE I - 5
Surface Ownership

-  BLM Administered Lands
-  Other Federal Lands
-  State Lands
-  Private Lands

SAN JUAN RESOURCE AREA

5 0 5 10 15 20
Scale in miles



C O L O R A D O

FIGURE I - 5
Surface Ownership

A R I Z O N A



SAN JUAN
RESOURCE AREA

in

TABLE I-3

Land Surface Administration

Jurisdictional Unit	Unit Total (acres)	Agency Total (acres)	Total Acres
<u>FEDERAL OWNERSHIP</u>			3,935,868.52
BLM administered public lands		^a 1,779,193.21	
National Park Service		569,176.34	
Canyonlands National Park (NP)	247,998.47		
Glen Canyon NRA	312,656.38		
Hovenweep National Monument (NM)	440.00		
Natural Bridges NM and access road	7,445.49		
Rainbow Bridge NM	461.00		
U.S. Forest Service		367,006.41	
Manti-LaSal National Forest (NF)	366,853.91		
Baker Ranger Station	152.50		
Navajo Indian Reservation		1,220,492.56	
<u>STATE OWNERSHIP</u>			244,955.22
State Lands Commission	244,935.22		
State Parks and Recreation	20.00		
<u>PRIVATE INDIAN TRUST LANDS</u>			22,998.31
Ute Indian Allotments	12,297.43		
Navajo Indian Allotments	10,700.88		
<u>PRIVATE OWNERSHIP</u>			^c 335,155.99
Housing and Urban Development ^d	40.00		
BLM ^d	61.89		
Department of Energy ^d	79.54		
Ute Mountain Tribe	840.00		
Navajo tribe	1,280.00		
Other private lands	^c 332,854.56		
TOTAL			4,538,978.04

^aIncludes 3,053 acres of accretion land which is subject to a legal decision in ongoing litigation, and 2,591.94 acres of surface that were transferred out of federal ownership through private exchange in October 1985.

^dLands owned by the Federal Government for sole use by a federal agency. These are purchased lands, not part of the public domain, and are not subject to public land use laws.

^cDoes not include 2,591.94 acres of land transferred to private ownership after this table was compiled.

Source: BLM Master Title Plats, December 1984. Surveyed land is measured to the hundredth of an acre; unsurveyed land is estimated to the nearest acre.

TABLE I-4

Management of Mineral Resources

ADMINISTRATION OF SURFACE ESTATE		ADMINISTRATION OF MINERALS ESTATE			
Managing Agency or Surface Owner	Acres Total Surface	Acres Federal Minerals by BLM	Acres Federal Minerals by Other Federal Agency	Acres State Minerals by State	Acres Private Minerals by Owner
BLM (Public Lands) Federal Minerals State Minerals	a1,779,193.21	a1,777,828.21		1,365.00	
NPS	569,176.34				
Canyonlands NP Federal Minerals State Minerals	(247,998.47)		b242,292.49	5,705.98	
Glen Canyon NRA Federal Minerals State Minerals Indian Minerals	(312,656.38)	260,249.60	c51,606.78	800.00	
Hovenweep NM Federal Minerals	(440.00)		b440.00		
Natural Bridges NM Federal Minerals	(7,445.49)		b7,445.49		
Natural Bridges NM Access Road Federal Minerals	(175.00)		b175.00		
Rainbow Bridge NM Federal Minerals	(461.00)		b461.00		

USFS	367,006.41		
Manti-LaSal National Forest	(366,853.91)	366,853.91	
Federal Minerals			
Baker Ranger Station	(152.50)		
Federal Minerals			€152.50
<hr/>			
Navajo Indian Reservation	1,220,492.56		
Federal Minerals		51,606.78	
Indian Minerals			b1,168,885.78
<hr/>			
State Ownership	244,955.22		
State Lands Commission	(244,935.22)		
State Minerals			244,935.22
State Parks	(20.00)		
Federal Minerals		20.00	
<hr/>			
Private Indian Trust Lands	22,998.31		
Ute Indian Allotments	(12,297.43)		
Private Minerals			d12,297.43
Navajo Indian Allotments	(10,700.88)		
Federal Oil and Gas		1,074.96	
Private Minerals			c9,625.92
<hr/>			
Private Ownership	€335,155.99		
HUD	(40.00)		
State Minerals			40.00
BLM	(61.89)		
Federal Minerals		61.89	
DOE	(79.54)		
Federal Minerals		79.54	
Ute Mountain Tribe	(840.00)		
Private Minerals			840.00
Navajo Tribe	(1,280.00)		
Private Minerals			1,280.00

TABLE I-4 (Concluded)

ADMINISTRATION OF SURFACE ESTATE ADMINISTRATION OF MINERALS ESTATE

Managing Agency or Surface Owner	Acres Total Surface	Acres			
		Acres Federal Minerals by BLM	Acres Federal Minerals by Other Federal Agency	Acres State Minerals by State	Acres Private Minerals by Owner
Other Private Lands	(332,854.56)				
Federal Minerals		^a 28,396.32			
Federal Oil and Gas		26,850.86			
Federal Other Minerals ^f		27,687.72			
State Minerals			67,154.12		
Private Minerals					182,765.54
TOTALS	4,538,978.04	2,540,709.79	1,493,382.39	320,000.32	184,885.54

NOTE: Split-estate lands are where the surface estate and minerals estate are managed by different agencies. Federal minerals managed by the BLM will be carried into the RMP; other totals are for information only.

^aThese figures do not reflect 2,591.94 acres transferred from federal to private surface after this table was compiled. The mineral estate remains federal minerals administered by the BLM.

^bNPS, 250,813.98 acres total.

^cBureau of Indian Affairs, exploration and production managed by Farmington Resource Area, Albuquerque District, BLM, 1,178,511.80 acres.

^dBureau of Indian Affairs, exploration and production managed by San Juan Resource Area, Montrose District, BLM, 12,297.43 acres.

^eUSFS, 152.50 acres total.

^fIncludes all or some of the following: oil and gas, potash, sodium, phosphate, nitrogen, uranium, thorium, coal, or fissionable minerals.

Source: BLM Master Title Plats, December 1984. Surveyed land is measured to the hundredth of an acre; unsurveyed land is estimated to the nearest acre.

TABLE I-5

Management of Grazing and Recreation Resources

<u>Public Resource</u>	<u>Acres Administered by SJRA</u>	<u>Acres Not Administered by SJRA</u>
<u>Livestock Grazing</u>		
Public lands within SJRA	1,748,253.21	
Public lands in Grand Resource Area	300.00	
Public lands in Colorado ^a	5,600.00	
NPS lands in Glen Canyon NRA	<u>312,656.38</u>	
TOTAL	2,066,809.59	
Public lands by Grand Resource Area		200.00
Public lands by Colorado ^a		10,200.00
Public lands not within an allotment ^b		<u>20,540.00</u>
TOTAL		30,940.00
<u>Recreation</u>		
Public lands	1,779,193.21	
San Juan River, Joint Management	<u>15,000.00</u>	
TOTAL	1,794,193.21	

NOTE: Acres administered by SJRA will be carried into the RMP; other totals are for information only.

^aLivestock grazing is managed under a memorandum of understanding with BLM's Montrose District, Colorado, San Juan Resource Area.

^bIncludes acreage allotted to wildlife.

^cRecreational use of the San Juan River from Mexican Hat to Clay Hills Crossing is managed jointly with Glen Canyon NRA.

Source: BLM Grazing Case Files; BLM Master Title Plats, December 1984.

Statement of Financial Position

Assets	Liabilities	Equity
Cash and equivalents Accounts receivable Inventory Property, plant, and equipment Intangible assets Other assets	Accounts payable Long-term debt Other liabilities	Common stock Retained earnings Other equity components
Total Assets	Total Liabilities	Total Equity

The accompanying notes are an integral part of these financial statements.





These financial statements were prepared in accordance with generally accepted accounting principles.

The financial statements are presented in U.S. dollars.

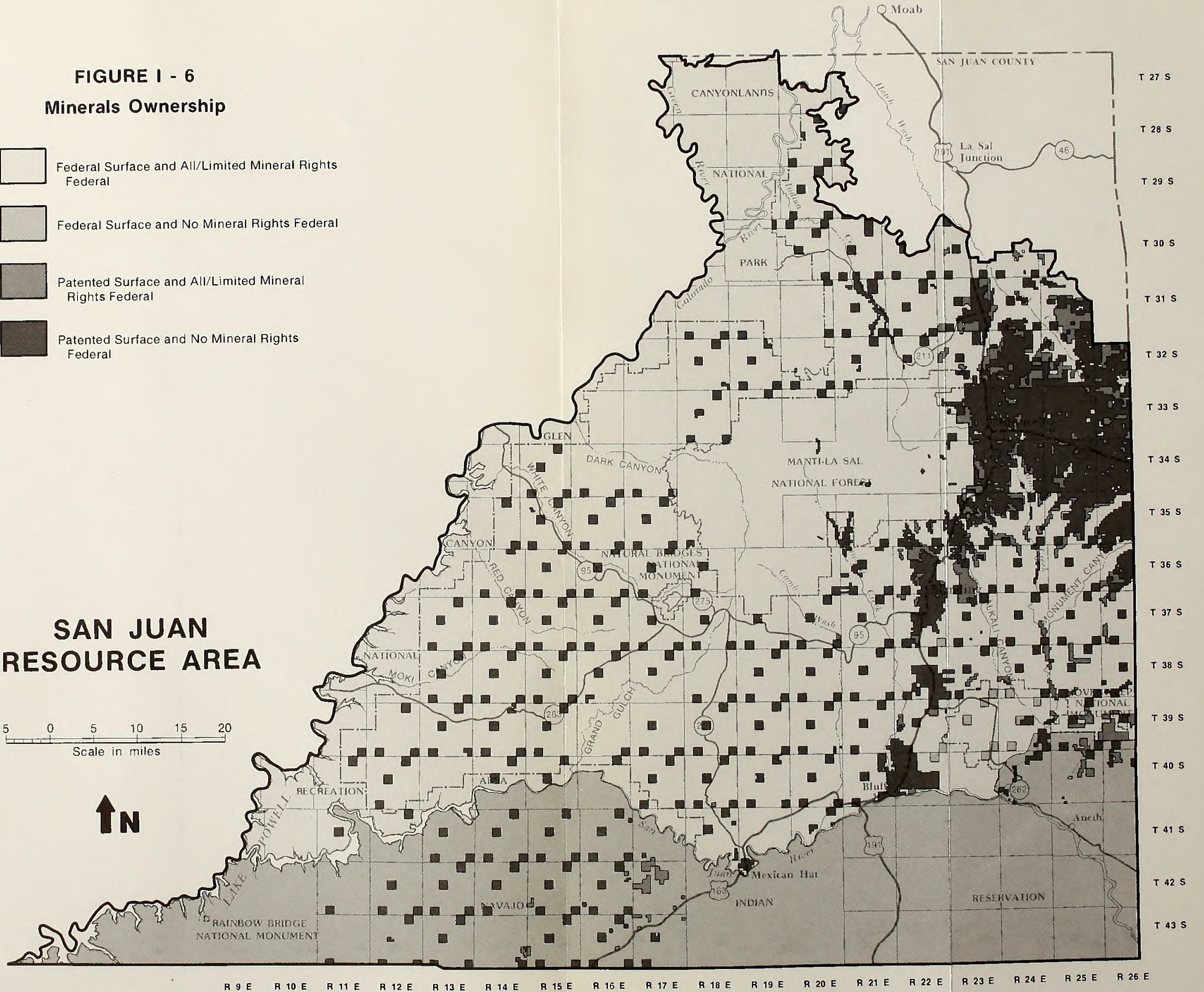
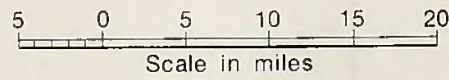
The financial statements are presented for the period ended December 31, 20XX.

Management is responsible for the preparation and fair presentation of these financial statements.

**FIGURE I - 6
Minerals Ownership**

-  Federal Surface and All/Limited Mineral Rights Federal
-  Federal Surface and No Mineral Rights Federal
-  Patented Surface and All/Limited Mineral Rights Federal
-  Patented Surface and No Mineral Rights Federal

**SAN JUAN
RESOURCE AREA**



**FIGURE I - 6
Minerals Ownership**

A R I Z O N A

C O L O R A D O



FIGURE 1-1
SAN JUAN RESOURCE AREA

SAN JUAN
RESOURCE AREA

FIGURE 1-2
SAN JUAN RESOURCE AREA

CHAPTER 1



CHAPTER 1

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CHAPTER 1 — PLANNING ISSUES AND CRITERIA

OVERVIEW

The development of the resource management plan (RMP) is based on answering questions raised by specific planning issues. The answers are guided by planning criteria developed especially for this RMP.

Identification of planning issues is the first planning step. The planning issues in this draft RMP were selected by the resource area manager to determine topics to be addressed during the planning process (43 CFR 1610.4-1). These issues focus on resource management opportunities, problems, conflicts, and trade-offs to be addressed in and resolved through the environmental impact statement (EIS). In deriving these issues, consideration has been given to public input, management concerns of other agencies, and direct knowledge of resource conditions by Bureau of Land Management (BLM) personnel.

Planning issues reflect resource management problems that may affect more than one BLM resource management program. Issues may be required by state or national policy, or may reflect conditions specific to this resource area. Identified issues are subject to change throughout the planning process.

Planning issues identify concerns that

- present an unresolved question regarding allocation of a specific resource;
- present major land use conflicts regarding management or maintenance of a base resource;
- can reasonably be resolved in alternative ways by BLM field managers;

- can be identified on a map; and
- are timely within the life of the plan.

Planning issues do not reflect concerns that

- require changes in laws, regulations, agency policies, or operating budgets;
- are subject to policy or procedures beyond the discretion of BLM field managers;
- are administrative problems;
- are more appropriately addressed in specific program activity plans subsequent to adoption of the RMP;
- are within the jurisdiction of another land management agency; or
- are emotional or political rather than resource oriented.

Topics of interest to the BLM, other agencies, or the public, which do not qualify as planning issues, may be addressed as specific management concerns.

PLANNING ASSUMPTIONS

Development of the RMP is based on the following planning assumptions.

- The planning horizon will be 20 years. This period would generally be the maximum amount of time required for planning decisions as implemented to result in noticeable change to the base resources.
- The year 2000 is used as a common point in time for projection of future demands for

public lands and resources and environmental impacts caused by implementation of any alternative assessed. This date falls within the scope of the planning horizon, yet is far enough from the anticipated implementation dates given in the RMP that alternative management actions would have had time to become effective.

- Funding and personnel will be sufficient to carry out any alternative selected.
- Management of lands administered by another federal agency, and management of San Juan Resource Area (SJRA) lands by other agencies or BLM offices, will be in accordance with memorandums of understanding or other written agreements now in place.
- The plan will not address management of any surface uses of state or private lands or of nonfederal minerals.
- The plan will assume continuation of existing patterns of state and federal land ownership for this RMP. A plan amendment will be prepared if necessary in the event of state indemnity selections that would alter federal/state ownership, or if federal legislation is enacted to implement Project BOLD, which would block up state lands, or if federal legislation is enacted that would set aside lands under special designation, or would transfer management of public lands or resources from the BLM.

PLANNING ISSUES

The following have been identified as planning issues (planning questions) for the San Juan RMP/EIS:

LIVESTOCK MANAGEMENT

Livestock grazing is a traditional use of the public lands within the resource area. However, past and present patterns of forage utilization have resulted in uneven use of the range resource, loss of forage productivity in some areas, improper distribution of livestock, and conflicts with other resource uses. An analysis is needed, on an allotment basis, to determine

if changes are needed in stocking levels, in seasons of use, or in range management practices. Current or potential conflicts are seen with wildlife use of forage (primarily bighorn sheep, antelope, and mule deer) and with land developments removing areas from forage production (primarily oil and gas exploration and field development). Resolution of this issue should satisfy the requirements of the site-specific assessment ordered by the District Court in 1974.

- What stocking levels and periods of use should be achieved on rangelands within the SJRA?

WILDERNESS STUDY AREA MANAGEMENT

The SJRA contains 2 instant study areas (ISAs) and all or part of 16 wilderness study areas (WSAs) (table 1-1 and figure 1-1).

The two ISAs were identified administratively in 1977 under the authority of Section 603(a) of the Federal Land Policy and Management Act of 1976 (FLPMA) because they had been identified as primitive areas prior to 1975. Fifteen of the WSAs were identified through the wilderness inventory process, conducted from 1978 through 1980 under the authority of Section 603(a) of FLPMA. The remaining WSA, South Needles (UT-060-169A), was identified in 1986 through this RMP planning process, as authorized by Sections 202(c)(9) and 302(b) of FLPMA. This WSA is an isolated tract of public land, containing 160.15 acres, adjacent to the Needles proposed wilderness in Canyonlands National Park (NP). It is separated from the Butler Wash WSA by 0.5 mile of state land. It is similar in character to both the Needles and Butler Wash units, but would not qualify for WSA status under Section 603(a) of FLPMA because it contains fewer than 5,000 acres. WSAs identified through the planning process are referenced as Section 202 WSAs, and may be released from wilderness review administratively if they are determined unsuitable for wilderness designation. All other WSAs and ISAs remain under wilderness review until released by Congress.

In Utah, recommendations as to the suitability or non-suitability for wilderness designation of

areas under wilderness review will be made through the statewide wilderness EIS. Wilderness designations are made by Congress. The Interim Management Policy and Guidelines for Lands Under Wilderness Review (IMP) dictates management of these areas while under wilderness review, and the Wilderness Management Policy describes how they will be managed if Congress designates them as wilderness. The San Juan RMP/EIS will address how these 18 areas will be managed if they are released from wilderness review without designation to the national wilderness preservation system. The cumulative uses and impacts anticipated for each ISA and WSA (if released by Congress from wilderness review) must be described in the RMP/EIS to serve as a basis of comparison for the impacts of wilderness designation described in the statewide wilderness EIS.

- How should areas within the SJRA now designated as ISAs and WSAs be managed if not designated as wilderness by Congress?

VEGETATION MANAGEMENT

Management of the vegetation resource controls many different land uses. Removal of vegetation, through mechanical or natural means, can increase the potential for erosion and change the visual character of the landscape. The species composition of vegetation in different areas controls the quality and amount of forage for livestock and wildlife, extent and type of wildlife habitat, rate of erosion, the visual resource, and quantity and type of vegetative products; it can also affect recreational use.

Within the SJRA decisions are needed regarding management of the vegetation resource. These decisions will, in turn, affect management of various land uses by controlling surface disturbance, and of other natural resources by establishing preferred areas for vegetation enhancement or use. Watersheds with critically sensitive soils need to be identified, along with areas suitable for woodland product sales, land treatments, and limited fire suppression. Alternative uses of the public lands that would affect vegetative cover must be recognized, and the effects of such uses assessed.

- Where should uses of the public lands within the SJRA be allowed to affect vegetative resources, and where should management actions be prescribed to alter present vegetative patterns?

WILDLIFE HABITAT MANAGEMENT

Big game species, aquatic species, special or sensitive species, and animals common to the region live within the resource area. Management of alternative uses of the public lands could affect habitats used by these animals. Within the resource area, certain wildlife habitats need to be managed if protection from adverse impacts caused by other land uses and extraction or production of natural resources is to be gained.

- How should special wildlife habitat areas within the SJRA be managed, and where should management actions be prescribed to alter or maintain present habitat areas?

RECREATION MANAGEMENT

The SJRA provides settings for many recreational opportunities, which vary based on topography, the presence or absence of roads, facilities, human modifications, and visitors. Activities include both motorized and nonmotorized pursuits. The area is becoming more popular as it becomes more well known, as evidenced by increasing visitation. However, some types of recreational uses are incompatible with other surface uses or with one another. Primitive recreational settings cannot be maintained if motorized recreational use occurs, and motorized settings can be altered with increased use. Some types of recreational opportunities are constrained or eliminated if surface resources are managed for an incompatible use.

Within the resource area, decisions are needed to determine the optimal mix of various recreational opportunities, and whether management actions are needed to preserve this mix. Management decisions to maintain, increase, or decrease the extent of recreational opportunities now present can affect other land uses, including resource production or extraction and grazing uses.

TABLE 1-1

Wilderness Review Areas in the San Juan Resource Area

Unit Number	Unit Name	Acreage	Contiguous Units	Acreage
	Dark Canyon ISA ^a	62,040	Dark Canyon Wilderness, Manti-LaSal NF Dark Canyon proposed wilderness, Glen Canyon NRA Needles proposed wilderness, Canyonlands NP	60,000 18,100 61,182
	Grand Gulch ISA ^b	37,810	San Juan proposed wilderness, Glen Canyon NRA	13,010
UT-060-164	Indian Creek WSA	6,870	Maze proposed wilderness, Canyonlands NP	105,980
UT-060-167	Bridger Jack Mesa WSA	5,290		
UT-060-169	Butler Wash WSA	22,030	Needles proposed wilderness, Canyonlands NP	61,182
UT-060-169A	South Needles WSA	160	Needles proposed wilderness, Canyonlands NP	61,182
UT-060-171	Middle Point WSA ^a	5,990		
UT-060-181	Mancos Mesa WSA	51,440	Moki-Mancos proposed wilderness, Glen Canyon NRA	41,700
UT-060-188	Pine Canyon WSA ^b	10,890		
UT-060-191	Cheesebox Canyon WSA	15,410		
UT-060-196	Bullet Canyon WSA ^b	8,520		
UT-060-197/198	Stickhorn Canyon WSA ^b	45,390	San Juan proposed wilderness, Glen Canyon NRA	13,010
UT-060-201	Road Canyon WSA	52,420		
UT-060-204	Fish Creek WSA	46,440		

UT-060-205B	Mule Canyon WSA	5,990		
UT-060-224	Sheiks Flat WSAP	3,140		
UT-060-227	Squaw Canyon WSA	6,580	CO-030-265A, Squaw Canyon WSA, Montrose District, Colorado BLM ^d	4,611
UT-060-229	Cross Canyon WSA	1,000	CO-030-265, Cross Canyon WSA, Montrose District, Colorado BLM ^d	11,734

^aThe Dark Canyon ISA combines with the Middle Point WSA to form the Dark Canyon Complex, with a total of 68,030 acres.

^bThe Grand Gulch ISA combines with the Pine Canyon, Bullet Canyon, Slickhorn Canyon, and Sheiks Flat WSAs to form the Grand Gulch Complex, with a total of 105,520 acres.

^cThe statewide wilderness EIS uses 37,580 acres for the Grand Gulch ISA. Acreage calculations for the San Juan RMP from the master title plats revealed the actual total to be 37,807, which is rounded to 37,810. The difference between the two figures amounts to 0.6 percent.

^dRefer to BLM, 1984a and BLM, 1984b for suitability recommendations for Colorado BLM's Squaw Canyon and Cross Canyon WSAs.

Source: BLM Master Title Plats, 1984. Surveyed land is measured to the hundredth of an acre; unsurveyed land is estimated to the nearest acre.

- Which recreational opportunities on the public lands should be maintained, increased, or decreased, and where should management actions be prescribed to preserve this mix of opportunities?

MANAGEMENT CONCERNS

The following topics have been identified as specific management concerns for the San Juan RMP/EIS.

MINERALS MANAGEMENT

The importance of minerals management within SJRA is reflected in the extent of expressed public concern. Management of most minerals is governed by law and regulation and is therefore beyond the discretion of BLM field office personnel. Accordingly, this topic does not qualify as a planning issue.

Conflicts between minerals development and management of other resources is covered in this RMP/EIS according to the surface resource affected. Affected surface resources were identified in the management situation analysis (MSA), and questions regarding their management are covered in the five planning issues described above.

CULTURAL RESOURCE MANAGEMENT

The appreciable archaeological resource in SJRA is widely recognized. Management and protection of archaeological and historic resources has been identified as a concern by the public, academic institutions, the BLM, and other federal, state and local government agencies.

Use and management of cultural resources is specifically governed by law and regulation. The need for protection of these resources is established by law and is beyond the discretion of BLM field office personnel. Accordingly, this topic does not qualify as a planning issue.

Conflicts between protection of cultural sites and use or management of other resources are covered in this RMP/EIS according to the other resource affected. Activities impacting cultural resources were identified in the MSA, and

questions regarding their management have been covered in the five planning issues described above.

GLEN CANYON NATIONAL RECREATION AREA

The SJRA has certain management responsibilities for grazing and minerals within Glen Canyon National Recreation Area (NRA). These responsibilities are a topic of concern to both the BLM and the National Park Service (NPS).





Problems and opportunities for management of these resources within Glen Canyon NRA were identified in the MSA. Management of livestock is discussed under the livestock planning issue. Management of minerals falls under specific laws and regulations and is beyond the discretion of BLM field office personnel. Resolution of conflicts between minerals development and surface use is within the authority of the NPS and is covered in their planning documents.

PLANNING CRITERIA

Planning criteria (planning step 2) are guidelines established to (1) structure development of the RMP; (2) tailor the RMP to the planning issues; (3) avoid unnecessary data collection; (4) avoid unnecessary analyses; and (5) guide estimation of the effects of the various alternatives considered in the EIS. The planning criteria guide agency and public review and explain what will be considered in the RMP/EIS. The purposes of planning criteria vary at different stages of the planning process. Accordingly, separate criteria have been developed to guide the following steps: identification of problem areas in the MSA; formulation of alternatives; and estimation of the effects of alternatives. The planning criteria were subject to a 30-day public comment period (from March 1 to April 1, 1985). The criteria used reflect public concerns and include suggestions received from the public. Criteria guiding the identification of planning issues and the collection of resource data are given in the appropriate parts of this section.

FIGURE 1 - 1

Areas Under Wilderness Review

-  Designated Wilderness, National Forest Service
 -  Proposed Wilderness Areas, National Park Service
 -  BLM Instant Study Areas (ISA)
 - 1. Oak Canyon ISA¹ (62,040 acres)
 - 2. Grand Gulch ISA² (37,810 acres)
 -  BLM Wilderness Study Areas (WSA)
 - 3. Indian Creek WSA, UT-060-164 (6,870 acres)
 - 4. Bridger Jack Mesa WSA, UT-060-167 (5,290 acres)
 - 5. Butler Wash WSA, UT-060-169 (22,030 acres)
 - 6. South Needles WSA, (Sec. 202) UT-060-169A (160 acres)
 - 7. Middle Point WSA¹, UT-060-171 (5,990 acres)
 - 8. Mancos Mesa WSA, UT-060-181 (51,440 acres)
 - 9. Pine Canyon WSA², UT-060-188 (10,890 acres)
 - 10. Cheesebox Canyon WSA, UT-060-191 (15,410 acres)
 - 11. Bullet Canyon WSA², UT-060-196 (8,520 acres)
 - 12. Slickhorn Canyon WSA², UT-060-197/198 (45,390 acres)
 - 13. Road Canyon WSA, UT-060-201 (52,420 acres)
 - 14. Fish Creek Canyon WSA, UT-060-204 (46,440 acres)
 - 15. Mule Canyon WSA, UT-060-205B (5,990 acres)
 - 16. Shiels Flat WSA², UT-060-224 (3,140 acres)
 - 17. Squaw Canyon WSA, CO-030-265A/UT-060-227 (6,580 acres in Utah, 11,190 acres total)
 - 18. Cross Canyon WSA, CO-030-265/UT-060-229 (1,000 acres in Utah, 12,730 acres total)
- ¹Part of Dark Canyon ISA Complex
²Part of Grand Gulch ISA Complex

Note: All acreage figures are public land acres.

SAN JUAN RESOURCE AREA

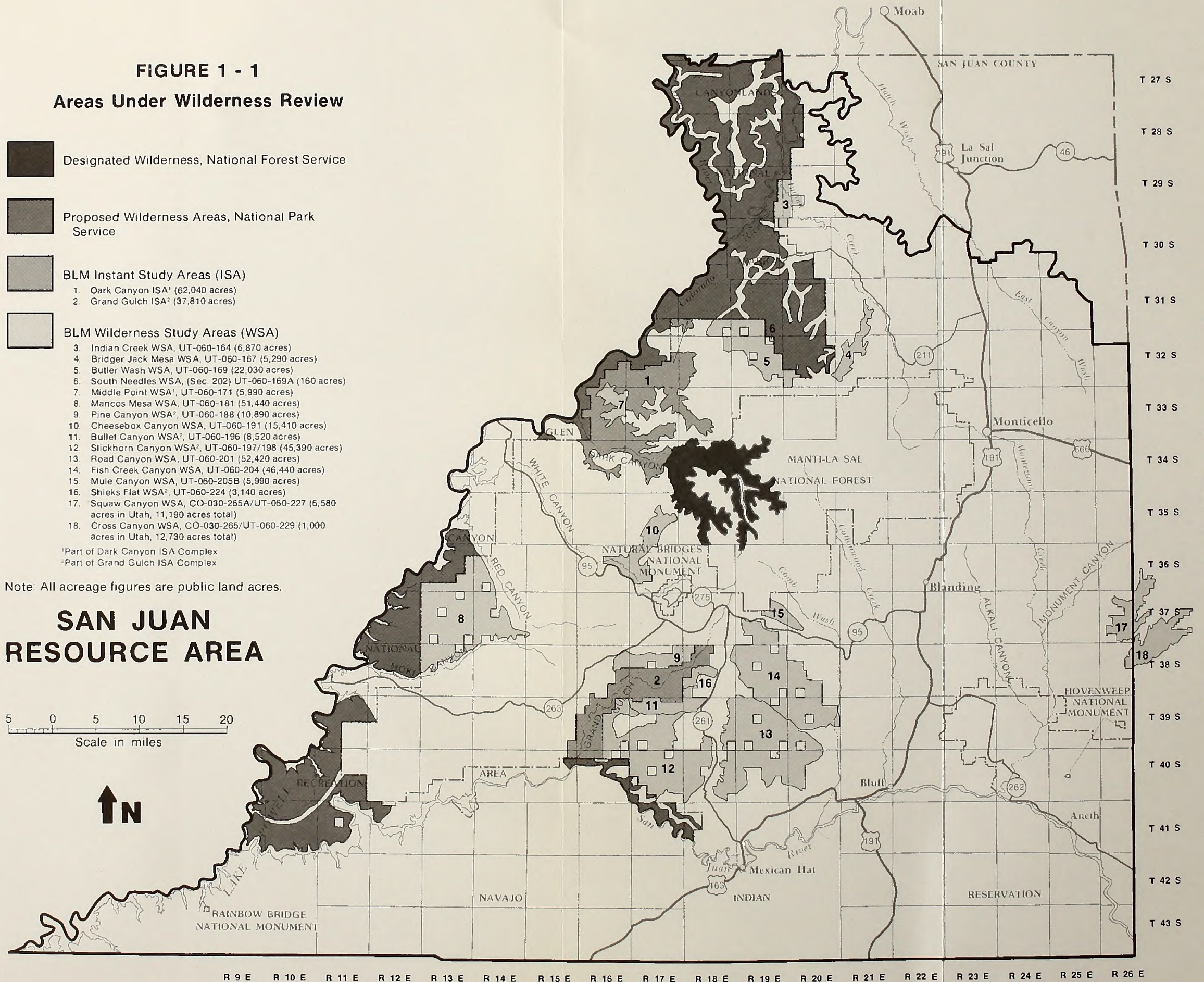
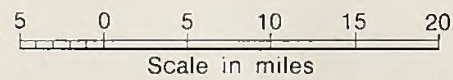


FIGURE 1 - 1

Areas Under Wilderness Review

A R I Z O N A

C O L O R A D O



RESOR OF AREA
EAST JAVA

-
-
-
-

The following table shows the results of the survey conducted in the East Java region. The data is presented in a tabular format, detailing the number of respondents and their characteristics across different categories. The survey was conducted in the year 2000, and the results are as follows:

Category	Number of Respondents
Male	120
Female	80
Age Group 18-25	150
Age Group 26-35	100
Age Group 36-45	70
Age Group 46-55	50
Age Group 56-65	30
Age Group 66+	20
Education Level: High School	180
Education Level: University	120
Education Level: Below High School	100
Occupation: Government Employee	150
Occupation: Private Employee	100
Occupation: Unemployed	80
Occupation: Business	50
Occupation: Other	30

Section 202(c) of FLPMA provides that in the development and revision of land use plans, the Secretary of the Interior shall:

- use and observe the principles of multiple use and sustained yield;
- use an interdisciplinary approach to integrate consideration of physical, biological, economic, and other sciences;
- give priority to the designation of areas of critical environmental concern;
- rely on the inventory of public lands, their resources, and other values;
- consider present and potential uses of the public lands;
- consider the relative scarcity of the values involved and the availability of alternative means and sites for realization of those values;
- weigh long-term benefits to the public against short-term benefits;
- provide for compliance with applicable pollution control laws; and
- to the extent possible, coordinate land use inventory, planning, and management of public lands with the land use planning and management programs of other federal agencies and state and local governments.

At Section 302(b), FLPMA requires the Secretary to manage the public lands so as to prevent unnecessary or undue degradation of the lands.

Because these fundamental planning criteria are required by law, they are not repeated below.

CRITERIA FOR PROBLEM IDENTIFICATION

Current resource management practices discussed in the MSA will be identified as problem areas if any of the following conditions occurs:

- existing or proposed management of one resource significantly constrains or curtails

existing or proposed use of another resource;

- agency guidance requires land use allocations, which are not now in place, to be made through the planning process;
- existing land use allocations conflict with current agency resource management policies or guidance;
- existing resource management practices conflict with management plans, policies, and guidance of another federal surface management agency; or if
- documented public controversy regarding management of a specific resource value indicates a management concern.

CRITERIA FOR IDENTIFICATION OF MANAGEMENT OPPORTUNITIES

The opportunity to change current management practices discussed in the MSA will be identified if any of the following conditions occurs:

- management problems identified under the above criteria can be resolved outside the EIS process through administrative means (these may be carried into the RMP);
- management problems identified under the above criteria can be resolved in alternative ways, with selection through the EIS process (the selected resolution will be carried into the RMP); or if
- current management does not now meet the above problem criteria, but could be improved or resource use enhanced through a change in management (these may be carried into the RMP);

CRITERIA FOR ALTERNATIVE FORMULATION

The following criteria have been developed to guide formulation of a range of alternatives for each issue to be addressed in this draft EIS. Management problems that do not fall under the issues are resolved in the MSA and carried through the EIS analysis as management actions common to all alternatives.

All alternatives formulated and assessed in the draft EIS will:

- be in accordance with all applicable laws, regulations, and agency policies;
- provide reasonable, feasible, and practical guidance for management of the public lands and resources, without requiring appreciable changes in facilities, services, or scope of management; and
- provide a complete management plan for the entire SJRA.

At least one of the alternatives assessed in the RMP/EIS will provide for each of the following:

- continuing the present management;
- maximizing the use, production or extraction of renewable and nonrenewable resources, including grazing resources, mineral resources, woodland products, and lands (although not necessarily within the same alternative);
- maximizing the development and use of the recreational resource, including motorized and nonmotorized pursuits (although not necessarily within the same alternative);
- minimizing consumptive use of the grazing resource by domestic livestock;
- recognition and protection of sensitive ecological or visual environments;
- designation and protection of areas of critical environmental concern or other special ecological areas (although not necessarily under only one alternative); and
- protection or enhancement of those values on public lands within the resource area which are relatively scarce within the public domain as a whole.

None of the alternatives assessed in the RMP/EIS will consider or provide for the following:

- the designation of public lands as wilderness (the assessment of effects of Congress-

sional designation of wilderness is left to the statewide wilderness EIS);

- except as identified, the designation of specific parcels of public lands as suitable for disposal through sales, exchanges, state indemnity selections, or other means (these types of actions will be considered individually upon proper application; the RMP will be used as a guide to determine whether disposal would serve the national interest, and an RMP amendment will be prepared if necessary);
- the designation of specific parcels of public lands for special use permits, special withdrawals, private Congressional bills, or Congressional withdrawals, whether application is made by another federal agency or by other entities (these types of actions will be considered individually upon proper application; an RMP amendment will be prepared if necessary)^a; or for
- the development of any coal resources through the unsuitability criteria at 43 CFR 3461. (Coal resources within the resource area are marginal and scattered; coal development is not believed to be economically viable within the next 10 years. If, in the future, coal resources are scheduled to be leased, or if public interest is expressed in development of coal resources, an unsuitability study will be made and the RMP amended, if necessary, as part of its periodic review.)

CRITERIA FOR ESTIMATION OF EFFECTS

The estimation of effects of each alternative will include the following:

- the impact of management actions upon adjacent federal, private, or Indian lands;
- the formal land use plans of state and local governments and other federal agencies;

^aThe wording of this criterion has changed slightly due to a change in BLM policy regarding right-of-way and utility corridors.

- short-term impacts, or those occurring within 5 years of completion of a given management action (the period of time required for reclamation in SJRA under normal conditions); long-term impacts, or those occurring thereafter; residual impacts, or those remaining 15 years after implementation of a management action; and cumulative impacts, or those which are individually insignificant but become significant when considered together;

- all local economic and social changes caused by each alternative, compared to the continuation of current management practices described in the No Action alternative; and
- the cost to the BLM of implementation, based on current conditions and budgets.

CHAPTER 2

OBJECTIVES

The objectives of this chapter are to provide the student with the necessary background information to understand the planning process and to provide the student with the necessary information to understand the planning process.

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CHAPTER 2

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CHAPTER 2

CHAPTER 2 — PLAN ALTERNATIVES

INTRODUCTION

Five alternative plans have been developed and considered in this draft resource management plan/environmental impact statement (RMP/EIS) to provide for multiple use management of the public lands in the San Juan Resource Area (SJRA). These alternatives provide different answers to the questions raised by the planning issues. They include solutions allowing for either production or protection of the many public resources found in the SJRA.

Alternative A (no action) represents continuation of present management. The interdisciplinary planning team developed alternatives B, C, and D to suggest different ways of managing the public lands and resources. Bureau of Land Management (BLM) managers selected ideas from A, B, C, and D to develop alternative E (the preferred alternative).

Each alternative provides a complete multiple use plan which could be used to guide management of all public lands and resources in the SJRA. Each plan is believed to be reasonable and feasible, although each has a different focus. Each plan would be subject to continuation of valid rights for use of public lands or resources existing at the time the RMP became final.

After reviewing public comment and the comments of other agencies, managers may change the preferred alternative. Changes will be presented in the proposed RMP and final EIS. The RMP eventually decided upon will recognize the concerns of the public and of other agencies regarding use of public lands and resources administered by the SJRA.

MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES

OVERVIEW

The following describes, by resource management program, the guidance that will apply to management of public lands and resources, no matter which alternative is chosen (figure I-3); therefore, it should be considered as part of each alternative. This guidance has been implemented in the past, or was identified in the management situation analysis (MSA) as an administrative action that will be implemented in the future. It is different from the management actions listed in the detailed description of alternatives, in that it provides policy and procedures that apply regardless of management decisions or specific management actions.

All alternatives are subject to all applicable laws, executive orders, Departmental regulations, and BLM policy. These were described in detail in the MSA for each resource management program and are not repeated here; a list of relevant laws is given in appendix C. Environmental impacts of land use actions not specifically covered in the RMP will be analyzed in site-specific National Environmental Policy Act (NEPA) documents on a case-by-case basis as projects are proposed.

Management common to all alternatives is given by resource management program.

4111 OIL AND GAS MANAGEMENT

Oil and gas leases issued prior to the RMP will continue to be managed under the stipulations in effect when issued. Those issued subsequent to the RMP will be subject to category restrictions

developed in the plan. Leases are issued by BLM's Utah State Office (USO). Compliance with lease terms is administered by SJRA and the Moab District office.

Within the SJRA, review of existing and potential known geologic structures (KGSs) will be ongoing. Qualifying areas will be designated as KGSs, and existing KGSs may be revised in accordance with drilling data.

Certain federal oil and gas resources within SJRA underlie lands not administered by the BLM (table I-4 and figure I-6). BLM administers the operational aspects of these leases with concurrence of the surface owner. The surface owner or administering federal agency manages the surface. BLM oil and gas leasing categories do not apply to these leases (see chapter 5).

- Glen Canyon National Recreation Area (NRA): Administer 101,720 acres of federal leases on lands available for oil and gas development (see Glen Canyon NRA Minerals Management Plan).
- Manti-LaSal National Forest (NF): Administer 366,850 acres of federal leases on the Monticello Ranger District.
- Navajo Indian Reservation: Administer 51,610 acres of federal leases, under a memorandum of understanding with Farmington Resource Area, Albuquerque District, BLM, with concurrence of Indian tribe.
- Indian Trust Lands: Administer 1,080 acres of federal leases.
- Split-estate lands: Administer 20 acres of federal leases with state surface and 55,390 acres of federal leases with private surface.

4113 GEOTHERMAL MANAGEMENT

A portion of the Warm Springs Canyon geothermal area (about 16,320 acres) extends into SJRA. The U.S. Geological Survey (USGS) has identified this area as prospectively valuable for geothermal resources. No data are available to confirm whether or not a geothermal resource is present. No interest has been expressed in

geothermal leasing. Leases in the Warm Springs Canyon geothermal area would be noncompetitive, and would be issued by USO.

In addition, approximately 20,050 acres of the prospectively valuable lands underlie Glen Canyon NRA in San Juan County. SJRA would administer the operational aspects of any geothermal leases issued on this part of Glen Canyon NRA, with the concurrence of the National Park Service (NPS) (see chapter 5).

At such time as interest is expressed in geothermal leasing, the RMP will be amended to establish leasing conditions and exploration requirements.

4121 COAL MANAGEMENT

The coal resources within the SJRA are limited to the San Juan Coal Field, totaling about 530,000 acres. Approximately 60 percent of this field is under private ownership (both surface and mineral estate); about 212,000 acres of federal surface and federal minerals in the coal field are administered by the SJRA. No consideration will be given in the RMP to coal resource potential outside the San Juan Coal Field or to nonfederal coal reserves.

Leases are issued by USO. Mining unsuitability criteria (43 CFR 3461) will be applied by SJRA before any coal leases are issued and may restrict all or certain types of mining techniques. (This would require an amendment to the RMP.) If coal leases are issued, they will be subject to special conditions developed in the RMP, as well as through the unsuitability criteria. Before any coal could be removed, SJRA would have to approve the mining permit application package, incorporating stipulations developed in the RMP.

4122 TAR SAND MANAGEMENT

The White Canyon Special Tar Sand Area (STSA) was made available until November 1983 for conversion of existing oil and gas leases and certain mining claims to combined hydrocarbon leases (CHLs). No applications for conversion were received. The STSA is now available for tar sand or oil and gas development only through

CHLs that would be issued by USO under competitive leases. The leases would be subject to category stipulations developed in the RMP. Of the 10,470-acre STSA, 7,980 acres are federal surface underlain by federal minerals. The remaining area does not overlie federal minerals and would not be subject to RMP stipulations.

Oil and gas leases issued after November 16, 1981 carry the right to develop any tar sand resources that may be present outside of the STSA. Leases issued prior to the RMP will continue to be managed under the stipulations in effect when issued. New leases will be subject to category restrictions developed in the RMP.

4131 MINERAL MATERIALS MANAGEMENT

Mineral materials disposal is by sale at fair market value or by free use permit for public agencies. Disposal sites are established in response to specific requests. The RMP will be used to determine which areas are available for mineral materials use, and to impose conditions that will apply to use of material sites. Use of existing sites will continue to be subject to the permit conditions. Sales and free use permits are handled at the SJRA.

Seven areas, covering about 900 acres, are Federal Highway Administration material site rights-of-way. Nine areas, totaling about 2,430 acres, have been designated as community pits. Both the material sites and community pits are carried through all alternatives.

Free use of petrified wood is allowed for non-commercial purposes in designated areas (up to 250 pounds per person per year). The entire SJRA will be designated as a petrified wood free use area in the RMP.

4132 MINING LAW ADMINISTRATION

Locatable minerals are administered under the mining laws, which preserve the right of individuals and corporations to enter on the public lands to claim (locate) certain types of mineral discoveries. All public lands overlying federal minerals are open to mining claim location unless specifically withdrawn from mineral entry by Secretarial order or public law or segregated

from mineral entry under specific reservations, such as a recreation and public purposes (R&PP) lease. Lands and minerals that were acquired by the Federal Government but were not part of the original public domain are not open to mineral entry under the mining laws.

The RMP may be used to identify lands to be segregated from mineral entry. Claims located on these areas prior to adoption of the RMP will not be affected. The RMP cannot impose conditions on annual assessment work done under a notice of intent, but will be used to develop special conditions to apply to mining operations or annual assessment work approved under a plan of operations, regardless of whether the claim was located before or after adoption of the RMP.

BLM administers claim recordation requirements (at USO) and operational aspects of mining federally owned minerals (at SJRA), whether or not the surface is administered by the BLM. Outside of U.S. Forest Service (USFS) administered land, location and operation of mining claims on other federal lands or split-estate lands is extremely restricted under various land ownership laws. The surface owner or administering federal agency manages the surface. RMP requirements do not apply to these lands.

- Manti-LaSal NF: administer mining claims on 366,850 acres in the Monticello Ranger District.

- Split-estate lands: administer federal minerals on 20 acres of State surface and 56,090 acres of private surface.

Federally owned locatable minerals underlying federal lands administered by the NPS within SJRA boundaries are not available for claim location. Most NPS administered land has been withdrawn from mineral entry. Locatable minerals under Glen Canyon NRA have not been withdrawn and may be available for lease in the future, but no regulations have yet been formulated to allow for this (see chapter 5).

4133 MINERAL MANAGEMENT (NONENERGY LEASABLES)

In SJRA, potash is the only mineral that has been managed under this program, although other

nonenergy leasable minerals (if present) could be leased, if found to occur in marketable quantities. The RMP establishes categories of conditions that will apply to prospecting permits or leases. In areas where mineral values are not known, SJRA could issue prospecting permits. These can lead to issuance of a preference right lease. In areas with known mineral occurrence, leases are sold competitively. Leases are issued by USO. Once an area is leased, the Federal Government is committed to allowing mining on the lease.

Within SJRA, two areas fall within known potash leasing areas (KPLAs). The KPLA designation is based on known geologic data, and will remain in place until potash resources are depleted. Within a KPLA potash leases are acquired through competitive bidding. Additional KPLAs could be designated, based on geologic field data, if interest warranted.

4211 RIGHTS-OF-WAY

Lands available for rights-of-way, including the major transportation and utility systems, are divided into four major categories: (1) lands in designated transportation and utility corridors where standard operating procedures apply; (2) lands outside of designated corridors where additional conditions may apply upon completion of proper NEPA documentation; (3) areas that will be avoided; and (4) areas that will be excluded.

Under alternative A, existing groupings of rights-of-way would be used without designating corridors, under the second category given above; primitive areas would be excluded under the fourth category. Under all other alternatives, the existing groupings would be designated as corridors under the first category.

The existing groupings include rights-of-way for electric transmission facilities, pipelines 10 inches and larger, communication lines, federal and state highways, and major county road systems. These include those recommended in the May 1980 Western Regional Corridor Study [Western Utility Group, 1980].

Since the demand is minimal, separate corridors for major transmission and utility systems would not be designated under any alternative. Existing transportation rights-of-way, such as U-211 and U-95 and its interconnecting systems of U-261 and U-276 (formerly U-263), would not be designated as corridors because the lands to which they provide access are environmentally sensitive.

The RMP will identify lands to be excluded, avoided, or available for additional rights-of-way. Use of existing rights-of-way will continue to be subject to the conditions made a part of the grant upon issuance; renewals of these grants may be subject to the conditions developed in the RMP.

Rights-of-way for access to private and state inholdings, inheld oil and gas leases, and pipelines for producing oil and gas wells are processed and issued upon application; by law these cannot be denied. Rights-of-way for county and state roads similarly will not be denied. The BLM is required to recognize and maintain the county's Revised Statute (R.S.) 2477 road system, to provide right-of-way reservations to the BLM or other federal agencies upon request, and to provide rights-of-way for water projects upon proper application. A land report documents the action on each application, and is prepared at the same time as site-specific NEPA documentation.

4212 LANDS

Lands actions commonly involve authorizing specific land uses or disposing of public lands. These actions are considered upon application and cannot reasonably be predicted in the RMP.

The RMP will identify specific tracts of land available for community expansion, public purposes, or private use; these lands will be considered available for sale or other disposal. For other lands, upon receipt of application or proposal for a land sale, exchange, state indemnity selection, or other disposal action, a plan amendment will be prepared. Generally, disposals of qualifying land will be allowed if: (1) the sale meets one of the three criteria in Sec. 203 of the Federal Land Policy

and Management Act (FLPMA); (2) disposal meets requirements of other appropriate law, such as the R&PP Act; and (3) disposal is not precluded by law. A land report documents the action on each application and is prepared concurrently with site-specific NEPA documentation.

Existing R&PP leases generally carry the right to patent. Upon proper application the existing R&PP leases (140 acres) which have previously been determined suitable for R&PP lease or patent could be patented. An additional area (470 acres) adjacent to Recapture Lake could be classified as suitable for disposal, for a total of 610 acres.

Permits or leases for special uses of the public lands will be considered upon application. The RMP could impose conditions of use within specific areas. Special uses, including community expansion, will generally be accommodated on qualifying lands upon proper application.

Unauthorized use of the public lands will be resolved either through termination of the activity or by lease of the lands to the trespasser, consistent with RMP management objectives. Priority will be given to resolving unauthorized uses where malicious or criminal intent is involved, sensitive resources of national significance are threatened, or rights of authorized users are detrimentally affected.

4220 WITHDRAWAL PROCESSING AND REVIEW

FLPMA requires the BLM to review agency withdrawals and C&MU classifications. This is done in response to schedules prepared by USO, or upon special BLM or agency request. SJRA will review other agency withdrawals (24,140 acres). After review, withdrawals found to be obsolete will be removed. New withdrawals will be processed upon request from the BLM or other federal agencies, but can be made only by the Secretary or by Congress.

The C&MU classifications will remain in force until either the classification is lifted or the lands are formally withdrawn. Existing land leases, which have been classified under the R&PP or the Small Tract Acts, will not be affected by this RMP.

4311 FOREST MANAGEMENT

The SJRA manages woodland products by controlling harvests and sales. The SJRA will sell woodland products in designated areas for fuelwood, posts, Christmas trees, ornamental or medicinal purposes, and other uses as demand arises. Fuelwood harvest will be limited to pinyon and juniper. Onsite use of wood products by recreationists (for example, campfires) will be allowed unless specifically excluded in certain areas under the RMP.

All forest lands in SJRA will be assigned to one of four categories in activity plans following completion of the RMP. The categories are

- lands available for intensive management of forest products;
- lands available for restricted management of forest products;
- lands where forests will be managed to enhance other uses; and
- forest lands not available for management of forest products.

The RMP will describe management objectives that will be used to determine which areas are assigned to which of the four categories, and to impose conditions on forest product use.

Prior to any land treatment project (such as thinning) that would remove woodland products, the SJRA will strive first for the sale and second for the free use of those products.

4312 FOREST DEVELOPMENT

SJRA may develop forest resources for sustained yield, where feasible, in areas where sale of forest products is allowed under the RMP. The RMP may impose conditions of use or reclamation requirements in certain areas.

4322 GRAZING MANAGEMENT

Changes in livestock use may be made in response to resource conflicts identified in the RMP or as a result of monitoring range condition and

trend. Monitoring will take actual use, utilization, trend, and climate into account to measure vegetative change and to determine the need for subsequent livestock adjustments. The first opportunity to make changes based on monitoring results will be 5 years after the RMP is adopted.

SJRA grazing allotments have been evaluated as to resource potential and conflicts, and assigned a management category (appendix D). Categories were assigned in accordance with BLM range policy. BLM staff have contacted the grazing permittees, and the permittees have agreed with the assigned categories. BLM will endeavor to improve allotments with identified resource problems.

The RMP will identify allotments where existing allotment management plans (AMPs) will be implemented or modified, or where new AMPs will be prepared and implemented. AMPs are prepared after approval of the RMP, to meet the objectives stated in the RMP. AMPs will describe in detail the management objectives, grazing system to be used, and the range improvements to be constructed in specific allotments. Ecological site information will be used to establish management objectives, management potential, and treatment potential within the allotment.

Range improvements will be used to facilitate grazing management. Areas available for improvements will be determined in the RMP; potential for rangeland treatments will be determined by using ecological site information. The extent, location, and scheduling of range projects will be determined on an allotment basis, and will depend on operator contributions and BLM funding capability.

An investment analysis will be done where an AMP suggests projects that would require expenditure of rangeland improvement funds. The analysis serves to: (1) identify allotments where there is opportunity for a positive return on the investment; (2) integrate economic, resource, and social objectives in prioritizing investments; and (3) incorporate priorities and detailed investment analysis in annual work plans.

Grazing systems will be maintained, revised, or implemented. Seasons of use may be changed to resolve surface management conflicts identified in the RMP or in response to monitoring. Grazing system implementation will be based on consideration of (1) objectives detailed in an AMP; (2) resource characteristics detailed in the RMP; (3) vegetation characteristics determined by monitoring; (4) availability of water; (5) operator requests; and (6) implementation costs.

The SJRA administers grazing on 312,660 acres available for livestock use within Glen Canyon NRA under BLM policy and regulations.

4331 CULTURAL RESOURCES MANAGEMENT

Natural history, palentology, archaeology, and history resources are all administered under this program. By law, the BLM is charged with protecting these resources from adverse impacts resulting from development, grazing, and recreation activities and from vandalism.

The BLM will conduct an ongoing inventory for natural history, paleontological, and cultural resources as funding and personnel become available. Identified resources will be protected as required by law, regulation, and policy; activity plans for management of specific sites will be prepared if needed.

The BLM will manage cultural resources for current scientific use, potential scientific use, conservation for future use, management use, socio-cultural use, public use, and discharged use (these terms are explained in the Glossary). Five broad cultural use zones will be designated; within each zone, management of cultural resources will concentrate on specific use categories. Cultural properties will be protected from direct and, where possible, indirect adverse impacts from surface disturbing actions. National Register cultural properties and districts, and those eligible for designation, will be protected and managed for specific cultural resource uses. Additional cultural properties may be designated to the National Register if they qualify. Cultural resources management plans (CRMPs) may be developed for management of specific cultural properties and districts if needed.

4332 WILDERNESS MANAGEMENT

Wilderness study areas (WSAs) and instant study areas (ISAs) will be managed under the wilderness interim management policy (IMP) until Congress either designates them as wilderness or drops them from the wilderness review process. Actions allowed under IMP will also be subject to restrictions developed in the RMP. Designated wilderness will be managed under the regulations at 43 CFR 8560. A wilderness management plan will provide site-specific management guidance for each designated wilderness area.

Areas studied and not designated as wilderness will be released from wilderness review by Congress. When released, these areas will be managed under the guidance for management of other resource programs given in the RMP.

4333 RECREATION RESOURCES MANAGEMENT

This program covers management of recreation resources, recreational use, and visual resources.

Specific areas are managed as special recreation management areas (SRMAs) in recognition of intensive recreational use or special recreational values. The remainder of the SJRA is managed as the San Juan Extensive Recreation Management Area (RMA). Some SRMAs will be designated through the RMP. Additional SRMAs may be designated in response to future use demands. Dispersed recreation use will be allowed throughout the SJRA, with permits required for commercial use. Permits will also be required for private use in the San Juan River SRMA. Existing developed recreation sites will be maintained at Sand Island, Mexican Hat, Kane Gulch Ranger Station, Mule Canyon Ruins, Butler Wash Ruins, and Three Kiva Pueblo (150 acres total).

The SJRA will continue to manage recreational use of the San Juan River in conjunction with the NPS under the existing memorandum of understanding (see chapter 5).

Off-road vehicle (ORV) use designations will be made following completion of an ORV implementation plan (appendix E). The designations will

be those developed in the RMP. The ORV designations do not distinguish between recreational and nonrecreational use; ORV use in an area designated closed or where limited may be allowed under an authorized permit. ORV designations do not apply to federal, state, or county roads, or to private or state inholdings.

Recreation opportunity spectrum (ROS) classes (appendix F) have been identified based on inventory work in the SJRA. These classes reflect current conditions based on five setting factors. These factors are reviewed periodically; a change in conditions could result in a change in the ROS class.

Visual resource management (VRM) class areas have been identified based on inventory work in the SJRA. Classes are based on visual resource conditions, such as scenic quality, distance zones, and sensitivity levels (appendix G). These are reviewed periodically; a change in conditions could result in a change in the VRM class.

The VRM classes give management objectives to be applied to actions taking place on the public lands. Land use proposals are reviewed individually to determine whether visual impacts can be adequately mitigated to meet the objective of the existing VRM class.

4341 SOIL, WATER, AND AIR MANAGEMENT

The BLM will manage actions on the public lands to protect the soil resource. Additionally, the BLM will manage the soil resource to maintain or increase soil productivity as needed.

The BLM will maintain the soil data base by updating range site descriptions from information collected through range monitoring and other specific studies. Information is shared with the Soil Conservation Service (SCS).

Existing watershed control structures will be maintained. Additional structures may be constructed if needed, subject to conditions developed in the RMP.

The BLM will maintain the data base on water quantity. Water quality data have been entered

on the USGS STORET computer program and will be maintained. The BLM will maintain water rights files and data entry on the statewide computer system. USGS stream gauging stations will be accommodated. The BLM will take appropriate actions to maintain the water quality of streams within SJRA to meet state and federal criteria. The public lands will be managed so as to abide by laws, executive orders, and regulations on floodplain and wetland areas to reduce resource loss from floods and erosion.

The BLM will manage actions on the public lands to meet air quality standards prescribed by federal, state, and local laws. The BLM will protect existing air quality when feasible. The BLM has identified the existing primitive areas as areas to be managed to protect pristine air quality conditions and other air quality related values (99,850 acres total).

4342 HAZARDOUS WASTE MANAGEMENT

The BLM will inventory the SJRA to identify sites with potentially hazardous waste and develop management plans for these sites. At this time (1986) BLM policy for this program is still being formulated.

4351 HABITAT MANAGEMENT

Wildlife habitats will be managed to provide forage, cover, water, and space requirements to support major wildlife species. Habitat management plans (HMPs) will be prepared and implemented to provide for site-specific wildlife habitat management. Existing wildlife water developments will be maintained. Fifteen water sources have been developed for use by bighorn sheep, and two for antelope.

Management actions in floodplains and wetlands will preserve, protect, and, if necessary, restore natural functions in accordance with laws, executive orders, and regulations. Actions will be taken to minimize degradation of streambanks, loss of riparian vegetation, and degradation of aquatic habitats. Ecological site information from range monitoring will be used to establish riparian habitat potential and monitor conditions. Activities in riparian zones, including mitigation of surface disturb-

ance, will be designed to maintain riparian and aquatic habitat conditions. Bridges and culverts will allow adequate fish passage where applicable.

Big game species habitat will be managed in cooperation with the Utah Division of Wildlife Resources (UDWR). Interagency big game studies will monitor habitat conditions.

4352 ENDANGERED SPECIES MANAGEMENT

No management action will be permitted on public lands that would jeopardize the continued existence of plant or animal species listed as threatened or endangered, or officially proposed for listing. The BLM will consult the U.S. Fish and Wildlife Service for a formal or informal consultation under Section 7 of the Endangered Species Act before approving or implementing any action that may affect a protected species. SJRA will continue to cooperate in surveys to determine the extent or existence of threatened, endangered, or sensitive species.

4360 FIRE MANAGEMENT

Fires will be suppressed in accordance with a fire management plan prepared to implement RMP decisions. The fire management plan will detail prescriptions for or limitations on fire suppression, including areas where fires will be completely suppressed or allowed to burn, equipment and techniques allowed in specified areas, and values at risk to be protected.

SOCIOECONOMICS

Socioeconomic considerations are part of every BLM management program, but are not a separate management program. The social and economic impacts of implementation of any management action are required to be assessed either through the RMP/EIS or in the site-specific NEPA documents prepared at the activity level.

BLM budget restrictions are also a management consideration. Lack of funding can prevent full implementation of approved projects or designations. Priorities in funding can shift over time, resulting in changes in implementation or monitoring schedules.

The RMP is prepared under the assumption that all management actions and designations will be adequately funded and staffed, based on past levels (explained in the MSA). A comparison of budget requirements for each alternative assessed has been prepared as part of the RMP/EIS.

ALTERNATIVES ASSESSED

Five alternative plans are considered in detail in this EIS. Each plan presents guidance for all resource programs managed by the SJRA. Except for alternative A, each plan presents generalized zones or levels of management (see the Summary). Decisions to protect or produce a given resource in that zone are applied to management of all resource programs. This ensures that requirements applied to an oil and gas operator, for example, correspond to the requirements applied to a rancher or recreationist.

Alternative A (the no action alternative) represents continuation of current management. This provides a baseline for comparing the other alternatives and anticipating the effects of their implementation.

Alternative B provides for (1) the production of mineral resources; and (2) the production of forage and use of public lands for grazing.

Alternative C provides for (1) the use of the public lands for recreation by maintaining the spectrum of recreational opportunities now present; (2) the production of wildlife habitat and protection of specialized wildlife habitats; and (3) the preservation of watershed values through protection of certain soils resources.

Alternative D provides for (1) preservation of natural succession of plant communities by minimizing surface disturbance, particularly in four large areas; (2) protection of cultural resources beyond the requirements of law; and (3) increasing the extent of areas available for primitive uses.

Alternative E (the preferred alternative) provides for (1) continuation of livestock grazing at current use levels; (2) protecting the opportunity for primitive and semiprimitive recreational uses in certain areas; (3) protection of

certain wildlife habitat areas; (4) the preservation of watershed values through protection of certain soils resources; and (5) making public lands available for the production of mineral resources.

ALTERNATIVES CONSIDERED BUT ELIMINATED

The following were considered by the planning team but were not developed into complete alternatives or subalternatives, for the reasons given.

NO GRAZING

The interdisciplinary team considered exclusion of grazing from all the public lands in SJRA. This would have provided one end of a spectrum of varying grazing intensities on public lands. This is not considered in any alternative, however, because it did not provide a reasonable form of management given the historical use of the area for grazing (over 100 years). Specific areas where grazing use conflicts with vegetation management, wildlife use, or recreation use have been identified, and the exclusion of grazing in these areas has been considered under one or more of the alternatives that were developed.

SPECIAL MANAGEMENT AREAS

The team considered putting together an alternative consisting of the designation of special management areas, such as areas of critical environmental concern (ACECs). This alternative was not developed because designations of qualified areas as ACECs or other special management areas such as research natural areas (RNAs), outstanding natural areas (ONAs), or national historic landmarks (NHLs) are part of the five alternatives that were developed.

WILDERNESS SUITABILITY

The SJRA contains 2 ISAs and all or part of 16 WSAs (table 1-1 and figure 1-1). All ISAs and WSAs are managed under specific rules that regulate the amount and degree of surface disturbing activities that can take place. These rules are found in the IMP.

The wilderness review process provides for BLM to determine, through the planning process, whether a WSA or ISA is more suitable for wilderness designation or for other uses. In other states, these studies have often been documented in the RMP/EIS. However, WSAs and ISAs in Utah have been compared in a statewide wilderness EIS, published (in draft for public review) in February 1986. Because wilderness suitability is being studied in that EIS, it will not be covered in the San Juan RMP/EIS. The RMP/EIS, however, will be used to determine how the ISAs and WSAs should be managed if Congress does not designate them as wilderness and drops them from wilderness review. Only Congress can decide to designate an area as wilderness or to release an ISA or WSA from the BLM's wilderness review.

LEGISLATIVE ACTIONS OR ACTIONS OF OTHER AGENCIES

Over the past few years, there has been discussion that some of the public lands in SJRA could be used for various projects that would involve legislation or management by another agency. These ideas have been presented to the public in the newspapers, on television, or in public meetings or hearings. They include:

- (1) Project BOLD, the 1982 proposal by the State of Utah to block up state lands [UDNR, 1982]. This would be done by exchanging (or trading) public lands administered by the BLM for the scattered sections of lands now owned by the State. To accomplish this, Congress would have to pass special legislation. The BLM has no control over this process, which would require a separate impact assessment. For that reason, Project BOLD is not considered under any alternative in the RMP/EIS.
- (2) Expansion of Canyonlands National Park (NP). From time to time proposals have been made to change the boundaries of Canyonlands NP. In 1985 there was an informal public proposal to increase the park in the vicinity of Davis and Lavender Canyons. An Act of Congress would be required in order to change the park boundaries. The BLM has no control over this type of legislation,

and no specific formal proposal has been made. Therefore, changes to Canyonlands NP boundaries are not considered in the RMP/EIS.

- (3) Expansion of Hovenweep National Monument (NM). In 1985 the NPS proposed expanding the borders of Hovenweep NM to include about 1,800 acres of public land in SJRA. An Act of Congress or a Secretarial Order would be required in order to change the NM boundaries. The BLM has no control over this type of legislation, and no specific formal proposal has been made. Therefore, changes to Hovenweep NM boundaries are not considered in the RMP/EIS.
- (4) BLM/USFS Interchange. The Departments of Interior and Agriculture have proposed to interchange management of BLM administered public lands and USFS administered federal lands. Under the proposal as presented in 1985, the BLM would assume management of the Manti-LaSal NF in San Juan County. Such an exchange would require approval of the President and perhaps an Act of Congress. This interchange will not be considered in the RMP/EIS because (1) the details are still being worked out, (2) it has not received formal approval, and (3) the USFS is developing a land use plan for Manti-LaSal NF, which would be used even if the interchange occurred.
- (5) Nuclear waste repository studies. Since 1976, several sites on public lands in SJRA have been considered for further study under the site characterization studies for a national nuclear waste repository. Public attention has been focused on a site in Davis Canyon as a candidate for further testing. The Department of Energy (DOE) has prepared extensive environmental documentation weighing the suitability of this site (and other sites in SJRA) for various phases of testing and repository development [DOE, 1984]. The President, with help from Congress, will make the final decision. The BLM has no control over this process. At this time (1986) there is no definite proposal to use public lands in SJRA for a specific phase of the testing or for development of the nuclear waste repository. For

these two reasons, the nuclear waste repository studies will not be addressed in any alternative in the RMP/EIS.

COAL UNSUITABILITY

The BLM is required to make a special, detailed study before coal is leased, to determine if any areas are unsuitable for development of underlying coal resources. Because the coal resources in the SJRA are of marginal quality, and because developers have not expressed interest in mining this coal, the coal unsuitability study will not be done now and will not be addressed in any alternative in the RMP/EIS. If interest develops later, a coal unsuitability study will be done and the RMP amended. For analysis purposes, coal leasing has been considered under alternative B.

DETAILED DESCRIPTION OF ALTERNATIVES

OVERVIEW

Five alternative plans were developed to provide a range of answers to the questions asked in the planning issues (see chapter 1).

For each planning question, the current means of managing that resource was always used as the no action alternative, providing a baseline for comparison. Alternatives were then arranged to provide for more or less management, production, or use of the resource at issue. Alternative E, the preferred alternative, was formulated by management based on the results of the other four alternatives. It is the least "pure" of the alternatives. It incorporates actions from each of the other alternatives, but also includes elements not found in any of the others.

ISSUE RESOLUTION SUMMARY

The issues were resolved to provide for the following levels of management. (This list is generalized and does not hold true in all cases.)

Livestock Management

- A - Continue current management.
- B - Maximize grazing use.

- C - Limit grazing use to protect recreation.
- D - Limit grazing use to allow natural plant succession.
- E - Continue current management.

Wilderness Study Area Management

- A - Continue management as it would be if the wilderness review had not taken place.
- B - Maximize minerals, livestock, and forestry uses of ISAs and WSAs to the greatest extent possible.
- C - Protect primitive and semiprimitive recreation values now present, and protect wildlife supplemental values.
- D - Protect wilderness values by protecting vegetation ecosystems, a supplemental value; protect cultural resources (also a supplemental value) to a greater extent than law requires.
- E - Protect most primitive recreation values, and protect semiprimitive recreation values to some extent, in certain parts of ISAs and WSAs; do not protect other wilderness values; protect some supplemental values.

Vegetation Management

- A- Continue current management.
- B - Produce forage vegetation for livestock uses and trees for forestry uses.
- C - Protect vegetation resources in parts of SJRA to provide for recreation opportunities and wildlife habitat and to intensify management of watersheds.
- D - Protect vegetation resources to the maximum extent possible, particularly in four designated areas.
- E - Protect vegetation resources in parts of SJRA to provide for certain recreation opportunities, wildlife habitats, and to manage watersheds. In other areas, provide

livestock forage to the same extent as current management.

Wildlife Habitat

- A - Continue current management.
- B - Do not make special provisions for wildlife habitat.
- C - Protect wildlife habitat so as to allow populations to increase, possibly attaining prior stable numbers (UDWR's long-term big game management goals).
- D - Do not make special provisions for wildlife habitat.
- E - Manage certain areas to protect wildlife habitat, but do not set population goals.

Recreation Management

- A - Continue current management.
- B - Do not make special provisions for recreation management.
- C - Manage all of SJRA to protect recreation opportunities now present, and intensify recreation management.
- D - Do not make special provisions for recreation management.
- E - Manage SJRA to protect some recreation opportunities now present in some areas, and intensify recreation management in some areas.

GOALS FOR ALTERNATIVES

The interdisciplinary team developed goals for each alternative and decided what trade-offs were needed to resolve the planning issues. These management goals, by alternative, follow.

Alternative A (No Action)

Alternative A is the current management. It would require no change from present management (no action on the part of BLM). It is used in this EIS to provide a basis of comparison when

the environmental impacts of each alternative are analyzed.

Goal

The goal of alternative A is to continue present management of public lands and resources in SJRA.

Trade-Offs for Each Planning Issue

Livestock Management. Maintain existing stocking levels and seasons of use in existing allotments.

Wilderness Study Area Management. Maintain special protection for Dark Canyon and Grand Gulch Primitive Area ISAs, and manage for primitive recreation. Require special protection of WSAs only if it would not limit livestock use below current levels or limit minerals production.

Vegetation Management. Allow surface disturbance to occur throughout SJRA, but require revegetation of disturbed areas. Permit use of vegetation resources to benefit livestock, and for other human uses in designated areas. Protect vegetation in watersheds and riparian areas only if livestock are not limited.

Wildlife Habitat Management. Manage wildlife habitat to support existing big game populations. Allow projects that would permit other wildlife populations to increase, only as long as livestock grazing or minerals uses are not limited.

Recreation Management. Manage recreation use in existing SRMAs and establish additional SRMAs only if needed because of heavy use or evidence of degradation of natural resources, to protect public health, safety and welfare. Maintain existing ORV closures in existing primitive areas.

Alternative B

Goal

The goal of alternative B is to provide for the maximum minerals development and livestock

grazing in the greatest possible area within SJRA.

Trade-Offs for Each Planning Issue

Livestock Management. Include all of SJRA (including isolated scattered tracts not now allotted for grazing) in grazing allotments, and increase number of allotments as necessary to cover all public land. Allow livestock to graze at full preference where possible. Maximize livestock forage production through range improvements, intensive grazing systems, and changing season of use. Conflicts between grazing and minerals production would be resolved in favor of minerals production; other conflicts with grazing would be resolved in favor of livestock.

Wilderness Study Area Management. Place special protective designations on ISAs and WSAs only if these would not limit minerals production or livestock grazing.

Vegetation Management. Protect vegetation in certain areas to allow for rangeland studies, only if minerals production is not limited. Allow surface disturbance to occur throughout the rest of SJRA, and require revegetation. Increase vegetation resources and maximize use to benefit livestock, and other human uses in designated areas.

Wildlife Habitat Management. Manage wildlife habitat to maintain current wildlife populations, and to increase game species, where there is no conflict with minerals production or livestock grazing. Allow deterioration of wildlife habitat where necessary to provide for minerals production, or livestock grazing.

Recreation Management. Maximize minerals development and livestock grazing in and adjacent to SRMAs, except in existing developed recreation sites. Designate all of SJRA as open to ORV use, unless limitations are necessary to protect vegetation in specific areas for rangeland studies.

Alternative C

Goal

The goal of alternative C is to maximize recreational use of the public lands and resources, increase wildlife populations, protect sensitive watersheds, and allow for multiple uses where these do not conflict with recreation.

Trade-Offs for Each Planning Issue

Livestock Management. Allow livestock use in existing grazing allotments. Allow livestock use up to current use levels wherever possible, but decrease where necessary to protect existing recreational opportunities, or to allow for protection of watershed values. Change season of use where necessary to eliminate competition with wildlife (big game).

Wilderness Study Area Management. Place special designations on ISAs and WSAs where these would preserve existing recreational opportunities.

Vegetation Management. Protect vegetation in certain areas to preserve existing recreational opportunities. Allow surface disturbance to occur only where consistent with existing recreational opportunities. Use only native species for revegetation where necessary to preserve existing recreational settings. Permit use of vegetation resources to benefit livestock and for other human uses in designated areas, only where recreational opportunities would not be limited. Protect vegetation in big game habitats, riparian areas, and watersheds only if recreational opportunities are not limited, but allow protection even if other resource uses are limited.

Wildlife Habitat Management. Manage wildlife habitat to be compatible with existing recreational opportunities. Protect and increase wildlife habitat as necessary to allow wildlife populations to attain prior stable numbers, and to maximize the extent of riparian habitat.

Recreation Management. Maintain existing recreational opportunities, and allow for increased recreational use where increased

TABLE 2-1

Identified Natural Succession Areas, Alternative D

<u>Area Number</u>	<u>Acres Public Land</u>	<u>Acres Inheld State Land</u>	<u>Acres Inheld Private Land</u>	<u>Total</u>
1	145,860	16,000	5,120	166,980
2	263,470	19,680	18,240	301,390
3	634,970	19,200	640	654,810
4	<u>10,570</u>	<u>1,120</u>	<u>0</u>	<u>11,690</u>
Totals	1,054,870	56,000	24,000	1,134,870

NOTE: Area numbers correspond to locations shown in figure 2-1.

demand is expected, so long as it is consistent with existing recreational opportunities. Provide developed recreation sites to maximize recreational use consistent with existing opportunities. Designate areas as open, limited, or closed to ORV use to maintain existing recreational settings and to protect wildlife habitat and watershed values.

Alternative D

Goal

The goal of alternative D is to protect vegetation resources by limiting new surface disturbance in the resource area to that which can be reclaimed within 5 years after the start of a project to match the condition existing when the project started. In certain areas, all surface disturbance would be minimized and the land managed to let natural succession of plant communities predominate over human activities. These are areas of at least 10,000 acres, where human caused imprints now present are confined to less than 20 percent of the total area (exclusive of cultural imprints created prior to 1900). The interdisciplinary team developed these two criteria to identify areas where natural succession processes could be expected to predominate over cultural influences. Four areas have been identified (table 2-1 and figure 2-1). The four areas, which total 1,054,870 acres, were the only areas that met these criteria.

Trade-Offs for Each Planning Issue

Livestock Management. Allow livestock use in existing grazing allotments. Minimize livestock use in the four identified areas to allow natural succession to predominate.

In the remainder of SJRA, allow livestock use up to current use levels, but decrease where necessary to protect natural vegetation in riparian and aquatic areas. Change season of use where necessary to improve plant vigor (grasses).

Wilderness Study Area Management. Place special designations or protection on ISAs and WSAs where these would preserve significant natural values.

Vegetation Management. Within the four identified areas, protect all vegetation resources by minimizing human caused alteration of vegetation. In the remainder of SJRA, protect native vegetation in riparian, aquatic, and other sensitive plant habitats, even if other resource uses are limited. Outside the identified areas, allow use or disturbance of vegetation resource to benefit livestock or for other human uses only as long as the 5-year reclamation requirement can be met. Use only native species for revegetation in the identified natural succession areas, riparian and aquatic areas, and other areas of sensitive plant habitats. Allow maintenance of existing vegetation manipulation projects, but do not allow new projects of this type.

Wildlife Habitat Management. Manage wildlife habitat to be compatible with vegetation management criteria. Within identified areas, allow natural processes to occur so that habitat is provided for a diversity of wildlife species, but do not identify population targets.

Recreation Management. Maximize primitive recreation opportunities in identified areas. Allow for increased recreational use where increased demand is expected, so long as the identified criteria are met. Maintain existing developed recreational sites so as to minimize impacts on vegetation resources. Close identified areas to ORV use and limit ORV use in riparian and aquatic areas. Designate other areas as open to ORV use unless limitations are necessary to protect other natural resource values.

Alternative E

Goal

The goal of alternative E is to manage public lands for multiple use of public resources, as long as grazing use is maintained at existing levels, certain primitive recreation opportunities are protected, certain wildlife habitats are protected, watersheds are protected, and minerals uses are otherwise allowed to increase.

Trade-Offs for Each Planning Issue

Livestock Management. Maintain existing stocking levels in existing allotments, exclude livestock use to protect certain wildlife habitats (riparian areas along upper Indian Creek and Cajon Pond, and bighorn sheep habitat on five mesa tops), and change season of use where needed for better range management. Conflicts with minerals production and other resource use conflicts would be resolved to allow for existing levels of livestock use.

Wilderness Study Area Management. Place special designations or protection on ISAs and portions of some WSAs to recognize or preserve certain primitive recreation opportunities or natural resource values.

Vegetation Management. Allow surface disturbance in certain ROS primitive (P) class areas to occur only where consistent with existing recreational opportunities, and reclaim surface disturbance in certain ROS semiprimitive non-motorized (SPNM) class areas to minimize change to SPNM class opportunities. Use native species for revegetation in these areas to preserve natural settings. Permit use of vegetation to benefit livestock, up to existing use levels, but exclude grazing use in some areas. Protect certain recreation settings, riparian areas, five mesa tops in bighorn sheep habitat, and some sagebrush areas in crucial deer winter range from vegetation manipulation. Protect riparian vegetation in certain riparian areas.

Wildlife Habitat Management. Protect aquatic/riparian habitat along upper Indian Creek and Cajon Pond. Protect certain big game habitats in selected areas from minerals and livestock uses. In other areas protect wildlife habitat only if livestock grazing is not limited and minerals uses not excluded. Do not identify target populations.

Recreation Management. Maintain existing ROS P class areas (except in the Squaw Canyon area), only if livestock are allowed at existing levels of use. Protect existing ROS SPNM class areas (except in the Squaw Canyon area) through reclamation standards, but do not exclude other uses. Protect primitive recreation opportunities in

existing primitive areas. Allow for increased recreational use; develop additional recreation sites. Designate certain ROS P class areas as closed to ORV use; limit ORV use in certain ROS SPNM class areas to existing roads and trails; and designate other areas as open to ORV use unless limited use is necessary to protect other natural resource values.

OBJECTIVES FOR PROGRAM MANAGEMENT

After developing goals for resolution of the issues under the different alternatives, the interdisciplinary team looked at the resource management programs administered by the SJRA to see how the goals would apply to the programs. Each resource management program was analyzed in the MSA. The MSA describes current management under the old management framework plans (MFPs), the capability of natural resources present to respond to demand, and management opportunities present. The objectives for existing management were written down for alternative A. Then objectives were developed for each of the other alternatives, to fit with the overall management goals.

PROGRAM MANAGEMENT ACTIONS

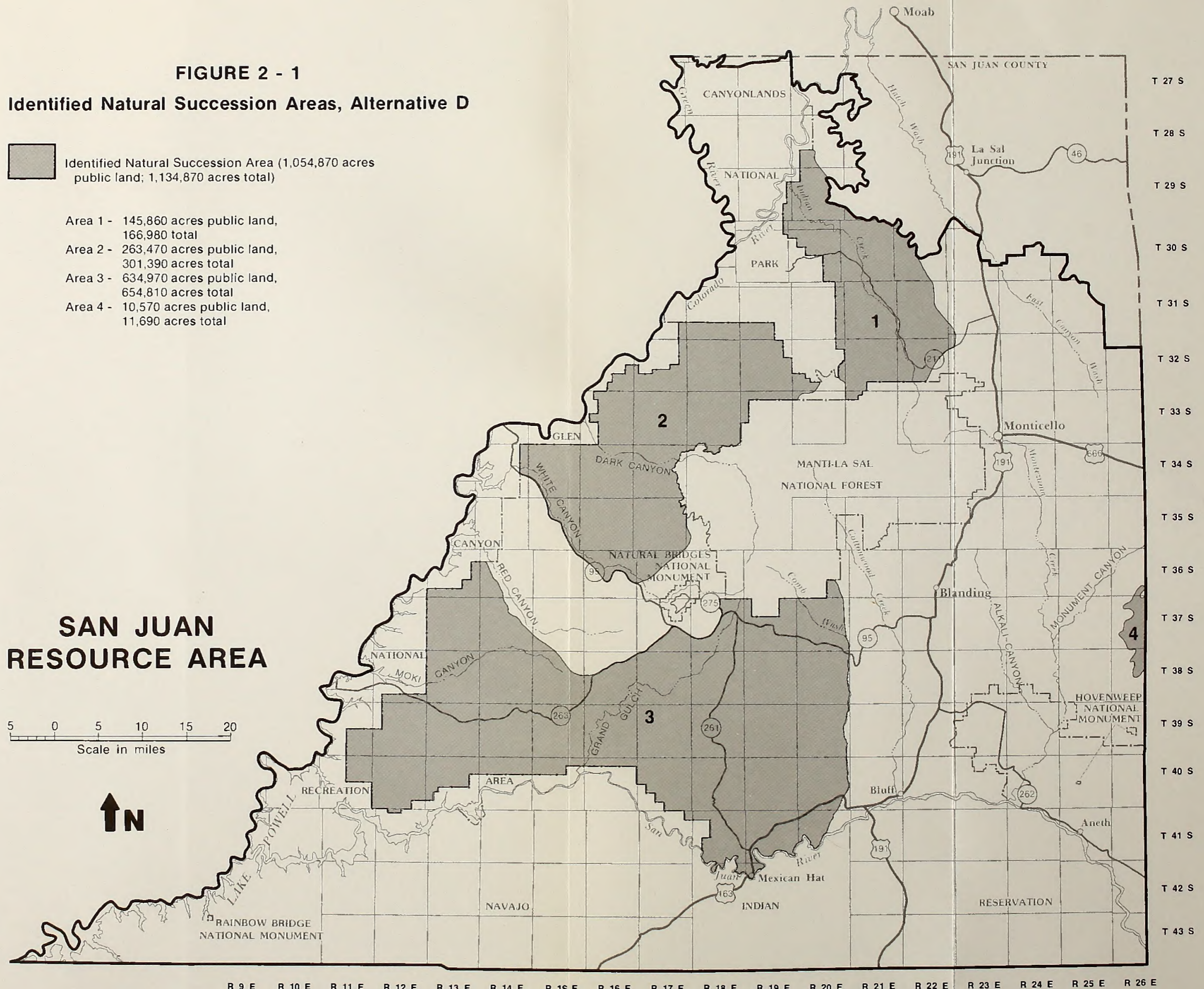
Following the development of program management objectives for each alternative, the interdisciplinary team determined how these objectives could be met. Separate management actions were written, for each resource management program, to solve the questions or problems that had been identified in the MSA. These are given in the introduction to this EIS (table I-2). Alternative solutions were not developed where either (1) current management was believed to be adequate and no change was needed; or (2) administrative problems involving budgets or personnel assignments had been identified, and a solution decided upon that would not change under any alternative. These actions were described under Management Guidance Common to all Alternatives (figure I-3).

In developing the program management actions, the planning team reviewed the opportunities for special management identified for each program in the MSA. Nominations for special management made by members of the public or other agencies

FIGURE 2 - 1
Identified Natural Succession Areas, Alternative D

- Identified Natural Succession Area (1,054,870 acres public land; 1,134,870 acres total)

- Area 1 - 145,860 acres public land, 166,980 total
- Area 2 - 263,470 acres public land, 301,390 acres total
- Area 3 - 634,970 acres public land, 654,810 acres total
- Area 4 - 10,570 acres public land, 11,690 acres total



**SAN JUAN
 RESOURCE AREA**

5 0 5 10 15 20
 Scale in miles



R 9 E R 10 E R 11 E R 12 E R 13 E R 14 E R 15 E R 16 E R 17 E R 18 E R 19 E R 20 E R 21 E R 22 E R 23 E R 24 E R 25 E R 26 E

A R I Z O N A

C O L O R A D O

FIGURE 2 - 1
Identified Natural Succession Areas, Alternative D



SAN JUAN
RESOURCE AREA

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were considered along with preliminary identification of areas in the MSA. Areas identified by the District Manager as having potential for ACEC designation were analyzed in at least one of the alternatives. Other types of special designations were also analyzed where appropriate. These are shown in figures 2-2, 2-3, 2-4, 2-5, and 2-6.

A summary of areas discussed in the MSA, preliminary identification, and rationale for potential ACEC analysis are found in appendix H. The management prescriptions developed for the alternative ACECs and other special designations are explained in appendix I. The effects of special management designations are analyzed in chapter 4.

Alternative designations for cultural resource management are listed in table 2-2 and alternative developed recreation sites in table 2-3. Developed campsites would include picnic tables, fire rings, and rest rooms. These are shown in figures 2-7, 2-8, 2-9, 2-10, and 2-11.

Livestock management actions were developed to meet objectives for the different alternatives. Under each alternative except D, specific areas were identified as having potential for land treatments to increase available forage. These are shown in figures 2-12, 2-13, 2-14, and 2-15. Under alternative D, no new land treatments would be allowed.

For each alternative except alternative A, a generalized plan emerged showing zones of land use management (table S-1 and figures S-1, S-2, S-3, and S-4). These incorporate combinations of existing management, management to protect sensitive resources as identified in chapter 3, management to recognize special management designations and, for alternative D, management to protect the identified natural succession areas shown in figure 2-1 and the remaining vegetation resource. Conditions imposed by the alternatives for management of these areas are explained in appendix A. Management conditions for areas not identified as requiring special treatment would be as described under standard operating procedures in appendix A.

RMP IMPLEMENTATION AND MONITORING

Management actions identified in the RMP will be implemented over a 10-year period. For some resource management programs, specific actions have been identified; for others, site-specific activity plans will be developed subsequent to approval of this RMP (for example, AMPs or HMPs). Activity plans generally require an auxiliary environmental assessment to assess site-specific impacts prior to implementation.

The last step of the planning process is monitoring and evaluating the RMP after it is implemented. The final plan will be monitored continually and formally evaluated at 5-year intervals. Monitoring will include making sure that all planning decisions are implemented on schedule; whether or not the decisions as implemented on the ground were effective in achieving the goals and objectives of the plan, and whether or not the planning decisions were the best decisions, given the resources and uses of the public lands. Implementation, schedules, monitoring, and evaluation are covered in the RMP monitoring plan (appendix B). The results of all RMP monitoring will be public information, available for review by individuals or other governmental agencies upon request.

A special range monitoring program has been set up to provide data on range condition. This will serve as the basis for change in grazing allocations, if any, based on evaluation of range conditions. This is explained in detail in appendix J.

The RMP may be changed through routine maintenance, amendment, or revision (appendix B). All changes will be documented and will be available for review by the public or governmental agencies.

Plan maintenance will document implementation of management actions or minor changes to the RMP (such as refinement of acreage calculations). Documentation will not normally be subject to public review and comment, but will be kept on file at the resource area office. Formal plan amendments will be prepared when necessary in response to a specific proposal. Plan revisions will formally change the guidance given in the

TABLE 2-2

Alternative Management of Cultural Resources

CULTURAL SITE	Acres by Alternative				
	A	B	C	D	E
<u>National Register Properties</u>					
Alkali Ridge NHL	2,340	2,340	^a 2,340	^a 2,340	^a 2,340
Hole-in-the-Rock Trail	6,110	6,110	6,110	6,110	6,110
Sand Island Petroglyph	b	b	b	b	b
Big Westwater Ruin	b	b	b	b	b
Butler Wash Arch. Dist.	2,030	2,030	2,030	2,030	2,030
Grand Gulch Arch. Dist.	4,240	4,240	4,240	4,240	4,240
Subtotal	14,720	14,720	14,720	14,720	14,720
<u>Potential National Register Eligible Properties</u>					
River House Ruin	b	b	b	b	b
Three Kiva Pueblo	b	b	b	b	b
Butler Wash Ruin	b	b	b	b	b
Mule Canyon Ruin	b	b	b	b	b
Kachina Panel	0	0	b	b	b
Monarch Cave	0	0	b	b	b
Three Story Ruin	0	0	b	b	b
Ruin Spring	0	0	10	10	10
Davis Canyon Archaeo- astronomy Site	0	0	b	b	0
Moon House Ruin	0	0	b	b	0
Shay Canyon Petroglyph	0	0	b	b	0
Subtotal	0	0	10	10	10
<u>Potential National Register Eligible Archaeologic Districts</u>					
Cedar Mesa	0	0	^a 349,640	^a 349,640	^a 349,640
Fable Valley	0	0	^a 5,030	^a 5,030	^a 5,030
Tin Cup Mesa	0	0	^a 2,610	^a 2,610	^a 2,610
Beef Basin	0	0	^a 34,130	^a 34,130	0
Indian Creek Canyon	0	0	^a 740	^a 740	0
Montezuma Creek	0	0	^a 9,970	^a 9,970	0
Subtotal	0	0	402,120	402,120	357,280
TOTAL	14,720	14,720	416,850	416,850	372,010

^aArea where a cultural resource management plan (CRMP) would be developed and implemented.

^bLess than 1 acre.

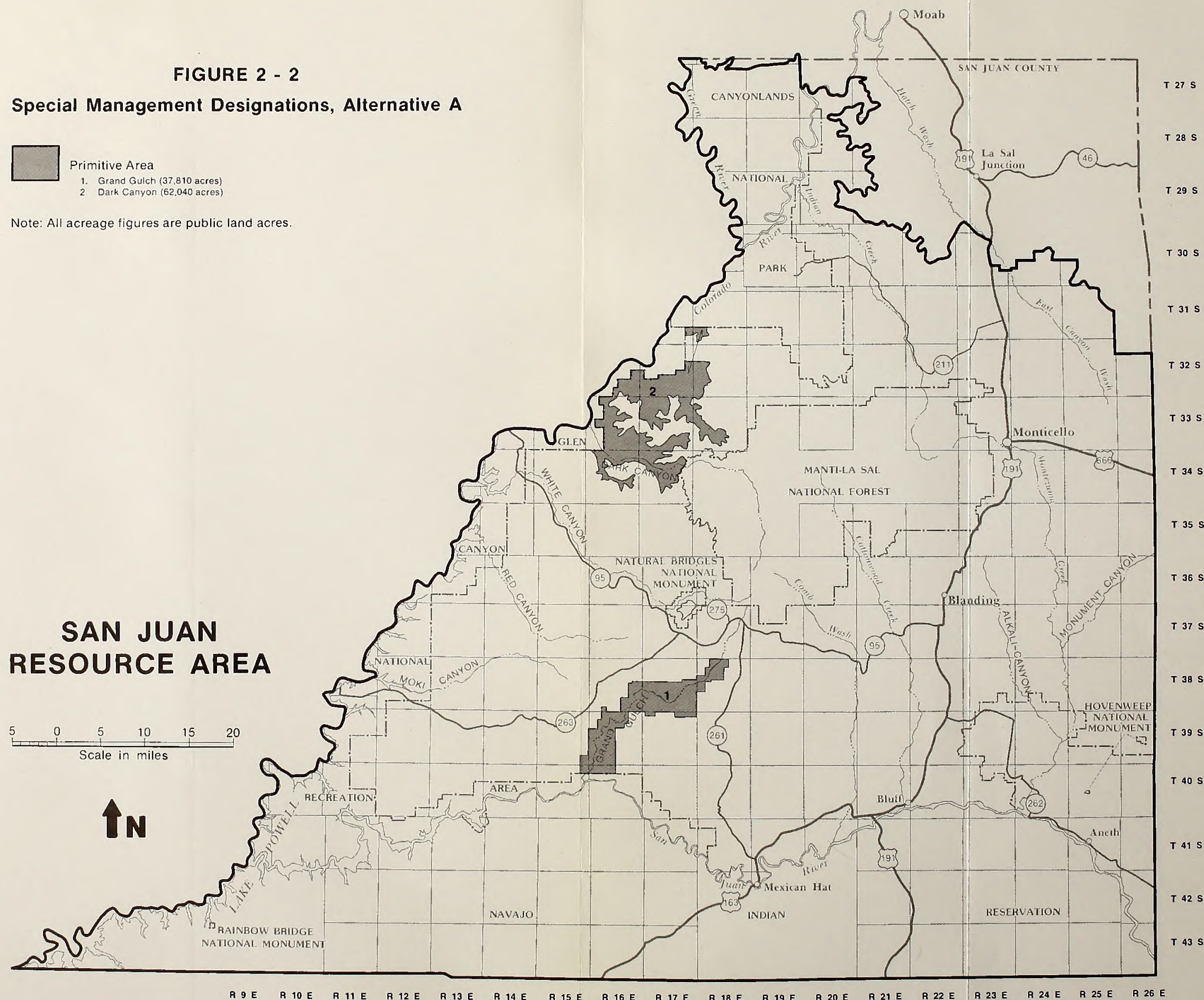
Source: BLM records.

FIGURE 2 - 2

Special Management Designations, Alternative A

- Primitive Area
 1. Grand Gulch (37,810 acres)
 2. Dark Canyon (62,040 acres)

Note: All acreage figures are public land acres.



SAN JUAN RESOURCE AREA

Scale in miles
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C O L O R A D O


FIGURE 2 - 2

Special Management Designations, Alternative A

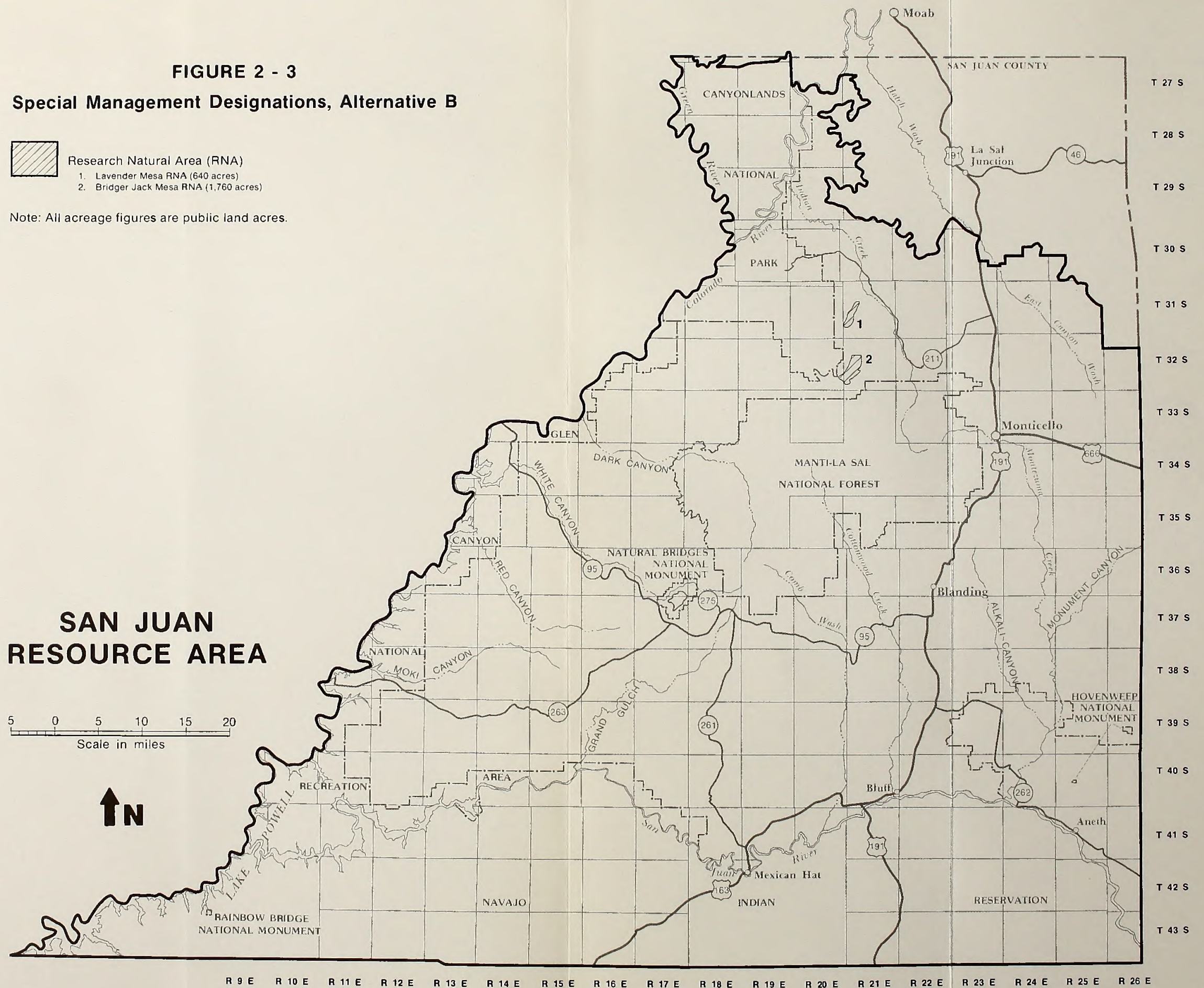
A R I Z O N A

FIGURE 2 - 3

Special Management Designations, Alternative B

- 
 Research Natural Area (RNA)
 1. Lavender Mesa RNA (640 acres)
 2. Bridger Jack Mesa RNA (1,760 acres)

Note: All acreage figures are public land acres.



SAN JUAN RESOURCE AREA

Scale in miles



FIGURE 2 - 3

Special Management Designations, Alternative B

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FIGURE 2
Special Management Designation Alternative A



FIGURE 3
Special Management Designation Alternative B

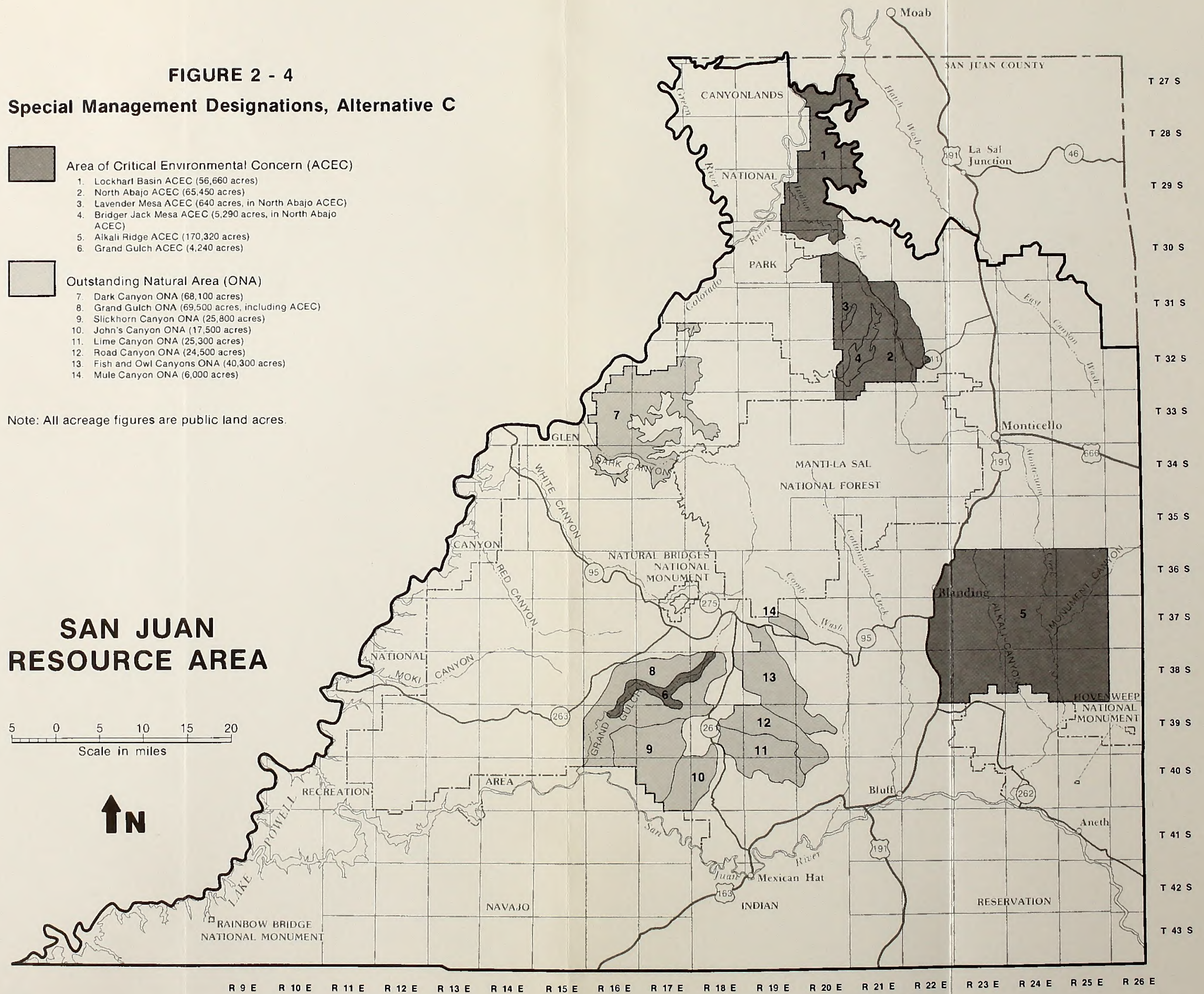


FIGURE 2 - 4
Special Management Designations, Alternative C

- Area of Critical Environmental Concern (ACEC)
 1. Lockhart Basin ACEC (56,660 acres)
 2. North Abajo ACEC (65,450 acres)
 3. Lavender Mesa ACEC (640 acres, in North Abajo ACEC)
 4. Bridger Jack Mesa ACEC (5,290 acres, in North Abajo ACEC)
 5. Alkali Ridge ACEC (170,320 acres)
 6. Grand Gulch ACEC (4,240 acres)

- Outstanding Natural Area (ONA)
 7. Dark Canyon ONA (68,100 acres)
 8. Grand Gulch ONA (69,500 acres, including ACEC)
 9. Slickhorn Canyon ONA (25,800 acres)
 10. John's Canyon ONA (17,500 acres)
 11. Lime Canyon ONA (25,300 acres)
 12. Road Canyon ONA (24,500 acres)
 13. Fish and Owl Canyons ONA (40,300 acres)
 14. Mule Canyon ONA (6,000 acres)

Note: All acreage figures are public land acres.



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 RESOURCE AREA**

Scale in miles
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FIGURE 2 - 4


A R I Z O N A


Special Management Designations, Alternative C



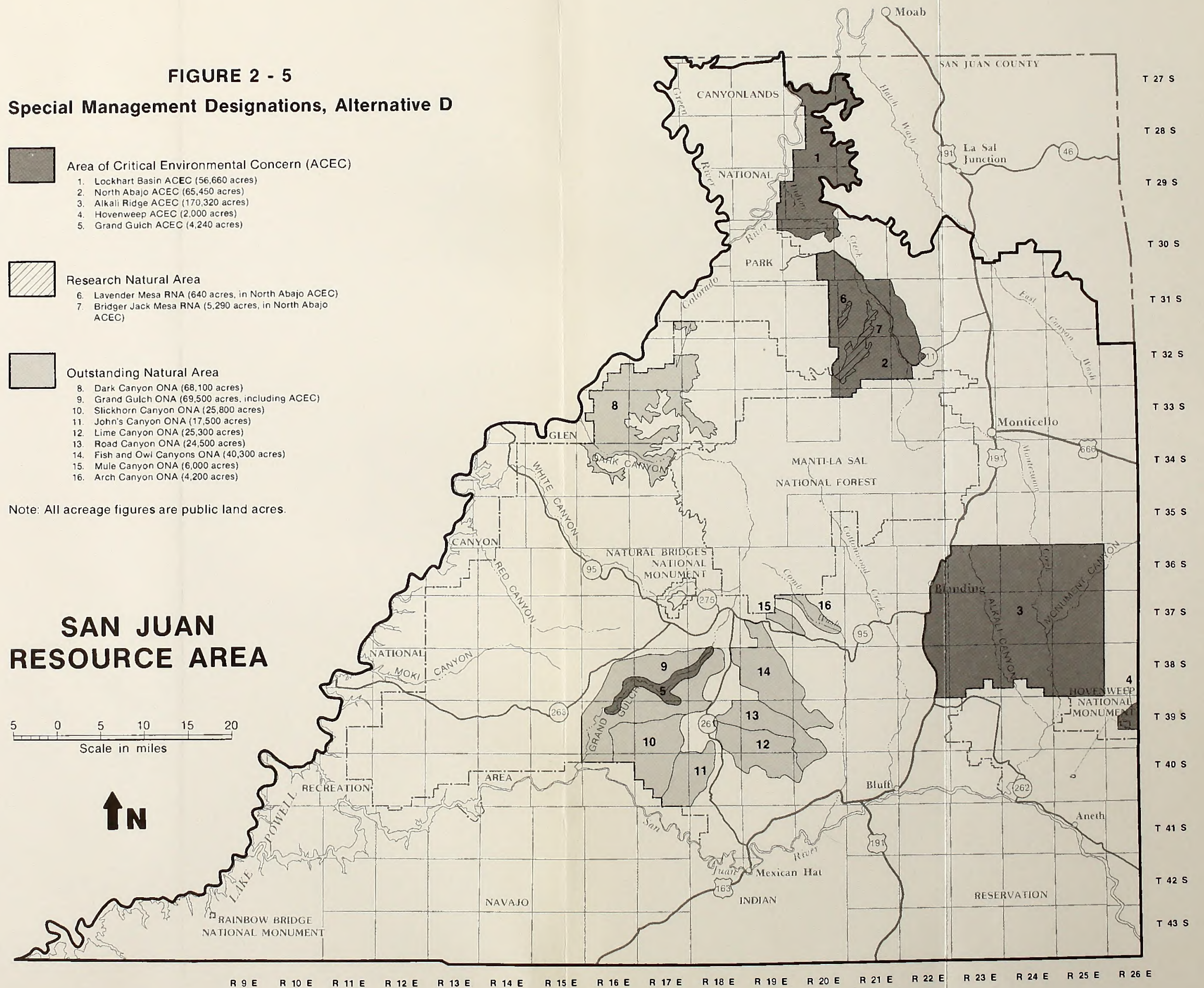
FIGURE 2 - 5
Special Management Designations, Alternative D

-  Area of Critical Environmental Concern (ACEC)
 1. Lockhart Basin ACEC (56,660 acres)
 2. North Abajo ACEC (65,450 acres)
 3. Alkali Ridge ACEC (170,320 acres)
 4. Hovenweep ACEC (2,000 acres)
 5. Grand Gulch ACEC (4,240 acres)

-  Research Natural Area
 6. Lavender Mesa RNA (640 acres, in North Abajo ACEC)
 7. Bridger Jack Mesa RNA (5,290 acres, in North Abajo ACEC)

-  Outstanding Natural Area
 8. Dark Canyon ONA (68,100 acres)
 9. Grand Gulch ONA (69,500 acres, including ACEC)
 10. Slickhorn Canyon ONA (25,800 acres)
 11. John's Canyon ONA (17,500 acres)
 12. Lime Canyon ONA (25,300 acres)
 13. Road Canyon ONA (24,500 acres)
 14. Fish and Owl Canyons ONA (40,300 acres)
 15. Mule Canyon ONA (6,000 acres)
 16. Arch Canyon ONA (4,200 acres)

Note: All acreage figures are public land acres.



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 RESOURCE AREA**

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 Scale in miles



FIGURE 2 - 5

Special Management Designations, Alternative D

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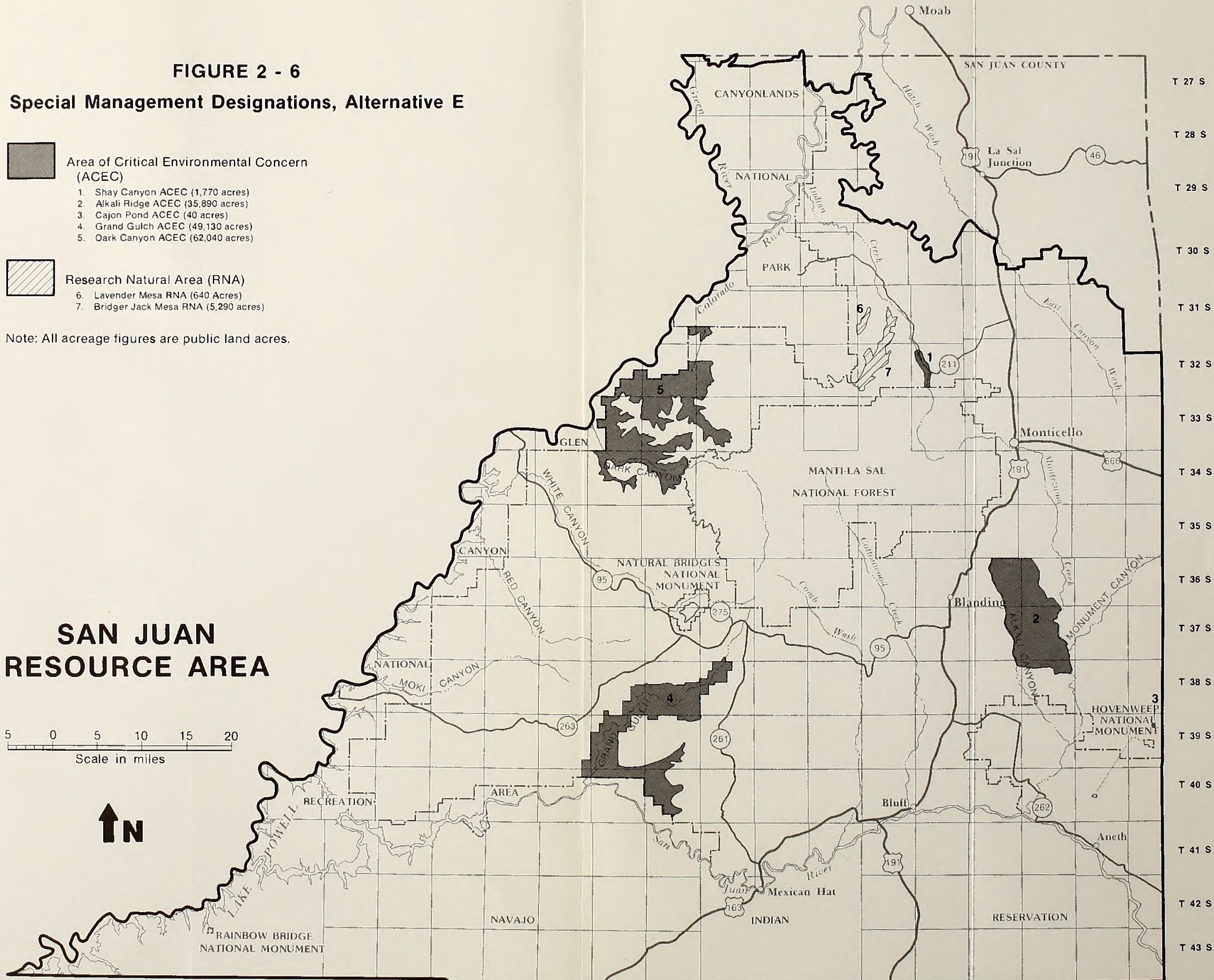
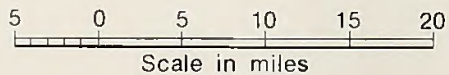
FIGURE 2 - 6

Special Management Designations, Alternative E

- 
 Area of Critical Environmental Concern (ACEC)
 1. Shay Canyon ACEC (1,770 acres)
 2. Alkali Ridge ACEC (35,890 acres)
 3. Cajon Pond ACEC (40 acres)
 4. Grand Gulch ACEC (49,130 acres)
 5. Dark Canyon ACEC (62,040 acres)
- 
 Research Natural Area (RNA)
 6. Lavender Mesa RNA (640 Acres)
 7. Bridger Jack Mesa RNA (5,290 acres)

Note: All acreage figures are public land acres.

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




FIGURE 2 - 6

Special Management Designations, Alternative E

A R I Z O N A



FIGURE 2 - 7
Cultural and Recreation Resources Management, Alternative A

-  Special Recreation Management Area (SRMA)
 1. San Juan River SRMA (15,100 acres)
 2. Grand Gulch Plateau SRMA (385,000 acres)
 3. Dark Canyon SRMA (62,040 acres)
-  National Register Properties
 4. Alkali Ridge National Historic Landmark (2,340 acres)
 5. Butler Wash Archaeologic District (2,030 acres)
 6. Grand Gulch Archaeologic District (4,240 acres)
-  Hole-in-the-Rock Historic Trail (6,110 acres)
-  Developed Recreation Site (150 acres)
-  Cultural Resource Site

Note: All acreage figures are public land acres.

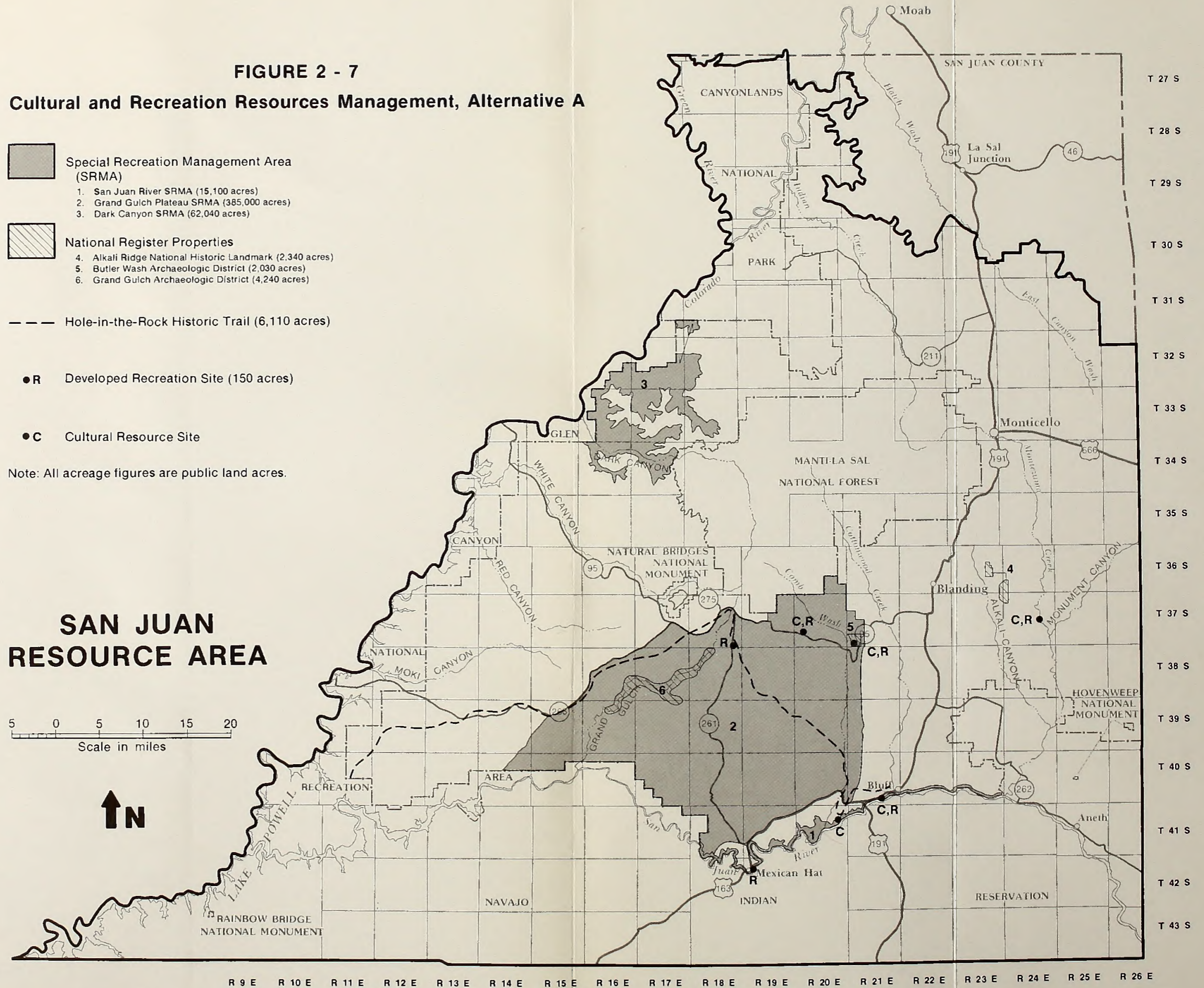


FIGURE 2 - 7

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Cultural and Recreation Resources Management, Alternative A








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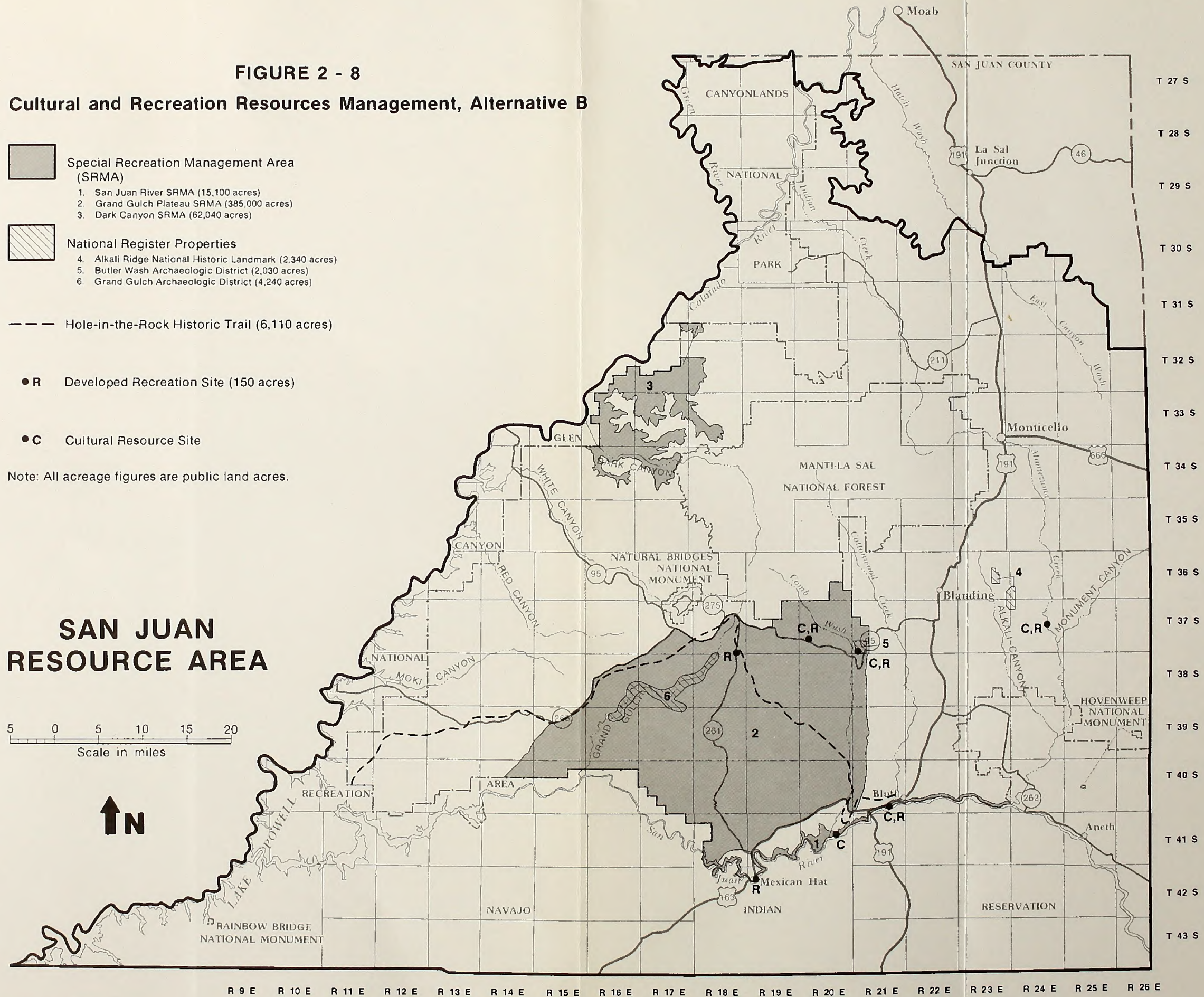
FIGURE 2-1

Location of the Resource Planning Management Districts A

FIGURE 2 - 8
Cultural and Recreation Resources Management, Alternative B

-  Special Recreation Management Area (SRMA)
 1. San Juan River SRMA (15,100 acres)
 2. Grand Gulch Plateau SRMA (385,000 acres)
 3. Dark Canyon SRMA (62,040 acres)
-  National Register Properties
 4. Alkali Ridge National Historic Landmark (2,340 acres)
 5. Butler Wash Archaeologic District (2,030 acres)
 6. Grand Gulch Archaeologic District (4,240 acres)
-  Hole-in-the-Rock Historic Trail (6,110 acres)
-  Developed Recreation Site (150 acres)
-  Cultural Resource Site

Note: All acreage figures are public land acres.



**SAN JUAN
 RESOURCE AREA**

5 0 5 10 15 20
 Scale in miles



FIGURE 2 - 8

Cultural and Recreation Resources Management, Alternative B

A R I Z O N A

C O L O R A D O

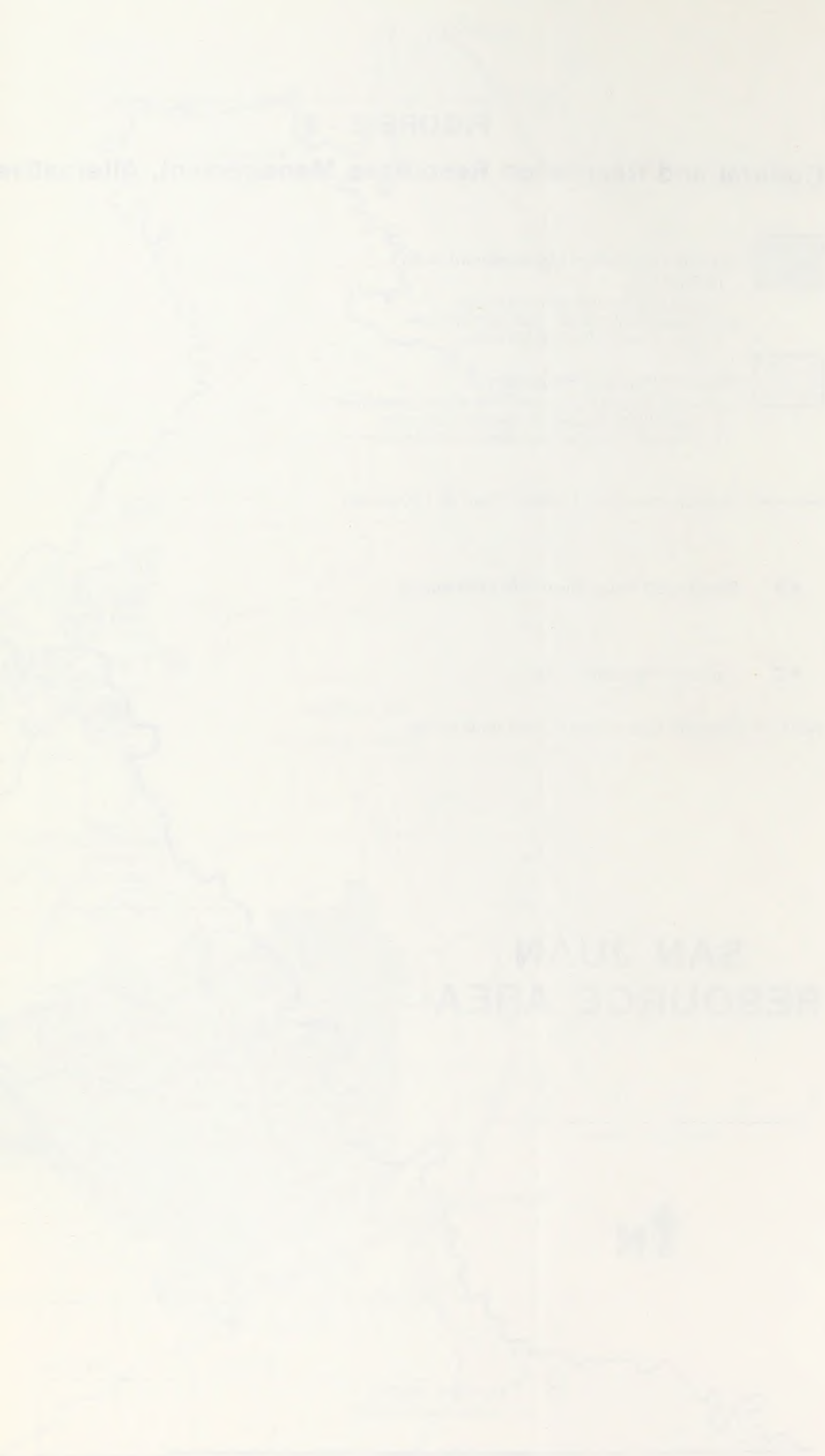







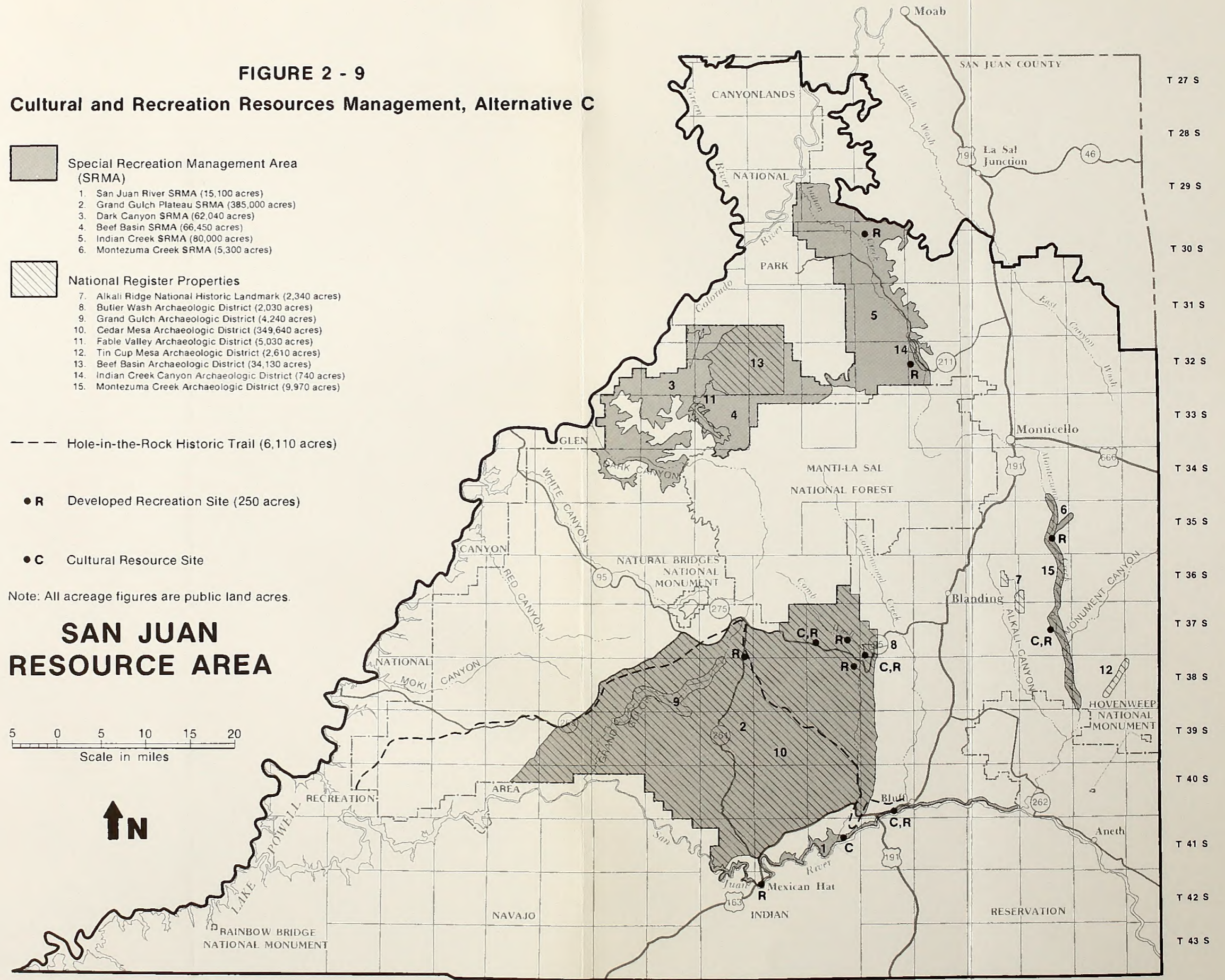
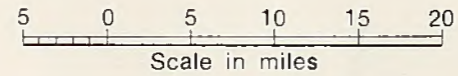
FIGURE 2-3
 State and Federal Resource Management in Alaska 3

FIGURE 2 - 9
Cultural and Recreation Resources Management, Alternative C

-  Special Recreation Management Area (SRMA)
 1. San Juan River SRMA (15,100 acres)
 2. Grand Gulch Plateau SRMA (385,000 acres)
 3. Dark Canyon SRMA (62,040 acres)
 4. Beef Basin SRMA (66,450 acres)
 5. Indian Creek SRMA (80,000 acres)
 6. Montezuma Creek SRMA (5,300 acres)
-  National Register Properties
 7. Alkali Ridge National Historic Landmark (2,340 acres)
 8. Butler Wash Archaeologic District (2,030 acres)
 9. Grand Gulch Archaeologic District (4,240 acres)
 10. Cedar Mesa Archaeologic District (349,640 acres)
 11. Fable Valley Archaeologic District (5,030 acres)
 12. Tin Cup Mesa Archaeologic District (2,610 acres)
 13. Beef Basin Archaeologic District (34,130 acres)
 14. Indian Creek Canyon Archaeologic District (740 acres)
 15. Montezuma Creek Archaeologic District (9,970 acres)
-  Hole-in-the-Rock Historic Trail (6,110 acres)
-  Developed Recreation Site (250 acres)
-  Cultural Resource Site

Note: All acreage figures are public land acres.

**SAN JUAN
 RESOURCE AREA**








C O L O R A D O

FIGURE 2 - 9

A R I Z O N A

Cultural and Recreation Resources Management, Alternative C

FIGURE 2 - 10
Cultural and Recreation Resources Management, Alternative D

-  Special Recreation Management Area (SRMA)
 1. San Juan River SRMA (15,100 acres)
 2. Grand Gulch Plateau SRMA (385,000 acres)
 3. Dark Canyon SRMA (62,040 acres)
 4. Beef Basin SRMA (66,450 acres)
 5. Indian Creek SRMA (80,000 acres)
 6. Montezuma Creek SRMA (5,300 acres)
 -  National Register Properties
 7. Alkali Ridge National Historic Landmark (2,340 acres)
 8. Butler Wash Archaeologic Oistrict (2,030 acres)
 9. Grand Gulch Archaeologic Oistrict (4,240 acres)
 10. Cedar Mesa Archaeologic Oistrict (349,640 acres)
 11. Fable Valley Archaeologic Oistrict (5,030 acres)
 12. Tin Cup Mesa Archaeologic Oistrict (2,610 acres)
 13. Beef Basin Archaeologic Oistrict (34,120 acres)
 14. Indian Creek Canyon Archaeologic District (740 acres)
 15. Montezuma Creek Archaeologic Oistrict (9,970 acres)
 -  Hole-in-the-Rock Historic Trail (6,110 acres)
 -  Developed Recreation Site (150 acres)
 -  Cultural Resource Site
- Note: All acreage figures are public land acres.

SAN JUAN RESOURCE AREA

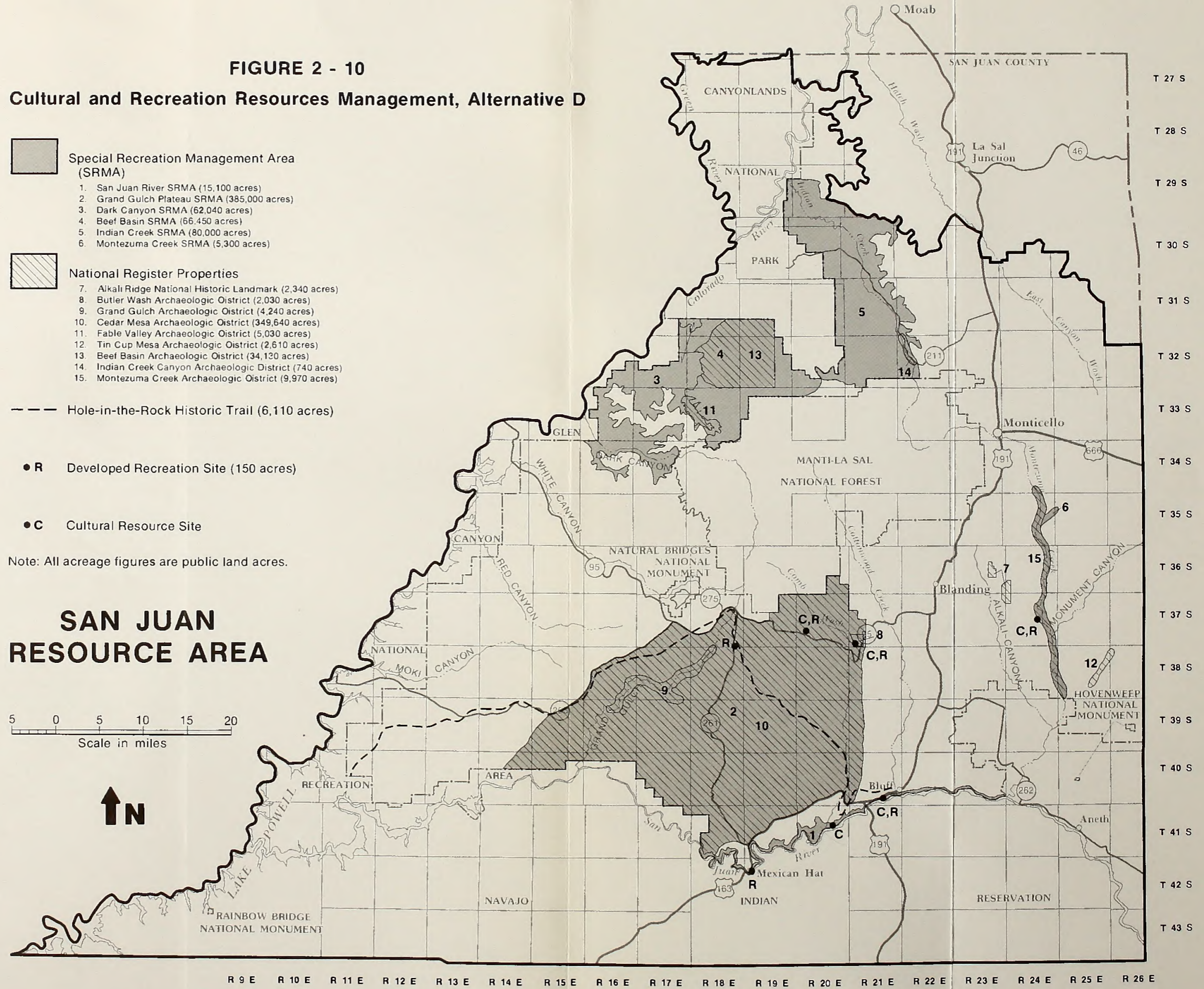
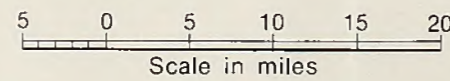


FIGURE 2 - 10

Cultural and Recreation Resources Management, Alternative D

A R I Z O N A

C O L O R A D O




FIGURE 2 - 10


Cultural and Resource Planning - Management Alternatives


FIGURE 2 - 10


Cultural and Resource Planning - Management Alternatives


FIGURE 2 - 11
Cultural and Recreation Resources Management, Alternative E

-  Special Recreation Management Area (SRMA)
 1. San Juan River SRMA (15,100 acres)
 2. Grand Gulch Plateau SMRA (385,000 acres)
 3. Oak Canyon SRMA (62,040 acres)
 4. Beef Basin SRMA (66,450 acres)
 5. Indian Creek SRMA (80,000 acres)
 6. Pearson Canyon SRMA (1,920 acres)

-  National Register Properties
 7. Alkali Ridge National Historic Landmark (2,340 acres)
 8. Butler Wash Archaeologic District (2,030 acres)
 9. Grand Gulch Archaeologic District (4,240 acres)
 10. Cedar Mesa Archaeologic District (349,640 acres)
 11. Fable Valley Archaeologic District (5,030 acres)
 12. Tin Cup Mesa Archaeologic District (2,610 acres)

-  Hole-in-the-Rock Historic Trail (6,110 acres)

-  Developed Recreation Site (250 acres)

-  Cultural Resource Site

Note: All acreage figures are public land acres.

**SAN JUAN
 RESOURCE AREA**

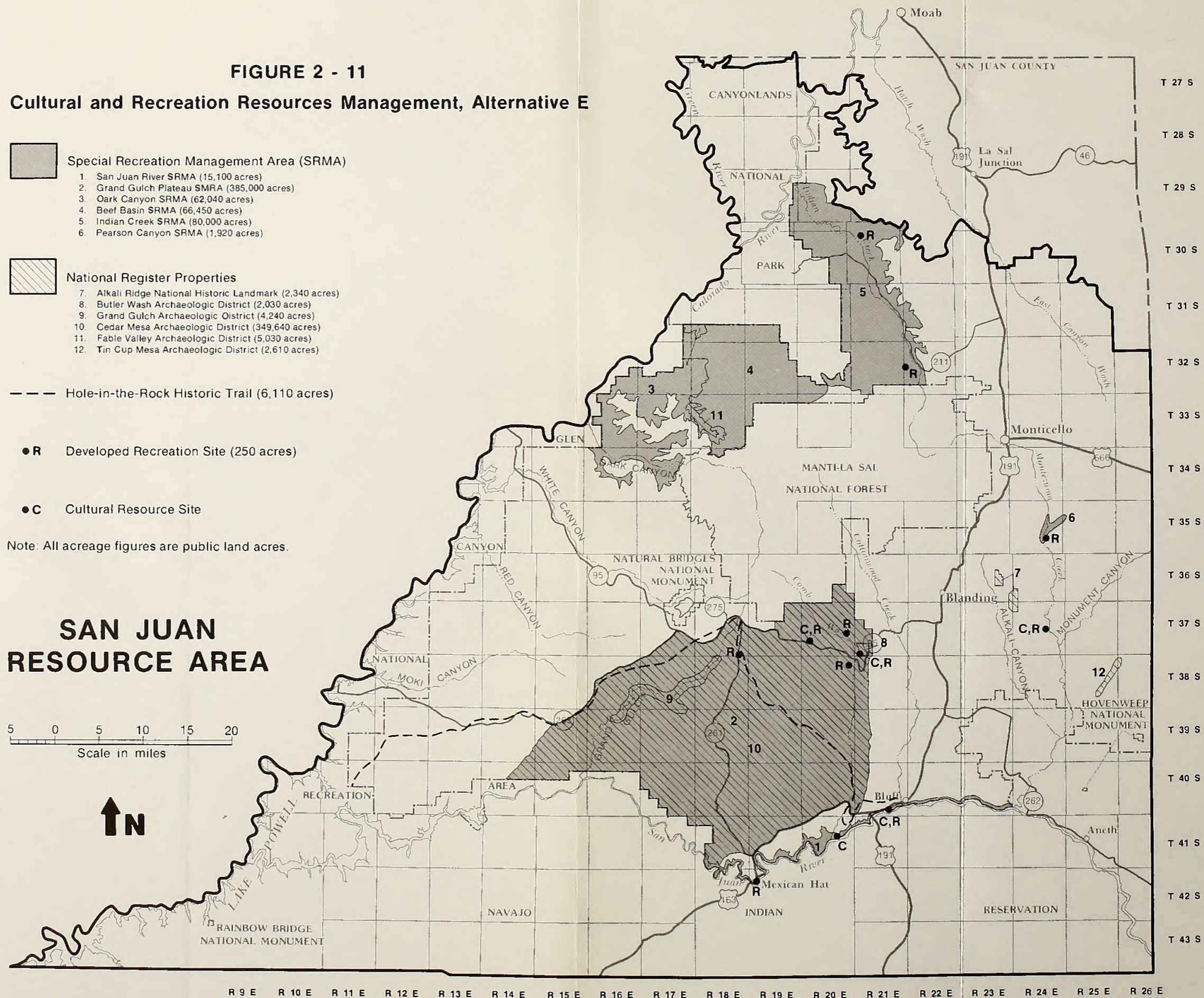
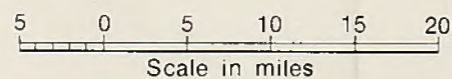


FIGURE 2 - 11

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Cultural and Recreation Resources Management, Alternative E

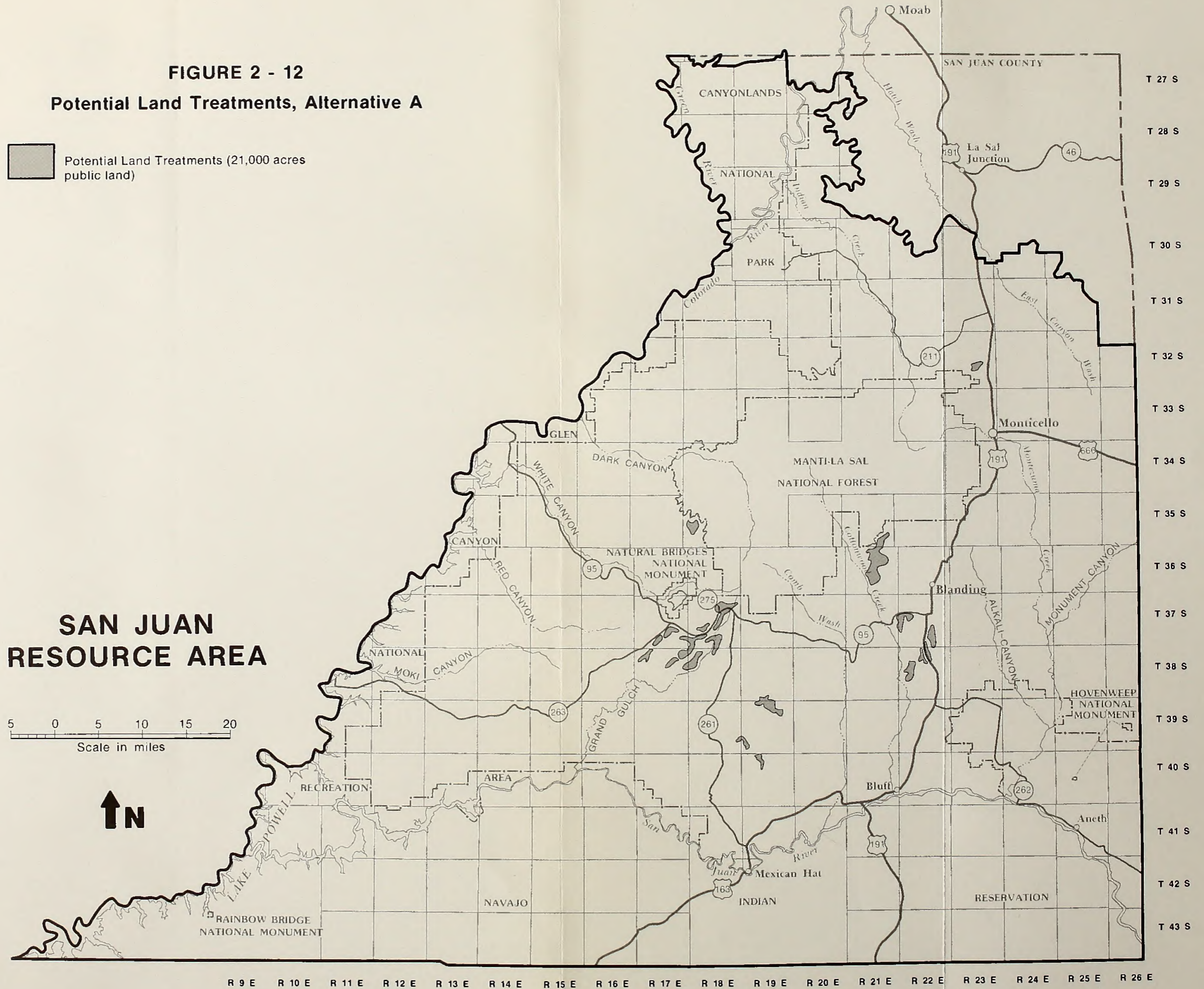


FIGURE 2-11

San Juan Resource Management Alternative E

FIGURE 2 - 12
Potential Land Treatments, Alternative A

 Potential Land Treatments (21,000 acres public land)



**SAN JUAN
 RESOURCE AREA**

5 0 5 10 15 20
 Scale in miles



C O L O R A D O

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FIGURE 2 - 12
Potential Land Treatments, Alternative A


FIGURE 3-12
Resource Land Treatment, Alternative 2

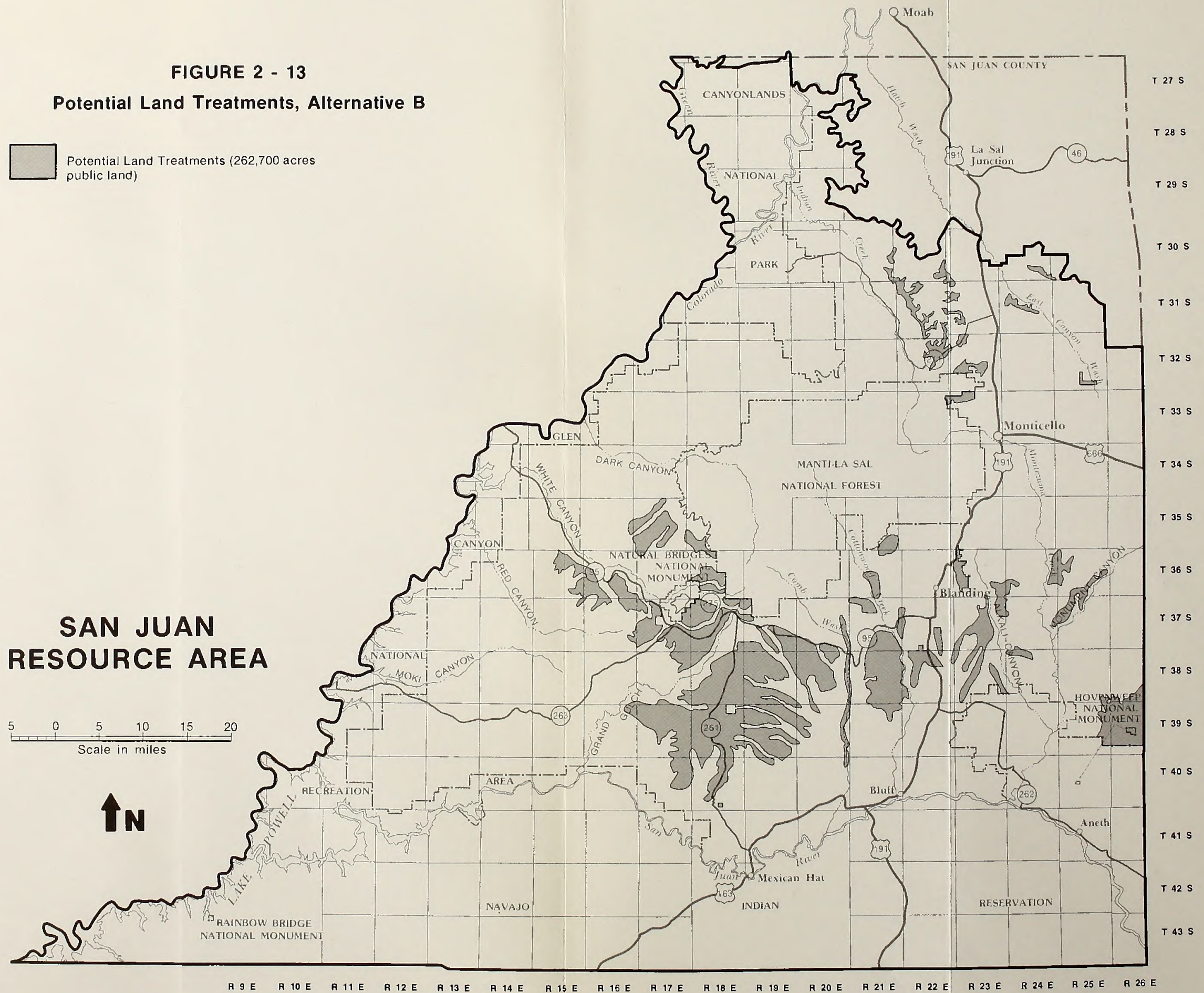


SAN JUAN
RESOURCE AREA

FIGURE 3-12
Resource Land Treatment, Alternative 2

FIGURE 2 - 13
Potential Land Treatments, Alternative B

 Potential Land Treatments (262,700 acres public land)



**SAN JUAN
 RESOURCE AREA**

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 Scale in miles



FIGURE 2 - 13

Potential Land Treatments, Alternative B

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C O L O R A D O




FIGURE 1 - 10
 Potential Land Treatment Alternatives B

RESOURCE AREA
 SAN JUAN

FIGURE 2 - 10
 Potential Land Treatment Alternatives B

FIGURE 2 - 14
Potential Land Treatments, Alternative C


 Potential Land Treatments (115,000 acres public land)

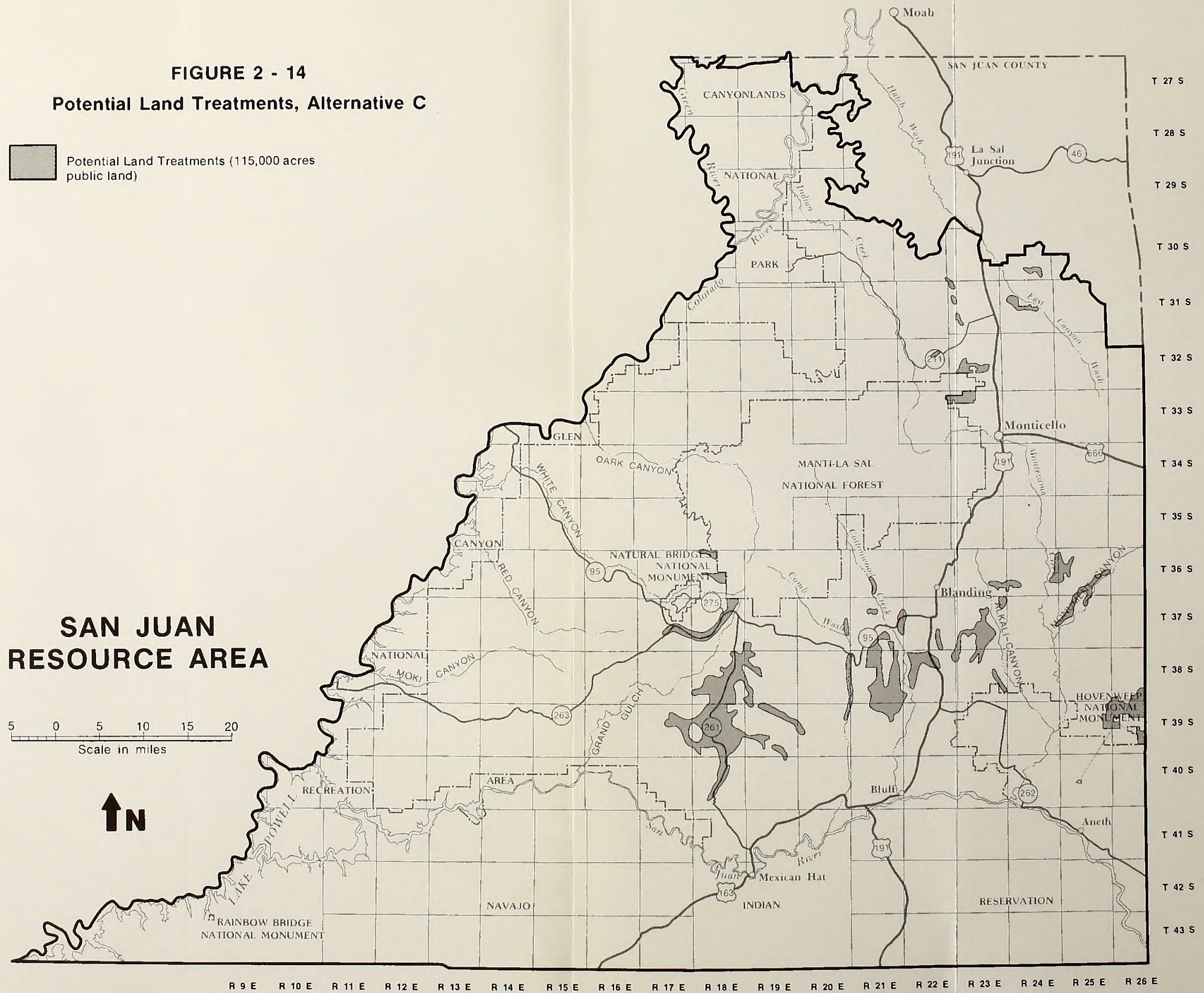


FIGURE 2 - 14
Potential Land Treatments, Alternative C




FIGURE 2 - 14
Potential Land Treatment, Alternative 2

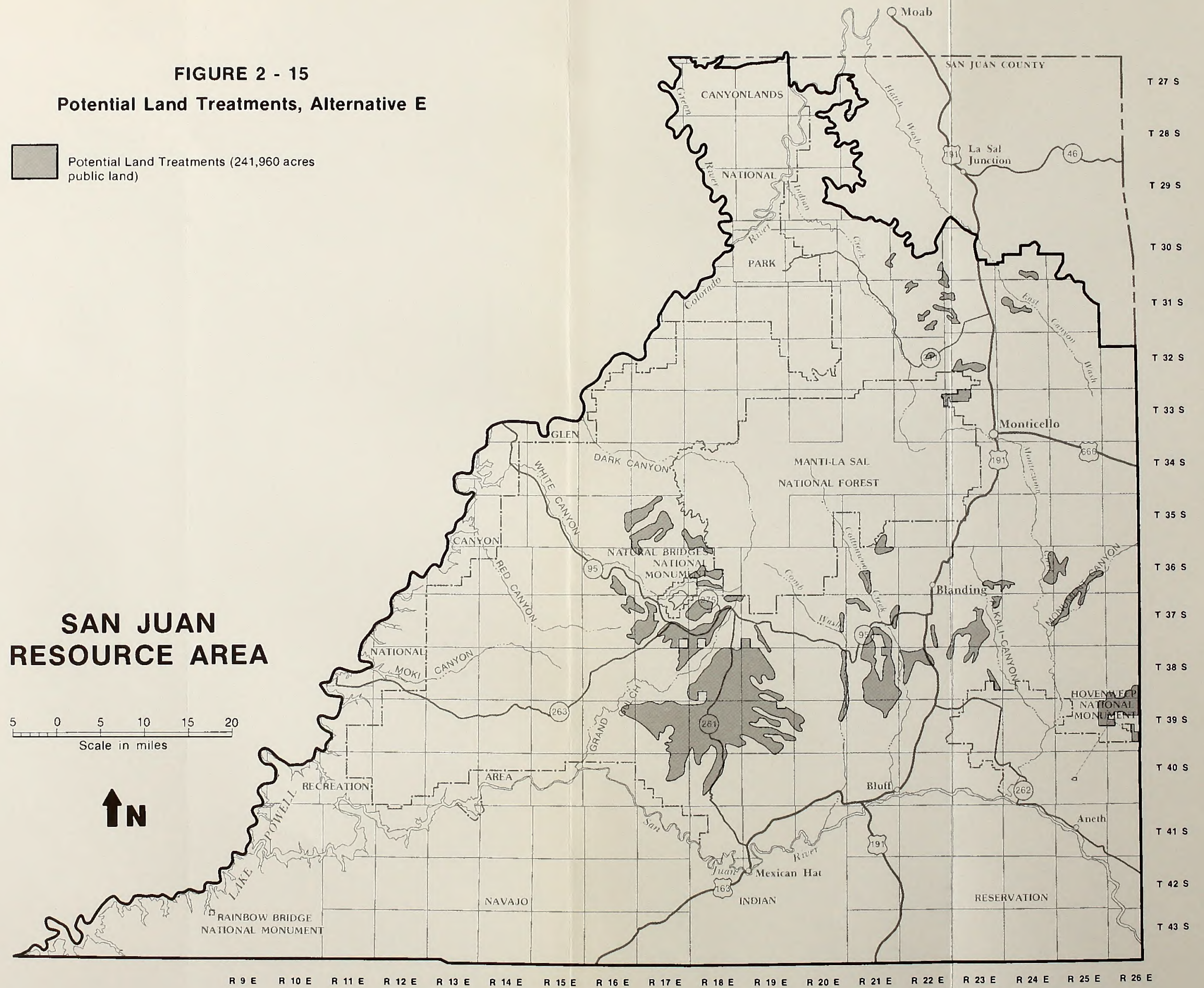
SAN JUAN
RESOURCE AREA

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FIGURE 2 - 14
Potential Land Treatment, Alternative 2

FIGURE 2 - 15
Potential Land Treatments, Alternative E


 Potential Land Treatments (241,960 acres public land)



**SAN JUAN
 RESOURCE AREA**

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 Scale in miles



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FIGURE 2 - 15

Potential Land Treatments, Alternative E

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FIGURE 1 - 12

Potential Land Use/Management Alternatives

San Juan Resource Area



FIGURE 1 - 13

Potential Land Use/Management Alternatives

TABLE 2-3

Alternative Recreation Management Areas

RECREATION MANAGEMENT AREA	Acres by Alternative				
	A	B	C	D	E
<u>Existing Special Recreation Management Areas</u>					
San Juan River	15,100	15,100	15,100	15,100	15,100
Grand Gulch Plateau	385,000	385,000	385,000	385,000	385,000
Dark Canyon	62,040	62,040	62,040	62,040	62,040
TOTAL	462,140	462,140	462,140	462,140	462,140
<u>Additional Special Recreation Management Areas</u>					
Beef Basin	0	0	66,450	66,450	66,450
Indian Creek	0	0	80,000	80,000	80,000
Montezuma Creek	0	0	5,300	5,300	0
Pearson Canyon	0	0	0	0	1,920
TOTAL	0	0	151,750	151,750	148,370
<u>Extensive Recreation Management Area</u>					
Remainder of SJRA	1,317,050	1,317,050	1,165,300	1,165,300	1,168,680
<u>DEVELOPED RECREATION SITES</u>					
<u>Existing and Additional Developed Recreation Sites</u>					
Sand Island Campground	20	20	40	20	40
Mexican Hat Launch Site	10	10	20	10	20
Kane Gulch Ranger Station	40	40	40	40	40
Mule Canyon Ruin	10	10	10	10	10
Butler Wash Ruin	60	60	60	60	60
Three Kiva Pueblo	10	10	10	10	10
Comb Wash Campsite	0	0	10	0	10
Arch Canyon Campsite	0	0	10	0	10
Indian Creek Campsite	0	0	20	0	20
Indian Creek Falls Campsite	0	0	10	0	10
Pearson Canyon Hiking Trail and Campsite	0	0	20	0	20
TOTAL	150	150	250	150	250

Source: BLM records.

RMP, in response to monitoring of the plan, new data, new or revised laws or policy, or other changes in the circumstances leading to adoption of this RMP. Plan amendments or revisions will be made in accordance with 43 CFR 1600 and the BLM planning manuals. Environmental impacts will be documented through an environmental assessment or an EIS. Plan amendments or revisions will be subject to public review.

Support Requirements

This document assumes that all five alternatives assessed are feasible and could be implemented within normal funding guidelines. For the basis of comparison, the budget costs to the BLM of implementing each of the alternatives has been compiled. In general, alternative D would be the most expensive to implement (in terms of BLM funding and personnel costs), and alternative A the least expensive (table 2-4 and appendix K).

COMPARISON OF ALTERNATIVES AND IMPACTS

The five alternatives were analyzed to assess their impacts (effects) on the human environment in the SJRA. The elements of the environment found to be affected, either beneficially or adversely, are described in chapter 3. Analysis assumptions and the environmental effects are described in chapter 4.

In general, alternative B shows the greatest economic return for use or production of public resources; alternative C shows the greatest protection of recreation opportunities; alternative D shows the greatest degree of preservation of public resources; and alternative E provides a balance between economic return and environmental protection.

TABLES

A series of detailed tables has been prepared to show the differences, among alternatives, in management objectives, management actions, resolution of planning issues, and impacts.

The management objectives for each alternative, by resource management program, are given in table 2-5.

Special management designations considered under each alternative are listed in table 2-6.

The actions for each management program, by alternative, are given in table 2-7, which also provides a comparison of land use allocations.

ORV designations, by alternative, are given in table 2-8. Alternative answers to the planning issues (questions) are given for the different BLM resource management programs in table 2-9.

Table 2-10 summarizes and provides a comparison of the effects of the different alternatives on the environment. Alternative A provides an environmental baseline for comparing the impacts of the different alternatives. For each element of the environment in SJRA found to be affected, the specific indicator that would change is listed, along with the unit of change (usually acres). The change in the current conditions anticipated to occur by the year 2000 (15-year span) under current management is given for alternative A. For each of the other alternatives, the anticipated total amount is given for each indicator, along with the change from alternative A.

TABLE 2-4

Summary of Estimated Management Costs, by Alternative

SUBACTIVITY/PROGRAM	\$'000 by Alternative				
	A	B	C	D	E
2300 Access	2.9	2.9	2.9	2.9	2.9
4111 Oil & Gas	233.5	246.0	246.0	117.0	234.2
4121 Coal	0.0	9.6	0.0	0.0	0.0
4122 Tar Sand	0.3	0.3	0.3	0.3	0.3
4131 Mineral Mat'ls.	10.6	10.6	10.6	10.6	10.6
4132 Mining Law	13.1	13.1	29.6	20.4	22.4
4211 Rights-of-Way	35.5	39.1	46.2	56.8	42.7
4212 Lands	61.1	45.9	45.9	45.9	61.1
4220 Withdrawals	3.6	7.5	7.5	15.3	5.6
4311 Forest Mgmt.	18.4	18.4	12.4	22.4	18.4
4322 Grazing	164.0	292.9	537.3	477.0	178.0
4331 Cultural	186.0	156.7	228.4	212.9	228.4
4333 Recreation	47.5	47.1	115.0	101.2	112.1
4341 Soil, Water, Air	38.9	38.9	38.9	35.4	38.9
4342 Hazardous Waste	0.6	0.6	0.6	0.6	0.6
4351 Habitat Mgmt.	76.6	76.6	166.8	148.8	166.8
4352 T/E Species	15.1	15.1	15.1	15.1	15.1
4360 Fire Mgmt.	9.7	9.7	9.7	9.7	9.7
4410 Planning	53.0	54.1	57.5	53.3	57.3
4420 Data Mgmt.	0.2	0.2	0.2	0.2	0.2
4610 Presuppression	41.8	41.8	41.8	41.8	41.8
4620 Firefighting	28.6	24.3	24.3	24.3	24.3
4630 Fire Rehab.	0.3	0.3	0.3	0.3	0.3
4711 Building Maint.	48.4	49.0	53.1	48.4	52.4
4712 Recreation Maint.	43.9	43.9	118.0	43.9	118.0
4713 Transportation	50.7	50.7	50.7	50.7	50.7
4714 Engineering	6.0	6.2	6.2	5.9	6.3
4820 Equal Employment	1.8	1.8	2.0	1.8	2.0
4830 Support Services	57.0	58.3	62.4	53.5	62.2
8100 Range Improve.	52.5	369.4	1243.7	1561.3	117.1
9350 Quarters Maint.	<u>5.7</u>	<u>5.7</u>	<u>5.7</u>	<u>4.9</u>	<u>5.7</u>
TOTAL	1,307.3	1,736.7	3,179.1	3,182.6	1,686.1

Source: BLM records.

TABLE 2-5

Alternative Management Objectives, by Program

Subactivity Code	Resource Management Program	Alternative A (No Action)	Alternative B	Alternative C	Alternative D ^a	Alternative E (Preferred Alternative)
411	Oil and Gas Management	To apply current category restrictions to oil and gas leases on public lands; to allow geophysical activity to occur within the limits of present management guidance; and to administer operational aspects of federal oil and gas leases where BLM does not manage the surface.	To maximize the area of public lands available for oil and gas leasing and geophysical activity; to limit restrictions to those required by law, executive order, or regulation; and to administer operational aspects of federal oil and gas leases where BLM does not manage the surface.	To lease public lands for oil and gas, and to allow geophysical activity to occur, only so long as ROS classes, wildlife habitats, and watershed values are protected; and to administer operational aspects of federal oil and gas leases where BLM does not manage the surface.	To lease public lands for oil and gas, and to allow geophysical activity to occur, only so long as the specified criteria are met; and to administer operational aspects of federal oil and gas leases where BLM does not manage the surface.	To lease public lands for oil and gas, and to allow geophysical activity to occur, only so long as certain primitive recreational opportunities, identified wildlife habitats, and watershed values are protected; and to administer operational aspects of federal oil and gas leases where BLM does not manage the surface.
413	Geothermal Management	To lease the Warm Springs Canyon prospectively valuable area, subject only to restrictions to protect the existing primitive area.	To lease the Warm Springs Canyon prospectively valuable area, subject only to restrictions required by law, executive order, or regulation.	To lease the Warm Springs Canyon prospectively valuable area only so long as ROS classes, wildlife habitats, and watershed values are protected.	To lease the Warm Springs Canyon prospectively valuable area only so long as the specified criteria are met.	To lease the Warm Springs Canyon prospectively valuable area only so long as primitive recreation opportunities, identified wildlife habitats, and watershed values are protected.
4121	Coal Management	To not provide for leasing coal resources.	To provide for coal leasing if interest is expressed.	To not provide for leasing coal resources.	To not provide for leasing coal resources.	To not provide for leasing coal resources.

4122	Oil Shale/Tar Sand Management	To lease White Canyon STSA for CHLs under current category restrictions.	To lease White Canyon STSA for CHLs, subject only to restrictions required by law, executive order, or regulation.	To lease White Canyon STSA for CHLs, only so long as ROS classes, wildlife habitats, and watershed values are protected.	To lease White Canyon STSA for CHLs, only so long as the specified criteria are met.	To lease White Canyon STSA for CHLs, only so long as primitive recreational opportunities and identified wildlife habitats are protected.
4131	Mineral Materials Management	To make federal mineral materials available wherever needed.	To make federal mineral materials available wherever needed, subject only to restrictions required by law, executive order, or regulation.	To make federal mineral materials available only so long as ROS classes, wildlife habitats, and watershed values are protected.	To make federal mineral materials available only so long as the specified criteria are met.	To make federal mineral materials available where needed, only so long as certain primitive recreational opportunities, identified wildlife habitats, and watershed values are protected.
4132	Mining Law Administration	To retain acreage now open for claim location and mineral development; to maintain existing closures to mineral entry; and to administer operational aspects of claims where BLM does not manage the surface.	To maximize the area of public lands available for claim location and mineral development, limited only by law, executive order, or regulation; and to administer operational aspects of claims where BLM does not manage the surface.	To make public lands available for claim location and mineral development, only so long as ROS classes, wildlife habitats, and watershed values are protected; and to administer operational aspects of claims where BLM does not manage the surface.	To make public lands available for claim location and mineral development, only so long as the specified criteria are met; and to administer operational aspects of claims where BLM does not manage the surface.	To make public lands available for claim location and mineral development, only so long as certain recreational values are protected; and to administer operational aspects of claims where BLM does not manage the surface.
4133	Mineral Management (Nonenergy Leasables)	To allow minerals leasing and development if interest is expressed.	To encourage minerals leasing and development, as limited only by law, executive order, or regulation.	To allow minerals leasing and development, only so long as ROS classes, wildlife habitats, and watershed values are protected.	To allow minerals leasing and development, only so long as the specified criteria are met.	To allow minerals leasing and development, only so long as certain primitive recreational opportunities, identified wildlife habitats, and watershed values are protected.

TABLE 2-5 (Continued)

Subactivity Code	Resource Management Program	Alternative A (No Action)	Alternative B	Alternative C	Alternative D _a	Alternative E (Preferred Alternative)
4211	Rights-of-Way	To use existing un-designated utility corridors where possible; to allow other rights-of-way so long as the primitive areas are protected.	To designate existing utility corridors; to allow other utility corridors subject only to restrictions required by law, executive order, or regulations; and to process other rights-of-way upon request.	To designate existing utility corridors; to allow other utility corridors only so long as ROS classes, wildlife habitats, and watershed values are protected; and to process other rights-of-way upon request.	To designate existing utility corridors; to allow other utility corridors only so long as the specified criteria are met; and to process other rights-of-way upon request.	To designate existing utility corridors; to allow other utility corridors only so long as certain primitive recreational opportunities, identified wildlife habitats, and watershed values are protected; and to process other rights-of-way upon request.
4212	Lands	To dispose of lands previously classified as suitable for disposal in the MFPS or for R&PP for community expansion or private uses; and to process permits, leases, and other actions as needed.	To dispose of lands previously classified, and classify for disposal additional tracts for community expansion or private uses where livestock grazing or mineral development would not be limited; and to process permits, leases, and other actions as needed.	To dispose of lands previously classified, and classify for disposal additional tracts for community expansion or private uses where ROS classes, wildlife habitats or watershed values would be protected; and to process permits, leases, and other actions as needed.	To dispose of lands previously classified, and classify for disposal additional tracts for community expansion or private uses only outside of natural succession areas; and to process permits, leases, and other actions as needed.	To dispose of lands previously classified, and classify for disposal additional tracts for community expansion or private uses where certain primitive recreational opportunities, wildlife habitats or watershed values would be protected; and to process permits, leases, and other actions as needed.
4220	Withdrawal Processing and Review	To continue withdrawal review, remove unneeded withdrawals, and process new withdrawals as needed.	To continue withdrawal review, remove unneeded withdrawals, and process new withdrawals as needed, so long as	To continue withdrawal review, remove unneeded withdrawals, and process new withdrawals as needed, so long as	To continue withdrawal review, remove unneeded withdrawals, and process new withdrawals as needed; and to	To continue withdrawal review, remove unneeded withdrawals, and process new withdrawals as needed.

4311	Forest Management	To continue present management for use of woodland products.	To maximize the use of woodland products so long as grazing and minerals uses are not curtailed.	To allow use of woodland products in areas specified for this use; and to preserve woodland products in other areas to maintain ROS classes and protect wildlife habitats and watershed values.	To allow use of woodland products in areas specified for this use; and to preserve woodland products in other areas to protect certain primitive recreational opportunities, identified wildlife habitats, and watershed values.
4312	Forest Development	To manage forest resources for sustained yield where woodland products are sold.	To manage forest resources for increased yield where woodland products are sold.	To manage forest resources for sustained yield where woodland products are sold, so long as ROS classes are maintained, wildlife habitat is improved, and watershed values are protected.	To manage forest resources for sustained yield where woodland products are sold, so long as the specified criteria are met.
4322	Grazing Management	To continue to manage rangelands to produce livestock forage and water to meet current demand.	To manage rangelands to produce the maximum amount of livestock forage within the potential of the vegetation resource, and water to meet future demand; and to manage identified areas to provide an ecological baseline for range studies.	To manage rangelands to allow for livestock use, so long as the P, SPM, and ROS classes are maintained, wildlife habitat is improved, and watershed values are protected; and to manage identified areas to provide an ecological baseline for range studies.	To continue to manage rangelands to produce livestock forage and water to meet current demand, so long as certain primitive recreational opportunities and identified wildlife habitats are protected; and to manage identified areas to provide an ecological baseline for range studies.

TABLE 2-5 (Continued)

Subactivity Code	Resource Management Program	Alternative A (No Action)	Alternative B	Alternative C	Alternative D ^a	Alternative E (Preferred Alternative)
4331	Cultural Resource Management	To continue to manage natural history, paleontological, and cultural resources so as to emphasize protection and preservation of special properties.	To manage surface disturbing actions so as to avoid adverse impacts to natural history, paleontological, and cultural resources as provided by law; and to manage for specific uses only where no conflicts occur with livestock use or minerals production.	To manage surface disturbing actions so as to avoid adverse impacts to natural history, paleontological, and cultural resources as provided by law; and to manage for public (recreational) use.	To provide for the maximum protection and preservation of natural history, paleontological, and cultural resources.	To manage surface disturbing actions so as to avoid adverse impacts to natural history, paleontological, and cultural resources as provided by law; and to manage cultural resources in identified areas for scientific and public (recreational) uses.
4332	Wilderness Management	To manage areas undergoing wilderness review under the IMP; and to manage designated wilderness areas to protect wilderness values.	To manage areas undergoing wilderness review under the IMP; and to manage designated wilderness areas to protect wilderness values.	To manage areas undergoing wilderness review under the IMP; and to manage designated wilderness areas to protect wilderness values.	To manage areas undergoing wilderness review under the IMP; and to manage designated wilderness areas to protect wilderness values.	To manage areas undergoing wilderness review under the IMP; and to manage designated wilderness areas to protect wilderness values.
4333	Recreation Resources Management	To continue present management of the existing SRMAs and San Juan Extensive RMA; and to maintain existing ORV closures in Grand Gulch and Dark Canyon Primitive Areas.	To continue present management of the existing developed recreation sites; to modify recreation management so as to allow maximum livestock and mineral uses in the remainder of SJRA; and to designate all of SJRA as open to ORV use	To develop additional recreation sites; to intensify recreation management of existing SRMAs; to designate additional SRMAs; to manage all areas so as to maintain existing ROS classes; to designate all of SJRA as open, closed, or limited	To continue present management of the existing developed recreation sites; to alter management of existing SRMAs; to designate additional SRMAs; to manage recreation so as to ensure that the specified criteria are met;	To develop additional recreation sites; to alter management of existing SRMAs so as to protect certain recreational opportunities; to designate additional SRMAs; to manage areas to preserve certain ROS P class areas and protect

unless use in a specific for ORV use, depending certain SPNM ROS class areas is limited by pro- on existing ROS classes, areas; to designate tecton of another or where use in a spe- all of SJRA as open, resource value. cific area is limited by use, and designate the closed, or limited for protection of another ORV use, depending in resource value; and to part on existing ROS classes and where use recognize outstanding limited for ORV use, in a specific area is area is limited by pro- where use in a specific limited by protection tecton of another re- area is limited by pro- of another resource source value; and to value; and to recognize recognize outstanding critical environmental natural values in values in specific specific areas.

To provide a systematic method to identify, evaluate, and manage visual resource values; and to minimize adverse visual impacts while allowing land use activities to occur.

To provide a systematic method to identify, evaluate, and manage visual resource values; and to minimize adverse visual impacts so as to maintain VRM classes.

To provide a systematic method to identify, evaluate, and manage visual resource values; and to minimize adverse visual impacts while allowing land use activities to occur.

To provide a systematic method to identify, evaluate, and manage visual resource values; and to minimize adverse visual impacts while allowing land use activities to occur.

To maintain or improve soil productivity, water quality, watershed conditions, and air quality, so long as natural succession of plant species within identified natural succession areas is not limited.

To maintain or improve soil productivity, water quality, watershed conditions, and air quality, so long as natural succession of plant species within identified natural succession areas is not limited.

To maintain or improve soil productivity, water quality, watershed conditions, and air quality, so long as natural succession of plant species within identified natural succession areas is not limited.

To maintain or improve soil productivity, water quality, watershed conditions, and air quality, so long as natural succession of plant species within identified natural succession areas is not limited.

To identify sites that contain potentially hazardous wastes; and to develop mitigation for those sites.

To identify sites that contain potentially hazardous wastes; and to develop mitigation for those sites.

To identify sites that contain potentially hazardous wastes; and to develop mitigation for those sites.

To identify sites that contain potentially hazardous wastes; and to develop mitigation for those sites.

TABLE 2-5 (Concluded)

Subactivity Code	Resource Management Program	Alternative A (No Action)	Alternative B	Alternative C	Alternative D ^a	Alternative E (Preferred Alternative)
4351	Habitat Management	To support big game populations and allow wildlife populations to increase to the extent possible, up to the limits imposed by other resource management programs.	To maintain current wildlife populations and alter management of wildlife habitat to provide for an increase in game species, only so long as livestock and mineral uses are not limited.	To alter management of wildlife habitats so as to maximize riparian and aquatic areas; to allow big game populations to approach prior stable numbers; and to maximize habitat for nongame species where possible.	To provide habitat for a diversity of wildlife species; and to protect native vegetation habitats within identified natural succession areas and in riparian and aquatic habitats outside these identified areas.	To alter management of wildlife habitats so as to protect certain riparian areas and crucial big game habitat areas, only so long as certain recreational opportunities are protected and livestock use is accommodated.
4352	Endangered Species Management	To protect and preserve all officially listed and proposed plants and animals and their habitats, as provided by law.	To protect and preserve all officially listed and proposed plants and animals and their habitats, as provided by law.	To protect and preserve all officially listed and proposed plants and animals and their habitats, as provided by law, and to increase animal populations where opportunities exist.	To protect and preserve all officially listed and proposed plants and animals and their habitats, as provided by law, and to increase animal and plant populations where opportunities exist.	To protect and preserve all officially listed and proposed plants and animals and their habitats, as provided by law, and to increase animal and plant populations where opportunities exist.
4360	Fire Management	To suppress all wildfires; and to use prescribed fire to maintain existing seedlings.	To suppress wildfires where necessary to protect life, property, and high-risk resource values; to conduct limited suppression where necessary to maintain fire-dependent ecosystems; and to use prescribed fire to	To suppress wildfires where necessary to protect life, property, and high-risk resource values; to conduct limited suppression where necessary to maintain ROS classes and fire-dependent ecosystems or to limit	To suppress wildfires where necessary to protect life, property, and high-risk resource values; to conduct limited suppression in other areas; and to use prescribed fire to maintain existing seedlings outside the iden-	To suppress wildfires where necessary to protect life, property, and high-risk resource values; to conduct limited suppression where necessary to protect certain P and SPNM ROS classes and fire-dependent ecosystems

maintain existing and new seedlings. motorized suppression in certain ROS classes; and to use prescribed fire to maintain existing and new seedlings. tified natural succession areas. or to limit motorized suppression in certain areas; and to use prescribed fire to maintain existing and new seedlings.

a specific criteria guide uses of the public lands and resources under this alternative. Within the entire SJRA, new surface disturbance would be limited to that which could be reclaimed within 5 years to match the initial conditions. Within identified natural succession areas, an additional criterion applies: new activities would be allowed only so long as natural succession of plant species could occur.

TABLE 2-6

Special Management Designations, by Alternative

Program	Area/ (Resource Value)	Alternative A Designation Acres	Alternative B Designation Acres	Alternative C Designation Acres	Alternative D Designation Acres	Alternative E Designation Acres
4322	Bridger Jack Mesa (relict vegetation)	None..... 0	RNA..... 1,760	ACEC..... 5,290	RNA..... 5,290	RNA..... 5,290
4322	Lavender Mesa (relict vegetation)	None..... 0	RNA..... 640	ACEC..... 640	RNA..... 640	RNA..... 640
4331	Alkali Ridge (cultural)	None..... 0	None..... 0	ACEC..... 170,320	ACEC..... 170,320	ACEC..... 35,890
4331	North Abajo (cultural)	None..... 0	None..... 0	ACEC..... 65,450	ACEC..... 65,450	ACEC..... 1,770 (Shay Canyon)
4331	Grand Gulch (cultural)	None..... 0	None..... 0	ACEC..... 4,240	ACEC..... 4,240	ACEC..... 49,130 (with recreation)
4331	Hovenweep (cultural)	None..... 0	None..... 0	None..... 0	ACEC..... 2,000	None..... 0
4333	Grand Gulch (recreation)	PA..... 37,810	None..... 0	ONA..... 69,500	ONA..... 69,500	ACEC..... 49,130 (with cultural)
4333	Dark Canyon (recreation)	PA..... 62,040	None..... 0	ONA..... 68,100	ONA..... 68,100	ACEC..... 62,040
4333	Slickhorn Canyon (recreation)	None..... 0	None..... 0	ONA..... 25,800	ONA..... 25,800	None..... 0
4333	John's Canyon (recreation)	None..... 0	None..... 0	ONA..... 17,500	ONA..... 17,500	None..... 0

4333	Fish & Owl Canyons (recreation)	None..... 0	None..... 0	ONA..... 40,300	ONA..... 40,300	None..... 0
4333	Road Canyon (recreation)	None..... 0	None..... 0	ONA..... 24,500	ONA..... 24,500	None..... 0
4333	Lime Canyon (recreation)	None..... 0	None..... 0	ONA..... 25,300	ONA..... 25,300	None..... 0
4333	Mule Canyon (recreation)	None..... 0	None..... 0	ONA..... 6,000	ONA..... 6,000	None..... 0
4333	Arch Canyon (recreation)	None..... 0	None..... 0	None..... 0	ONA..... 4,200	None..... 0
4333	Lockhart Basin	None..... 0	None..... 0	ACEC..... 56,660	ACEC..... 56,660	None..... 0
4351	Cajon Pond (wildlife)	None..... 0	None..... 0	None..... 0	None..... 0	ACEC..... 40

KEY: RNA = research natural area; ACEC = area of critical environmental concern; PA = primitive area; ONA = outstanding natural area;

TABLE 2-7

Alternative Management Actions, by Program
(All acreages rounded to the nearest 10 acres)

Subactivity Code	Resource Management Program	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
4111	Oil and gas Management	Apply oil and gas lease categories: 1,777,830 ac. Category 1 (open): 1,508,480 ac. standard conditions: 891,310 ac. special conditions: 617,170 ac. Category 2 (no surface occupancy): 114,120 ac. Category 3 (no lease): 155,230 ac.	Apply oil and gas lease categories: 1,777,830 ac. Category 1 (open): 1,775,280 ac. standard conditions: 1,773,240 ac. special conditions: 2,040 ac. Category 2 (no surface occupancy): 2,550 ac. Category 3 (no lease): 0 ac.	Apply oil and gas lease categories: 1,777,830 ac. Category 1 (open): 1,066,600 ac. standard conditions: 385,750 ac. special conditions: 680,850 ac. Category 2 (no surface occupancy): 711,230 ac. Category 3 (no lease): 0 ac.	Apply oil and gas lease categories: 1,777,830 ac. Category 1 (open): 509,190 ac. standard conditions: 0 ac. special conditions: 509,190 ac. Category 2 (no surface occupancy): 213,770 ac. Category 3 (no lease): 1,054,870 ac.	Apply oil and gas lease categories: 1,777,830 ac. Category 1 (open): 1,525,850 ac. standard conditions: 594,950 ac. special conditions: 930,900 ac. Category 2 (no surface occupancy): 251,980 ac. Category 3 (no lease): 0 ac.
4113	Geothermal Management	Allow geophysical activities: 1,779,190 ac. standard conditions: 0 ac. special conditions: 4,590 ac.	Allow geophysical activities: 1,774,600 ac. special conditions: 4,590 ac.	Allow geophysical activities: 387,110 ac. special conditions: 1,392,080 ac.	Allow geophysical activities: 0 ac. standard conditions: 1,779,190 ac.	Allow geophysical activities: 596,310 ac. special conditions: 1,182,880 ac.
4121	Coal Management	Do not designate coal lease areas, lease coal or allow coal exploration. 1,777,830 ac.	Do not designate coal lease areas, lease coal, or allow coal exploration. 1,565,830 ac.	Do not designate coal lease areas, lease coal, or allow coal exploration. 1,777,830 ac.	Do not designate coal lease areas, lease coal, or allow coal exploration. 1,777,830 ac.	Do not designate coal lease areas, lease coal or allow coal exploration. 1,777,830 ac.

Designate coal lease areas: 0 ac.

Approve coal exploration plans and underground mining permit action plans: 212,000 ac.

standard conditions: 211,600 ac.

special conditions: 400 ac.

Designate coal lease areas: 0 ac.

Designate coal lease areas: 0 ac.

4122 Tar Sand Management

Apply CHL lease categories in White Canyon STSA: 7,980 ac.

Category 1 (open): 7,700 ac.

standard conditions: 3,080 ac.

special conditions: 4,620 ac.

Category 2 (no surface occupancy): 120 ac.

Category 3 (no lease): 160 ac.

Apply CHL lease categories in White Canyon STSA: 7,980 ac.

Category 1 (open): 7,980 ac.

standard conditions: 7,980 ac.

special conditions: 7,980 ac.

Category 2 (no surface occupancy): 0 ac.

Category 3 (no lease): 0 ac.

Apply CHL lease categories in White Canyon STSA: 7,980 ac.

Category 1 (open): 5,910 ac.

standard conditions: 2,010 ac.

special conditions: 3,900 ac.

Category 2 (no surface occupancy): 2,070 ac.

Category 3 (no lease): 0 ac.

Apply CHL lease categories in White Canyon STSA: 7,980 ac.

Category 1 (open): 1,520 ac.

standard conditions: 0 ac.

special conditions: 1,520 ac.

Category 2 (no surface occupancy): 0 ac.

Category 3 (no lease): 6,460 ac.

Apply CHL lease categories in White Canyon STSA: 7,980 ac.

Category 1 (open): 7,980 ac.

standard conditions: 3,210 ac.

special conditions: 4,690 ac.

Category 2 (no surface occupancy): 80 ac.

Category 3 (no lease): 0 ac.

4131 Mineral Materials Management

Allow mineral material disposal and development: 1,679,340 ac.

standard conditions: 1,679,340 ac.

special conditions: 0 ac.

no disposal: 99,850 ac.

Allow mineral material disposal and development: 1,776,640 ac.

standard conditions: 1,774,600 ac.

special conditions: 2,040 ac.

no disposal: 2,550 ac.

Allow mineral material disposal and development: 1,067,960 ac.

standard conditions: 387,110 ac.

special conditions: 680,850 ac.

no disposal: 711,230 ac.

Allow mineral material disposal and development: 510,550 ac.

standard conditions: 0 ac.

special conditions: 510,550 ac.

no disposal: 1,268,640 ac.

Allow mineral material disposal and development: 1,527,210 ac.

standard conditions: 596,310 ac.

special conditions: 930,900 ac.

no disposal: 251,980 ac.

TABLE 2-7 (Continued)

Resource Management Program	Subactivity Code	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
Mining Law Administration	4132	Administer mining claim location: 1,777,830 ac.	Administer mining claim location: 1,777,830 ac.	Administer mining claim location: 1,777,830 ac.	Administer mining claim location: 1,777,830 ac.	Administer mining claim location: 1,777,830 ac.
		open to entry:	open to entry:	open to entry:	open to entry:	open to entry:
		not open to entry: 1,674,480 ac.	not open to entry: 1,776,190 ac.	not open to entry: 1,538,430 ac.	not open to entry: 730,280 ac.	not open to entry: 1,660,890 ac.
		103,350 ac.	1,640 ac.	239,400 ac.	1,047,550 ac.	116,940 ac.

		Approve mining plans: 1,674,480 ac.	Approve mining plans: 1,776,190 ac.	Approve mining plans: 1,538,430 ac.	Approve mining plans: 730,280 ac.	Approve mining plans: 1,660,890 ac.
		standard conditions:	standard conditions:	standard conditions:	standard conditions:	standard conditions:
		special conditions: 1,674,480 ac.	special conditions: 1,772,290 ac.	special conditions: 345,660 ac.	special conditions: 0 ac.	special conditions: 527,760 ac.
		0 ac.	3,900 ac.	1,192,770 ac.	720,280 ac.	1,133,130 ac.
Nonenergy Leasable Minerals Management	4133	Issue prospecting permits and subsequent leases: 1,777,830 ac.	Issue prospecting permits and subsequent leases: 1,777,830 ac.	Issue prospecting permits and subsequent leases: 1,777,830 ac.	Issue prospecting permits and subsequent leases: 722,960 ac.	Issue prospecting permits and subsequent leases: 1,777,830 ac.
		standard conditions: 1,777,830 ac.	standard conditions: 1,773,240 ac.	standard conditions: 385,750 ac.	standard conditions: 0 ac.	standard conditions: 594,950 ac.
		special conditions: 0 ac.	special conditions: 2,040 ac.	special conditions: 680,850 ac.	special conditions: 509,190 ac.	special conditions: 930,900 ac.
		no surface occupancy: 0 ac.	no surface occupancy: 2,550 ac.	no surface occupancy: 711,230 ac.	no surface occupancy: 213,770 ac.	no surface occupancy: 251,980 ac.
		closed to exploration and leasing: 0 ac.	closed to exploration and leasing: 0 ac.	closed to exploration and leasing: 0 ac.	closed to exploration and leasing: 1,054,870 ac.	closed to exploration and leasing: 0 ac.

4211	Rights-of-Way	<p>Make lands available for rights-of-way: 1,779,190 ac. available in design- corridors: 0 ac.</p> <p>available outside of designated corridors: 1,679,340 ac.</p> <p>standard conditions: 1,679,340 ac.</p> <p>special conditions: 0 ac.</p> <p>avoidance areas: 0 ac.</p> <p>exclusion areas: 99,850 ac.</p>	<p>Make lands available for rights-of-way: 1,779,190 ac. available in design- corridors: 85,760 ac.</p> <p>available outside of designated corridors: 1,690,880 ac.</p> <p>standard conditions: 1,688,840 ac.</p> <p>special conditions: 2,040 ac.</p> <p>avoidance areas: 2,550 ac.</p> <p>exclusion areas: 0 ac.</p>	<p>Make lands available for rights-of-way: 1,779,190 ac. available in design- corridors: 85,760 ac.</p> <p>available outside of designated corridors: 982,200 ac.</p> <p>standard conditions: 301,350 ac.</p> <p>special conditions: 680,850 ac.</p> <p>avoidance areas: 512,460 ac.</p> <p>exclusion areas: 198,770 ac.</p>	<p>Make lands available for rights-of-way: 1,779,190 ac. available in design- corridors: 85,760 ac.</p> <p>available outside of designated corridors: 424,790 ac.</p> <p>standard conditions: 0 ac.</p> <p>special conditions: 424,790 ac.</p> <p>avoidance areas: 213,620 ac.</p> <p>exclusion areas: 1,055,020 ac.</p>	<p>Make lands available for rights-of-way: 1,779,190 ac. available in design- corridors: 85,760 ac.</p> <p>available outside of designated corridors: 1,441,450 ac.</p> <p>standard conditions: 510,550 ac.</p> <p>special conditions: 930,990 ac.</p> <p>avoidance areas: 128,810 ac.</p> <p>exclusion areas: 123,170 ac.</p>
4212	Lands	<p>Provide lands for disposal for community expansion or private use: 2,880 ac.</p>	<p>Provide lands for disposal for community expansion or private use: 4,270 ac.</p>	<p>Provide lands for disposal for community expansion or private use: 5,950 ac.</p>	<p>Provide lands for disposal for community expansion or private use: 2,870 ac.</p>	<p>Provide lands for disposal for community expansion or private use: 6,350 ac.</p>
4220	Withdrawal Processing and Review	<p>Request Secretarial withdrawals: 101,860 ac.</p> <p>on C&MU classifica- tions: 92,130 ac.</p> <p>on acquired lands: 9,730 ac.</p> <p>on open lands: 0 ac.</p> <p>Open lands to entry: 0 ac.</p> <p>revoke C&MU classi- fications: 0 ac.</p> <p>open acquired lands: 0 ac.</p>	<p>Request Secretarial withdrawals: 150 ac.</p> <p>on C&MU classifica- tions: 150 ac.</p> <p>on acquired lands: 0 ac.</p> <p>on open lands: 0 ac.</p> <p>Open lands to entry: 101,700 ac.</p> <p>revoke C&MU classi- fications: 91,980 ac.</p> <p>open acquired lands: 9,730 ac.</p>	<p>Request Secretarial withdrawals: 237,910 ac.</p> <p>on C&MU classifica- tions: 92,130 ac.</p> <p>on acquired lands: 9,730 ac.</p> <p>on open lands: 136,050 ac.</p> <p>Open lands to entry: 0 ac.</p> <p>revoke C&MU classi- fications: 0 ac.</p> <p>open acquired lands: 0 ac.</p>	<p>Request Secretarial withdrawals: 1,046,060 ac.</p> <p>on C&MU classifica- tions: 92,130 ac.</p> <p>on acquired lands: 9,730 ac.</p> <p>on open lands: 944,200 ac.</p> <p>Open lands to entry: 0 ac.</p> <p>revoke C&MU classi- fications: 0 ac.</p> <p>open acquired lands: 0 ac.</p>	<p>Request Secretarial withdrawals: 115,450 ac.</p> <p>on C&MU classifica- tions: 92,130 ac.</p> <p>on acquired lands: 9,730 ac.</p> <p>on open lands: 13,590 ac.</p> <p>Open lands to entry: 0 ac.</p> <p>revoke C&MU classi- fications: 0 ac.</p> <p>open acquired lands: 0 ac.</p>

TABLE 2-7 (Continued)

Subactivity Code	Resource Management Program	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
4311	Forest Management	<p>Allow private dead fuelwood harvest: 1,777,680 ac.</p> <p>standard conditions: 1,504,550 ac.</p> <p>special conditions: 0 ac.</p> <p>Allow only limited onsite collection of dead fuelwood (for campfires): 273,130 ac.</p> <p>Exclude from private dead fuelwood harvest: 150 ac.</p>	<p>Allow private dead fuelwood harvest on designated sites: 1,776,640 ac.</p> <p>standard conditions: 1,774,600 ac.</p> <p>special conditions: 2,040 ac.</p> <p>Allow only limited onsite collection of dead fuelwood (for campfires): 2,400 ac.</p> <p>Exclude from private dead fuelwood harvest: 150 ac.</p>	<p>Allow private dead fuelwood harvest on designated sites: 1,025,360 ac.</p> <p>standard conditions: 387,110 ac.</p> <p>special conditions: 638,250 ac.</p> <p>Allow only limited onsite collection of dead fuelwood (for campfires): 753,580 ac.</p> <p>Exclude from private dead fuelwood harvest: 250 ac.</p>	<p>Allow private dead fuelwood harvest on designated sites: 421,940 ac.</p> <p>standard conditions: 0 ac.</p> <p>special conditions: 421,940 ac.</p> <p>Allow only limited onsite collection of dead fuelwood (for campfires): 1,357,100 ac.</p> <p>Exclude from private dead fuelwood harvest: 150 ac.</p>	<p>Allow private dead fuelwood harvest on designated sites: 1,527,170 ac.</p> <p>standard conditions: 596,310 ac.</p> <p>special conditions: 930,860 ac.</p> <p>Allow only limited onsite collection of dead fuelwood (for campfires): 251,770 ac.</p> <p>Exclude from private dead fuelwood harvest: 250 ac.</p>

		<p>Allow private and commercial use of woodland products on designated areas or other areas if designated: 1,506,060 ac.</p> <p>commercial use, dead fuelwood: 1,679,340 ac.</p> <p>all other private and commercial use: 1,679,340 ac.</p> <p>Exclude from harvest: commercial use, dead fuelwood: 273,130 ac.</p> <p>all other private and commercial use: 99,850 ac.</p>	<p>Allow private and commercial use of woodland products on designated sites: 1,776,640 ac.</p> <p>standard conditions: 1,774,600 ac.</p> <p>special conditions: 2,040 ac.</p> <p>Exclude from woodland products use: 2,550 ac.</p>	<p>Allow private and commercial use of woodland products on designated sites: 736,090 ac.</p> <p>standard conditions: 387,110 ac.</p> <p>special conditions: 348,980 ac.</p> <p>Exclude from woodland products use: 1,043,100 ac.</p>	<p>Allow private and commercial use of woodland products on designated sites: 421,940 ac.</p> <p>standard conditions: 0 ac.</p> <p>special conditions: 421,940 ac.</p> <p>Exclude from woodland products use: 1,357,250 ac.</p>	<p>Allow private and commercial use of woodland products on designated sites: 1,527,130 ac.</p> <p>standard conditions: 596,310 ac.</p> <p>special conditions: 930,820 ac.</p> <p>Exclude from woodland products use: 252,060 ac.</p>

4312 See management guidance common to all alternatives.

Forest
Development

4322	Grazing Management	License cattle use on 66 allotments and sheep use on 1 allot- ment.	License cattle use on 66 allotments and sheep use on 1 allot- ment.	License cattle use on 88 allotments and sheep use on 1 allot- ment.	License cattle use on 66 allotments and sheep use on 1 allot- ment.	License cattle use on 66 allotments and sheep use on 1 allot- ment.	License cattle use on 66 allotments and sheep use on 1 allot- ment.
		grazing allotments: 67 2,071,350 ac. public lands 1,758,690 ac. Glen Canyon NRA 312,660 ac. allotted to wildlife: 17,300 ac. unallotted: 3,200 ac.	grazing allotments: 67 2,071,350 ac. public lands 1,758,690 ac. Glen Canyon NRA 312,660 ac. allotted to wildlife: 17,300 ac. unallotted: 3,200 ac.	grazing allotments: 89 2,091,850 ac. public lands 1,779,190 ac. Glen Canyon NRA 312,660 ac. allotted to wildlife: 0 ac. unallotted: 0 ac.	grazing allotments: 67 2,071,350 ac. public lands 1,758,690 ac. Glen Canyon NRA 312,660 ac. allotted to wildlife: 17,300 ac. unallotted: 3,200 ac.	grazing allotments: 67 2,071,350 ac. public lands 1,758,690 ac. Glen Canyon NRA 312,660 ac. allotted to wildlife: 17,300 ac. unallotted: 3,200 ac.	grazing allotments: 67 2,071,350 ac. public lands 1,758,690 ac. Glen Canyon NRA 312,660 ac. allotted to wildlife: 17,300 ac. unallotted: 3,200 ac.
		Exclude livestock use: 37,720 ac. allotments affected: 2 AUMs affected: 0	Exclude livestock use: 75,560 ac. allotments affected: 24 AUMs affected: 0	Exclude livestock use: 2,550 ac. allotments affected: 6 AUMs affected: 0	Exclude livestock use: 11,760 ac. allotments affected: 21 AUMs affected: 144	Exclude livestock use: 138,120 ac. allotments affected: 24 AUMs affected: 264	Exclude livestock use: 138,120 ac. allotments affected: 24 AUMs affected: 264
		License use: 54,974 AUMs 2,033,630 ac. at total preference: 0 AUMs 0 ac. at past 5 years average licensed use: 54,974 AUMs 2,033,630 ac. at 50% of past 5 years average licensed use: 0 AUMs 0 ac. at 25% of past 5 years average licensed use: 0 AUMs 0 ac.	License use: 43,704 AUMs 1,995,790 ac. at total preference: 0 AUMs 0 ac. at past 5 years average licensed use: 33,382 AUMs 1,028,250 ac. at 50% of past 5 years average licensed use: 9,386 AUMs 780,410 ac. at 25% of past 5 years average licensed use: 0 AUMs 0 ac.	License use: 97,688 AUMs 2,089,300 ac. at total preference: 97,688 AUMs 2,089,300 ac. at past 5 years average licensed use: 0 AUMs 0 ac. at 50% of past 5 years average licensed use: 0 AUMs 0 ac. at 25% of past 5 years average licensed use: 0 AUMs 0 ac.	License use: 37,837 AUMs 2,059,590 ac. at total preference: 0 AUMs 0 ac. at past 5 years average licensed use: 31,837 AUMs 702,870 ac. at 50% of past 5 years average licensed use: 0 AUMs 0 ac. at 25% of past 5 years average licensed use: 0 AUMs 0 ac.	License use: 55,370 AUMs 1,933,230 ac. at total preference: 0 AUMs 0 ac. at past 5 years average licensed use: 55,370 AUMs 1,933,230 ac. at 50% of past 5 years average licensed use: 0 AUMs 0 ac. at 25% of past 5 years average licensed use: 0 AUMs 0 ac.	License use: 55,370 AUMs 1,933,230 ac. at total preference: 0 AUMs 0 ac. at past 5 years average licensed use: 55,370 AUMs 1,933,230 ac. at 50% of past 5 years average licensed use: 0 AUMs 0 ac. at 25% of past 5 years average licensed use: 0 AUMs 0 ac.

TABLE 2-7 (Continued)

Subactivity Code	Resource Management Program	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
4322	Grazing Management (Concluded)	<p>Allow present seasons of use:</p> <p>fall/winter on 0 allotments 0 ac.</p> <p>fall/winter/spring on 39 allotments 1,741,420 ac.</p> <p>summer: on 24 allotments 60,400 ac.</p> <p>yearlong: on 4 allotments 231,810 ac.</p>	<p>Allow season of use:</p> <p>fall/winter on 4 allotments 5,650 ac.</p> <p>fall/winter/spring: on 42 allotments 1,786,120 ac.</p> <p>summer: on 39 allotments 65,720 ac.</p> <p>yearlong: on 4 allotments 231,810 ac.</p>	<p>Allow seasons of use:</p> <p>fall/winter: on 12 allotments 221,470 ac.</p> <p>fall/winter/spring: on 27 allotments 1,482,110 ac.</p> <p>summer: on 25 allotments 62,990 ac.</p> <p>yearlong: on 3 allotments 229,220 ac.</p>	<p>Allow seasons of use:</p> <p>fall/winter: on 12 allotments 221,470 ac.</p> <p>fall/winter/spring: on 27 allotments 1,545,910 ac.</p> <p>summer: on 25 allotments 62,990 ac.</p> <p>yearlong: on 3 allotments 229,220 ac.</p>	<p>Allow seasons of use:</p> <p>fall/winter: on 4 allotments 5,650 ac.</p> <p>fall/winter/spring: on 35 allotments 1,635,370 ac.</p> <p>summer: on 24 allotments 60,400 ac.</p> <p>yearlong: on 4 allotments 231,810 ac.</p>
<hr/>						
		<p>Implement 9 existing AMPs: 1,282,520 ac.</p>	<p>Implement 9 existing AMPs: 1,315,450 ac.</p>	<p>Modify and implement 9 existing AMPs: 1,249,370 ac.</p>	<p>Modify and implement 9 existing AMPs: 1,307,140 ac.</p>	<p>Modify and implement 9 existing AMPs: 1,182,060 ac.</p>
<hr/>						
		<p>Develop additional AMPs: 0 plans 0 ac.</p>	<p>Develop and implement 22 additional AMPs: 734,700 ac.</p>	<p>Develop and implement 21 additional AMPs: 656,740 ac.</p>	<p>Develop and implement 16 additional AMPs: 247,770 ac.</p>	<p>Develop and implement 20 additional AMPs: 664,800 ac.</p>
<hr/>						
		<p>Implement land treatments (in conjunction with 4341). Maintain existing treatments on 27 allotments: 57,000 ac.</p> <p>Abandon existing land treatments on 0 allotments: 0 ac.</p> <p>Implement new land treatments identified in existing AMPs on 6 allotments: 21,000 ac.</p>	<p>Implement land treatments (in conjunction with 4341). Maintain existing treatments on 27 allotments: 57,000 ac.</p> <p>Abandon existing land treatments on 0 allotments: 0 ac.</p> <p>Implement new land treatments on 22 allotments: 262,700 ac.</p>	<p>Implement land treatments (in conjunction with 4341). Maintain existing treatments on 27 allotments: 57,000 ac.</p> <p>Abandon existing land treatments on 0 allotments: 0 ac.</p> <p>Implement new land treatments on 22 allotments: 115,000 ac.</p>	<p>Implement land treatments (in conjunction with 4341). Maintain existing treatments outside of identified areas on 22 allotments: 28,000 ac.</p> <p>Abandon existing land treatments on 9 allotments: 29,000 ac.</p> <p>Implement new land treatments on 0 allotments: 0 ac.</p>	<p>Implement land treatments (in conjunction with 4341). Maintain existing treatments on 27 allotments: 57,000 ac.</p> <p>Abandon existing land treatments on 0 allotments: 0 ac.</p> <p>Implement new land treatments on 22 allotments: 241,960 ac.</p>

Designate special management areas: 0 ac. Designate 2 RNAs: 2,400 ac. Designate 2 ACECs: 5,930 ac. Designate 2 RNAs: 5,930 ac.

Bridger Jack Mesa RNA 1,760 ac. Bridger Jack Mesa ACEC 5,930 ac. Bridger Jack Mesa RNA 5,930 ac.

Lavender Mesa RNA 640 ac. Lavender Mesa ACEC 5,290 ac. Lavender Mesa RNA 5,290 ac.

640 ac. 640 ac.

4331 Natural History/Cultural Resources Management

Nominate sites for designation to the National Register: 0 ac.

Nominate sites for designation to the National Register: 0 ac.

402,130 ac. 402,130 ac.

cultural properties: 10 ac. cultural properties: 10 ac.

archaeologic districts: 402,120 ac. archaeologic districts: 402,120 ac.

Develop and implement CRMPs: 0 ac. Develop and implement CRMPs for 1 NHL and 4 archaeological districts: 0 ac.

5 CRMPs 391,880 ac. 5 CRMPs 391,880 ac.

NHL: NHL:

archaeologic districts: 2,340 ac. archaeologic districts: 2,340 ac.

389,540 ac. 389,540 ac.

Designate ACECs: 0 ac. Designate 3 ACECs: 240,010 ac. Designate 3 ACECs: 86,790 ac.

Alkali Ridge ACEC: 170,320 ac. Alkali Ridge ACEC: 170,320 ac.

Grand Gulch ACEC: 4,240 ac. Grand Gulch ACEC: 4,240 ac.

North Abajo ACEC: 65,450 ac. North Abajo ACEC: 65,450 ac.

Hovenweep ACEC: 2,000 ac. Hovenweep ACEC: 2,000 ac.

4332 Wilderness Management

See management guidance common to all alternatives.

TABLE 2-7 (Continued)

Subactivity Code	Resource Management Program	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
4333	Recreation Management	Continue present management of 3 existing SRMAs and of primitive areas: 462,140 ac.	Modify management of 3 existing SRMAs; continuation of primitive areas: 462,140 ac.	Modify management of 3 existing SRMAs; continuation of primitive areas: 462,140 ac.	Modify management of 3 existing SRMAs; continuation of primitive areas: 462,140 ac.	Modify management of 3 existing SRMAs; continuation of primitive areas: 462,140 ac.
		Designate additional SRMAs: 0 ac.	Designate additional SRMAs: 0 ac.	Designate 3 additional SRMAs: 151,750 ac. Beef Basin SRMA 66,450 ac. Indian Creek SRMA 80,000 ac. Montezuma Creek SRMA 5,300 ac.	Designate 3 additional SRMAs: 151,750 ac. Beef Basin SRMA 66,450 ac. Indian Creek SRMA 80,000 ac. Montezuma Creek SRMA 5,300 ac.	Designate 3 additional SRMAs: 148,370 ac. Beef Basin SRMA 66,450 ac. Indian Creek SRMA 80,000 ac. Pearson Canyon SRMA 1,920 ac.
<hr/>						
		Develop management plans for SRMAs. 3 plans 462,140 ac.	Develop management plans for SRMAs. 3 plans 462,140 ac.	Develop management plans for SRMAs. 6 plans 613,890 ac.	Develop management plans for SRMAs. 6 plans 613,890 ac.	Develop management plans for SRMAs. 6 plans 610,510 ac.
		Continue present management of existing extensive RMA: 1,317,050 ac.	Provide no recreation management for existing extensive RMA: 1,317,050 ac.	Modify management of extensive RMA to include all area not in an SRMA: 1,165,300 ac.	Modify management of extensive RMA to include all area not in an SRMA: 1,165,300 ac.	Modify management of extensive RMA to include all area not in an SRMA: 1,168,680 ac.
<hr/>						
		Continue present management of developed recreation sites: 150 ac.	Modify management of developed recreation sites to protect facilities: 150 ac.	Intensify management of developed recreation sites to protect facilities: 150 ac.	Modify management of developed recreation sites to protect facilities: 150 ac.	Intensify management of developed recreation sites to protect facilities: 150 ac.
		Develop or improve recreation sites: 0 sites	Develop or improve recreation sites: 0 sites	Develop or improve recreation sites: 7 sites	Develop or improve recreation sites: 7 sites	Develop or improve recreation sites: 7 sites
		0 ac.	0 ac.	100 ac.	0 ac.	100 ac.

Designate ONAs:	0 ac.	Designate ONAs:	0 ac.	Designate 8 ONAs:	277,000 ac.	Designate 9 ONAs:	281,200 ac.	Designate ONAs:	0 ac.
				Grand Gulch	69,500 ac.	Grand Gulch	69,500 ac.		
				Dark Canyon	68,100 ac.	Dark Canyon	68,100 ac.		
				Slickhorn Canyon	25,800 ac.	Slickhorn Canyon	25,800 ac.		
				Johns Canyon	17,500 ac.	Johns Canyon	17,500 ac.		
				Fish and Owl Canyons	40,300 ac.	Fish and Owl Canyons	40,300 ac.		
				Road Canyon	24,500 ac.	Road Canyon	24,500 ac.		
				Lime Canyon	25,300 ac.	Lime Canyon	25,300 ac.		
				Mule Canyon	6,000 ac.	Mule Canyon	6,000 ac.		
				Arch Canyon	4,200 ac.	Arch Canyon	4,200 ac.		

Designate ORV use areas:	1,779,190 ac.	Designate ORV use areas:	1,779,190 ac.	Designate ORV use areas:	1,779,190 ac.	Designate ORV use areas:	1,779,190 ac.
open to ORV use:	1,679,340 ac.	open to ORV use:	1,779,190 ac.	open to ORV use:	421,940 ac.	open to ORV use:	651,000 ac.
limited use with seasonal conditions:	0 ac.	limited use with seasonal restrictions:	540,260 ac.	limited use with seasonal restrictions:	0 ac.	limited use with seasonal restrictions:	540,260 ac.
				Seasonal restrictions only:		Seasonal restrictions only:	
						Seasonal and other restrictions:	336,320 ac.
limited to existing road and trails:	0 ac.	limited to existing roads and trails:	0 ac.	limited to existing roads and trails:	346,870 ac.	limited to existing roads and trails:	203,940 ac.
limited to designated roads and trails:	0 ac.	limited to designated roads and trails:	150 ac.	limited to designated roads and trails:	250 ac.	limited to designated roads and trails:	501,300 ac.
closed to ORV use:	99,850 ac.	closed to ORV use:	2,400 ac.	closed to ORV use:	752,480 ac.	closed to ORV use:	15,850 ac.
							274,720 ac.

TABLE 2-7 (Continued)

Subactivity Code	Resource Management Program	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)	
4333	Recreation Management (Concluded)	Designate ACECs: 0 ac.	Designate ACECs: 0 ac.	Designate ACECs: 0 ac. (see 4322)	Designate ACECs: 0 ac.	Designate 2 ACECs 111,170 ac. Grand Gulch 49,130 ac. Dark Canyon 62,040 ac.	
4333	Visual Resources Management	Designate ACECs: 0 ac.	Designate ACECs: 0 ac.	Designate 1 ACEC: 56,660 ac. Lockhart Basin ACEC 56,660 ac.	Designate 1 ACEC: 56,660 ac. Lockhart Basin ACEC 56,660 ac.	Designate ACECs: 0 ac.	
4341	Soil, Water, and Air Management	Locate new watershed control structures where needed: available: 1,779,190 ac. excluded: 0 ac.	Locate new watershed control structures where needed: available: 1,776,790 ac. excluded: 2,400 ac.	Locate new watershed control structures where needed: available: 1,574,740 ac. excluded: 204,450 ac.	Locate new watershed control structures where needed: available: 724,320 ac. excluded: 1,054,870 ac.	Locate new watershed control structures where needed: available: 1,577,220 ac. excluded: 201,970 ac.	
4342	Hazardous Waste Management	See management guidance common to all alternatives					
4351	Habitat Management	Implement 3 existing HMPs: 890,560 ac.	Modify 3 existing HMPs: 890,560 ac.	Modify 3 existing HMPs: 890,560 ac.	Modify 3 existing HMPs: 890,560 ac.	Implement 3 existing HMPs: 890,560 ac.	
		Designate ACECs: 0 ac.	Designate ACECs: 0 ac.	Designate ACECs: 0 ac.	Designate ACECs: 0 ac.	Designate 1 ACEC 40 ac. Cajon Pond 40 ac.	

4352 Endangered Species See management common to all alternatives
Management

Fire Management	Implement a fire management policy: suppression: limited suppression: prescribed fire:	Implement a fire management policy: suppression: limited suppression: prescribed fire:	Implement a fire management policy: suppression: limited suppression: prescribed fire:	Implement a fire management policy: suppression: limited suppression: prescribed fire:
4360	1,779,190 ac. 1,724,790 ac. 0 ac. 54,400 ac.	1,779,190 ac. 264,750 ac. 1,324,190 ac. 190,250 ac.	1,779,190 ac. 683,410 ac. 1,036,280 ac. 59,500 ac.	1,779,190 ac. 266,060 ac. 1,453,530 ac. 59,600 ac.

TABLE 2-8

Off-Road Vehicle Designations, by Alternative

	Alternative A (No Action) (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)	Alternative E (Preferred) (acres)
Open to ORV use	1,679,340	1,776,640	484,320	421,940	651,000
Limited use with seasonal restrictions	0	0	540,260	0	540,260
Seasonal restrictions only	(0)	(0)	(193,390)	(0)	(336,320)
Seasonal restrictions with other limitations	(0)	(0)	(346,870)	(0)	(203,940)
To protect crucial wildlife habitat: -bighorn sheep lambing areas (Apr. 4 to Jul. 15) and rutting areas (Oct. 15 to Dec. 31) -antelope fawning area (May 15 to June 30) -deer winter range (Dec. 15 to Apr. 30)	(0) (0) (0)	(0) (0) (0)	(329,750) (12,960) (197,550)	(0) (0) (0)	(329,750) (12,960) (197,550)
Limited to Existing Roads and Trails	0	0	348,750	129,910	501,300
To protect watershed and wildlife values: -Floodplains, riparian/aquatic areas -sensitive soils	(0) (0)	(0) (0)	(1,500) (195,000)	(1,500) (195,000)	(1,500) (0)
To protect cultural and recreational values: -Alkali Ridge ACEC -North Abajo ACEC -Snay Canyon ACEC -SPNM class areas	(0) (0) (0) (0)	(0) (0) (0) (0)	(170,320) (65,450) (0) (0)	(0) (0) (0) (0)	(35,890) (0) (1,770) (505,700)
To protect scenic quality: -Lockhart Basin ACEC	(0)	(0)	(56,660)	(0)	(0)

Limited to Designated Roads and Trails	0	150	250	172,470	15,850
To protect wildlife values:					
-Cajon Pond ACEC	(0)	(0)	(0)	(0)	(40)
To protect cultural and recreational values:					
-Alkali Ridge ACEC	(0)	(0)	(0)	(170,320)	(0)
-Hovenweep ACEC	(0)	(0)	(0)	(2,000)	(0)
-Grand Gulch ACEC (except P ROS class)	(0)	(0)	(0)	(0)	(13,640)
-Pearson Canyon SRMA	(0)	(0)	(0)	(0)	(1,920)
-developed recreation sites	(0)	(150)	(250)	(150)	(250)
Closed to ORV Use	99,850	2,400	752,480	1,054,870	274,720
To protect vegetation values:					
-Bridger Jack Mesa	(0)	(1,760)	(5,290)	(0)	(5,290)
-Lavender Mesa	(0)	(640)	(640)	(0)	(640)
-Identified natural succession areas	(0)	(0)	(0)	(1,054,870)	(0)
To protect wildlife values:					
-five identified mesa tops (bighorn sheep)	(0)	(0)	(56,740)	(0)	(0)
To protect cultural and recreational values:					
-Existing primitive areas	(99,850)	(0)	(0)	(0)	(0)
-Grand Gulch ACEC	(0)	(0)	(4,240)	(4,240)	(0)
-Dark Canyon ACEC	(0)	(0)	(0)	(0)	(62,040)
-North Abajo ACEC	(0)	(0)	(0)	(65,450)	(0)
-Hovenweep ACEC	(0)	(0)	(0)	(2,000)	(0)
-Hovenweep NM area	(0)	(0)	(0)	(0)	(880)
-P class areas	(0)	(0)	(198,520)	(0)	(196,040)
-SPNM class areas	(0)	(0)	(512,460)	(0)	(0)
-San Juan River SRMA SPM class area	(0)	(0)	(0)	(0)	(9,830)

NOTE: Acreages in parentheses may not be additive because of overlap.

TABLE 2-9

Alternative Planning Decisions, by Planning Issue

PLANNING ISSUE: DECISIONS NEEDED: What stocking levels and periods of use should be achieved on rangelands managed by the SJRA (pending completion of monitoring studies)?	Alternative A	Alternative B	Alternative C ^a	Alternative D ^b	Alternative E
	<p>Livestock Management</p> <p>Livestock Management</p> <p>What stocking levels and periods of use should be achieved on rangelands managed by the SJRA (pending completion of monitoring studies)?</p>				
	<p>Alternative A</p> <p>Areal allotments of forage: - certain areas to deer; - isolated tracts unallotted; - remainder of SJRA to live-stock.</p> <p>Licensed grazing use level: - past 5 years average licensed use.</p> <p>Season of use: - continue present management.</p> <p>Livestock exclusions: - Wingate Mesa; - Grand Gulch Primitive Area (partial); - Pearson Canyon.</p>	<p>Alternative B</p> <p>Areal allotments of forage: - entire SJRA to livestock. - isolated tracts unallotted; - remainder of SJRA to live-stock.</p> <p>Licensed grazing use level: - total preference.</p> <p>Season of use: - eliminate spring grazing on certain allotments.</p> <p>Livestock exclusions: - Grand Gulch Primitive Area (partial); - Bridger Jack and Lavender Mesa RNAs; - developed recreation sites.</p>	<p>Alternative C^a</p> <p>Areal allotments of forage: - certain areas to deer; - isolated tracts unallotted; - remainder of SJRA to live-stock.</p> <p>Licensed grazing use level: - 25% of past 5 years average in P class areas; - 50% of past 5 years average in SPM and SPM areas; - past 5 years average licensed use elsewhere.</p> <p>Season of use: - eliminate spring grazing on certain allotments.</p> <p>Livestock exclusions: - Wingate Mesa and other identified mesa tops; - riparian areas; - Bridger Jack and Lavender Mesa ACECs; - developed recreation sites.</p>	<p>Alternative D^b</p> <p>Areal allotments of forage: - certain areas to deer; - isolated tracts unallotted; - remainder of SJRA to live-stock.</p> <p>Licensed grazing use level: - 25% of past 5 years average in identified natural succession areas and riparian areas; - at past 5 years average use elsewhere.</p> <p>Season of use: - eliminate spring grazing on certain allotments.</p> <p>Livestock exclusions: - riparian areas; - Bridger Jack and Lavender Mesa RNAs; - Grand Gulch ACEC; - developed recreation sites.</p>	<p>Alternative E</p> <p>Areal allotments of forage: - certain areas to deer; - isolated tracts unallotted; - remainder of SJRA to live-stock.</p> <p>Licensed grazing use level: - past 5 years average licensed use.</p> <p>Season of use: - eliminate spring grazing on certain allotments.</p> <p>Livestock exclusions: - Wingate Mesa and other identified mesa tops; - upper Indian Creek; - Grand Gulch Primitive area (partial); - Bridger Jack and Lavender Mesa RNAs; - Dark Canyon ACEC; - Pearson Canyon SRMA; - developed recreation sites.</p>

PLANNING ISSUE: Wilderness Study Area Management
 DECISIONS NEEDED: How should areas within the SURA now designated as ISAs and WSAs be managed if not designated as wilderness by Congress?

Alternative A	Alternative B	Alternative C ^d	Alternative D ^b	Alternative E
Dark Canyon ISA Complex	Dark Canyon ISA Complex	Dark Canyon ISA Complex	Dark Canyon ISA Complex	Dark Canyon ISA Complex
Special designations: none.	Special designations: none.	ROS classes present: P, SPNM, and SPM. Special designations: ONA covering complex.	WSA is within an identified natural succession area. Special designations: ONA covering complex.	ROS classes present: P, SPNM, and SPM. Special designations: ACEC covering ISA.
Minerals: complex closed to leasing; ISA segregated from entry; remainder open to entry.	Minerals: complex open to minerals leasing, sales, and entry with provisions to protect riparian areas.	Minerals: P and SPNM areas stipulated no surface occupancy for leasing and sales; P areas segregated from entry; remainder open.	Minerals: complex closed to minerals leasing and sales; segregated from mineral entry.	Minerals: ACEC stipulated no surface occupancy for leasing, closed to sales, and segregated from entry; remainder open with provisions to protect crucial wildlife habitats.
Grazing: ISA not grazed; remainder grazed at past 5 years average licensed use.	Grazing: complex grazed at total preference.	Grazing: P areas at 25% of past 5 years average licensed use, SPNM areas at 50%; remainder grazed at past 5 years average.	Grazing: complex at 25% of past 5 years average licensed use.	Grazing: excluded from ACEC; remainder grazed at past 5 years average licensed use.
Recreation: ISA managed as an SRMA for primitive recreation; closed to ORV use; remainder open to ORV use.	Recreation: ISA managed as an SRMA; remainder open to ORV use.	Recreation: ISA managed as an SRMA; P and SPNM areas closed to ORV use; remainder open to ORV use.	Recreation: ISA managed as an SRMA; complex closed to ORV use.	Recreation: ISA managed as an SRMA; ACEC and P areas closed to ORV use; SPNM areas limited to existing roads and trails; remainder open to ORV use.

TABLE 2-9 (Continued)

PLANNING ISSUE: Wilderness Study Area Management (Continued)

DECISIONS NEEDED: How should areas within the SURA now designated as ISAs and WSAs be managed if not designated as wilderness by Congress?

Alternative A	Alternative B	Alternative C ^a	Alternative D ^b	Alternative E
Grand Gulch ISA Complex	Grand Gulch ISA Complex	Grand Gulch ISA Complex	Grand Gulch ISA Complex	Grand Gulch ISA Complex
Special designations: none.	Special designations: none.	ROS classes present: P, SPNM, SPM, and RN. Special designations: 3 ONAs covering most of complex; ACEC covering National Register archaeological district.	WSA is within an identified natural succession area. Special designations: 3 ONAs covering most of complex; ACEC covering National Register archaeological district.	ROS classes present: P, SPNM, SPM, and RN. Special designations: ACEC covering ISA and part of complex.
Minerals: complex closed to leasing; ISA segregated from entry; remainder open to entry.	Minerals: complex open to leasing, sales, and entry with provisions to protect riparian areas.	Minerals: P and SPNM areas stipulated no surface occupancy for leasing and sales; P areas segregated from entry; remainder open with provisions to protect riparian areas.	Minerals: complex closed to leasing and sales; segregated from entry.	Minerals: ACEC and P areas stipulated no surface occupancy for leasing; remainder open with special conditions to protect SPNM and riparian areas; ACEC segregated from entry; remainder open.
Grazing: excluded from part of ISA; remainder grazed at past 5 years average licensed use; land treatments allowed on part of complex.	Grazing: complex grazed at total preference; land treatments allowed on part of complex.	Grazing: excluded from riparian areas; P areas grazed at 25% of past 5 years average licensed use; SPNM areas at 50%; remainder at past 5 years average; land treatments allowed on part of complex.	Grazing: excluded from riparian areas; remainder grazed at 25% of past 5 years average licensed use.	Grazing: excluded from riparian areas and part of ISA; remainder grazed at past 5 years average licensed use.
Recreation: ISA managed as part of Grand Gulch Plateau SRMA; closed to ORV use; remainder open to ORV use.	Recreation: ISA managed as part of Grand Gulch Plateau SRMA; remainder open to use.	Recreation: ISA managed as part of Grand Gulch Plateau SRMA; P and SPNM areas closed to ORV use; remainder open to ORV use.	Recreation: ISA managed as part of Grand Gulch Plateau SRMA; complex closed to use.	Recreation: ISA managed as part of Grand Gulch Plateau SRMA; P areas closed to ORV use; remainder of ACEC limited to designated roads and trails; SPNM and riparian areas limited to existing roads and trails; remainder open to ORV use.

<u>Indian Creek WSA</u>	<u>Indian Creek WSA</u>	<u>Indian Creek WSA</u>	<u>Indian Creek WSA</u>
<p>Special designations: none.</p> <p>Minerals: open to leasing, sales, and entry.</p> <p>Grazing: at past 5 years average licensed use.</p> <p>Recreation: open to ORV use.</p>	<p>Special designations: none.</p> <p>Minerals: open to leasing, sales, and entry, with provisions to protect riparian areas.</p> <p>Grazing: at total preference.</p> <p>Recreation: open to ORV use.</p>	<p>ROS classes present: P and SPNM.</p> <p>Special designations: none.</p> <p>Minerals: stipulated no surface occupancy for leasing and sales; P areas segregated from entry; remainder open.</p> <p>Grazing: excluded from riparian areas; P areas grazed at 25% of past 5 years average licensed use; SPNM areas at 50%.</p> <p>Recreation: managed as part of Indian Creek SRMA; closed to ORV use.</p>	<p>ROS classes present: P and SPNM.</p> <p>Special designations: none.</p> <p>Minerals: P areas stipulated no surface occupancy for leasing and sales; remainder open to leasing, sales, and entry with special conditions to protect SPNM and riparian areas.</p> <p>Grazing: at past 5 years average licensed use.</p> <p>Recreation: managed as part of Indian Creek SRMA; P areas closed to ORV use; SPNM and riparian areas limited to existing roads and trails.</p>
<u>Bridger Jack Mesa WSA</u>	<u>Bridger Jack Mesa WSA</u>	<u>Bridger Jack Mesa WSA</u>	<u>Bridger Jack Mesa WSA</u>
<p>Special designations: none.</p> <p>Minerals: stipulated no surface occupancy for leasing and sales; remainder open.</p> <p>Grazing: area not grazed.</p> <p>Recreation: open to ORV use.</p>	<p>Special designations: none.</p> <p>Minerals: RNA stipulated no surface occupancy for leasing and sales; open to entry; remainder open.</p> <p>Grazing: excluded.</p> <p>Recreation: closed to ORV use.</p>	<p>ROS class present: SPNM.</p> <p>Special designations: ACEC; also included in North Abajo ACEC.</p> <p>Minerals: stipulated no surface occupancy for leasing; closed to sales and entry.</p> <p>Grazing: excluded.</p> <p>Recreation: closed to ORV use.</p>	<p>Special designations: RNA.</p> <p>Minerals: RNA stipulated no surface occupancy for leasing and sales; open to entry; remainder open.</p> <p>Grazing: excluded.</p> <p>Recreation: closed to ORV use.</p>

TABLE 2-9 (Continued)

PLANNING ISSUE: Wilderness Study Area Management (Continued)
 DECISIONS NEEDED: How should areas within the SJRA now designated as ISAs and WSAs be managed if not designated as wilderness by Congress?

Alternative A	Alternative B	Alternative C ^a	Alternative D ^b	Alternative E
<u>Butler Wash WSA</u>	<u>Butler Wash WSA</u>	<u>Butler Wash WSA</u>	<u>Butler Wash WSA</u>	<u>Butler Wash WSA</u>
Special designations: none.	Special designations: none.	ROS classes present: P, SPNM, and SPM.	WSA is within an identified natural succession area.	ROS classes present: P, SPNM, and SPM.
Minerals: stipulated no surface occupancy or closed to leasing; open to entry.	Minerals: open to leasing, sales, and entry.	Special designations: part of Beef Basin National Register archaeological district.	Special designations: part of Beef Basin National Register archaeological district.	Special designations: none.
		Minerals: P and SPNM areas stipulated no surface occupancy for leasing and sales; P areas segregated from entry; remainder open with provisions to protect crucial wildlife habitats.	Minerals: closed to leasing and sales; segregated from entry.	Minerals: P areas stipulated no surface occupancy for leasing and sales; open to entry; remainder open with provisions to protect crucial wildlife habitats.
Grazing: at past 5 years average licensed use.	Grazing: at total preference.	Grazing: P areas at 25% of past 5 years average licensed use, SPNM areas at 50%; remainder at past 5 years average.	Grazing: at 25% of past 5 years averaged licensed use.	Grazing: at past 5 years average licensed use.
Recreation: open to ORV use.	Recreation: open to ORV use.	Recreation: managed as part of Beef Basin SRMA; P and SPNM areas closed to ORV use; remainder open with provisions to protect crucial wildlife habitats.	Recreation: managed as part of Beef Basin SRMA; closed to ORV use.	Recreation: managed as part of Beef Basin SRMA; P areas closed to ORV use; SPNM areas limited to existing roads and trails; remainder open with provisions to protect crucial wildlife habitats.

TABLE 2-9 (Continued)

PLANNING ISSUE: Wilderness Study Area Management (Continued)

DECISIONS NEEDED: How should areas within the SJRA now designated as ISAs and WSAs be managed if not designated as wilderness by Congress?

Alternative A	Alternative B	Alternative C ^a	Alternative D ^b	Alternative E
<u>South Needles WSA</u>	<u>South Needles WSA</u>	<u>South Needles WSA</u>	<u>South Needles WSA</u>	<u>South Needles WSA</u>
Special designations: none.	Special designations: none.	ROS class present: P.	WSA is within an identified natural succession area.	ROS classes present: P.
Minerals: stipulated no surface occupancy for leasing; open to entry.	Minerals: open to leasing, sales, and entry.	Special designations: part of Beef Basin National Register archaeological district.	Special designations: part of Beef Basin National Register archaeological district.	Special designations: none.
Grazing: at past 5 years average licensed use.	Grazing: at total preference.	Minerals: stipulated no surface occupancy for leasing and sales; segregated from entry.	Minerals: closed to leasing and sales; segregated from entry.	Minerals: stipulated no surface occupancy for leasing and sales; open to entry.
Recreation: open to ORV use.	Recreation: open to ORV use.	Grazing: at 25% of past 5 years average licensed use.	Grazing: at 25% of past 5 years average licensed use.	Grazing: at past 5 years average licensed use.
		Recreation: managed as part of Beef Basin SRMA; closed to ORV use.	Recreation: managed as part of Beef Basin SRMA; closed to ORV use.	Recreation: managed as part of Beef Basin SRMA; closed to ORV use.
<u>Mancos Mesa WSA</u>	<u>Mancos Mesa WSA</u>	<u>Mancos Mesa WSA</u>	<u>Mancos Mesa WSA</u>	<u>Mancos Mesa WSA</u>
Special designations: none.	Special designations: none.	ROS classes present: P and RN.	WSA is within an identified natural succession area.	ROS classes present: P and RN.
Minerals: open to leasing, sales, and entry.	Minerals: open to leasing, sales, and entry.	Special designations: none.	Special designations: none.	Special designations: none.
		Minerals: P areas stipulated no surface occupancy for leasing and sales and segregated from entry; remainder open with provisions to protect crucial wildlife habitats.	Minerals: closed to leasing and sales; segregated from entry.	Minerals: P areas stipulated no surface occupancy for leasing and sales; open to entry; remainder open with provisions to protect crucial wildlife habitats.

TABLE 2-9 (Continued)

PLANNING ISSUE: Wilderness Study Area Management (Continued)		DECISIONS NEEDED: How should areas within the SJRA now designated as ISAs and WSAs be managed if not designated as wilderness by Congress?	
Alternative A	Alternative B	Alternative C ^a	Alternative D ^b
Mancos Mesa WSA (Concluded)	Mancos Mesa WSA (Concluded)	Mancos Mesa WSA (Concluded)	Mancos Mesa WSA (Concluded)
Grazing: at past 5 years average licensed use.	Grazing: at total preference.	Grazing: P areas grazed at 25% of past 5 years average licensed use; RN areas at past 5 years average.	Grazing: at past 5 years average licensed use.
Recreation: open to ORV use.	Recreation: open to ORV use.	Recreation: P areas closed to ORV use; remainder open with provisions to protect crucial wildlife habitats.	Recreation: P areas closed to ORV use; remainder open with provisions to protect crucial wildlife habitats.
Cheesebox Canyon WSA	Cheesebox Canyon WSA	Cheesebox Canyon WSA	Cheesebox Canyon WSA
Special designations: none.	Special designations: none.	Special designations: none.	Special designations: none.
Minerals: stipulated no surface occupancy or special leasing conditions attached; open to sales and entry.	Minerals: open to leasing, sales, and entry.	Minerals: SPM areas stipulated no surface occupancy for leasing and sales; remainder open with provisions to protect crucial wildlife habitats.	Minerals: open to leasing, sales, and entry with provisions to protect SPM areas and crucial wildlife habitats.
Grazing: at past 5 years average licensed use.	Grazing: at total preference.	Grazing: SPM areas at 50% of past 5 years average licensed use; remainder at past 5 years average.	Grazing: at past 5 years average licensed use.
Recreation: open to ORV use.	Recreation: open to ORV use.	Recreation: SPM areas closed to ORV use, remainder open with provisions to protect crucial wildlife habitats.	Recreation: SPM areas limited to existing roads and trails with provisions to protect crucial wildlife habitats; remainder open with same provisions.

<u>Road Canyon WSA</u>	<u>Road Canyon WSA</u>	<u>Road Canyon WSA</u>	<u>Road Canyon WSA</u>
Special designations: none.	Special designations: none.	ROS classes present: P, SPNM, and RN.	ROS classes present: P, SPNM, and RN.
Minerals: stipulated no surface occupancy or special leasing conditions attached; open to entry.	Minerals: open to leasing and entry with conditions to protect riparian areas.	Minerals: P and SPNM areas stipulated no surface occupancy for leasing and sales; P areas segregated from entry; remainder open with provisions to protect riparian areas.	Minerals: closed to leasing and sales; segregated from entry.
Grazing: at past 5 years average licensed use.	Grazing: at total preference.	Grazing: excluded from riparian areas; P areas grazed at 25% of past 5 years average licensed use; SPNM areas at 50 percent; remainder at past 5 years average.	Grazing: excluded from riparian areas; remainder grazed at past 5 years average licensed use.
Recreation: managed as part of Grand Gulch Plateau SRMA; open to ORV use.	Recreation: open to ORV use.	Recreation: managed as part of Grand Gulch Plateau SRMA; P and SPNM areas closed to ORV use; riparian areas limited to existing roads and trails; remainder open.	Recreation: managed as part of Grand Gulch Plateau SRMA; P areas closed to ORV use; SPNM and riparian areas limited to existing roads and trails; remainder open.
<u>Fish Creek WSA</u>	<u>Fish Creek WSA</u>	<u>Fish Creek WSA</u>	<u>Fish Creek WSA</u>
Special designations: none.	Special designations: none.	ROS classes present: P, SPNM, SPM, and RN.	ROS classes present: P, SPNM, SPM, and RN.
Special designations: none.	Special designations: none.	Special designations: 2 ONAs covering part of WSA; also designated as part of Grand Gulch Plateau National Register archaeological district.	Special designations: 2 ONAs covering part of WSA; also included in Grand Gulch Plateau National Register archaeological district.
Special designations: part of Grand Gulch Plateau National Register archaeological district.	Special designations: part of Grand Gulch Plateau National Register archaeological district.	Special designations: part of Grand Gulch Plateau National Register archaeological district.	Special designations: part of Grand Gulch Plateau National Register archaeological district.

TABLE 2-9 (Continued)

PLANNING ISSUE: Wilderness Study Area Management (Continued)
 DECISIONS NEEDED: How should areas within the SJRA now designated as ISAs and WSAs be managed if not designated as wilderness by Congress?

Alternative A	Alternative B	Alternative C ^a	Alternative D ^b	Alternative E
<u>Fish Creek WSA (Concluded)</u>	<u>Fish Creek WSA (Concluded)</u>	<u>Fish Creek WSA (Concluded)</u>	<u>Fish Creek WSA (Concluded)</u>	<u>Fish Creek WSA (Concluded)</u>
Minerals: stipulated no surface occupancy or special leasing conditions attached; open to entry.	Minerals: open to leasing, sales, and entry, with provisions to protect riparian areas.	Minerals: P and SPNM areas stipulated no surface occupancy for leasing and sales; P areas segregated from entry; remainder open with provisions to protect riparian areas.	Minerals: closed to leasing and sales; segregated from entry.	Minerals: P areas stipulated no surface occupancy for leasing and sales; remainder open to leasing, sales, and entry with special conditions to protect SPNM and riparian areas.
Grazing: at past 5 years average licensed use.	Grazing: at total preference.	Grazing: excluded from riparian areas; P areas grazed at 25% of past 5 years average licensed use; SPNM areas at 50%; remainder at past 5 years average.	Grazing: excluded from riparian areas; remainder grazed at 25% of past 5 years average licensed use.	Grazing: at past 5 years average licensed use.
Recreation: managed as part of Grand Gulch Plateau SRMA; open to ORV use.	Recreation: open to ORV use.	Recreation: managed as part of Grand Gulch Plateau SRMA; P and SPNM areas closed to ORV use; riparian areas limited to existing roads and trails; remainder open.	Recreation: managed as part of Grand Gulch Plateau SRMA; closed to ORV use.	Recreation: managed as part of Grand Gulch Plateau SRMA; P areas closed to ORV use; SPNM and riparian areas limited to existing roads and trails; remainder open.
<u>Mule Canyon WSA</u>	<u>Mule Canyon WSA</u>	<u>Mule Canyon WSA</u>	<u>Mule Canyon WSA</u>	<u>Mule Canyon WSA</u>
		ROS class present: SPNM.	WSA is within an identified natural succession area.	ROS class present: SPNM.
Special designations: none.	Special designations: none.	Special designations: ONA covering part of WSA; also included in Grand Gulch Plateau National Register archaeological district.	Special designations: ONA covering part of WSA; also included in Grand Gulch Plateau National Register archaeological district.	Special designations: part of Grand Gulch Plateau National Register archaeological district.

Minerals: stipulated no surface occupancy.	Minerals: open to leasing, sales, and entry, with conditions to protect riparian areas.	Minerals: stipulated no surface occupancy for leasing and sales; open to entry.	Minerals: closed to leasing, and sales; segregated from entry.	Minerals: open to leasing, sales, and entry with provisions to protect SPNM and riparian areas.
Grazing: at past 5 years average licensed use.	Grazing: at total preference.	Grazing: excluded from riparian areas; remainder grazed at 50% of past 5 years average licensed use.	Grazing: excluded from riparian areas; remainder grazed at 25% of past 5 years average licensed use.	Grazing: at past 5 years average licensed use.
Recreation: managed as part of Grand Gulch Plateau SRMA; open to ORV use.	Recreation: open to ORV use.	Recreation: managed as part of Grand Gulch Plateau SRMA; closed to ORV use.	Recreation: managed as part of Grand Gulch Plateau SRMA; closed to ORV use.	Recreation: managed as part of Grand Gulch Plateau SRMA; ORV use limited to existing roads and trails.
<u>Squaw Canyon WSA</u>	<u>Squaw Canyon WSA</u>	<u>Squaw Canyon WSA</u>	<u>Squaw Canyon WSA</u>	<u>Squaw Canyon WSA</u>
Special designations: none.	Special designations: none.	Special designations: none.	Special designations: none.	Special designations: none.
Minerals: open to leasing, sales, and entry.	Minerals: open to leasing, sales, and entry.	Minerals: P and SPNM areas stipulated no surface occupancy for leasing and sales; P areas segregated from entry; remainder open with provisions to protect sensitive soils.	Minerals: closed to leasing and sales; segregated from entry.	Minerals: open to leasing, sales, and entry with provisions to protect sensitive soils.
Grazing: at past 5 years average licensed use.	Grazing: at total preference.	Grazing: P areas grazed at 25% of past 5 years average licensed use, SPNM areas at 50%; remainder at past 5 years average.	Grazing: at 25% of past 5 years average licensed use.	Grazing: at past 5 years average licensed use.
Recreation: open to ORV use.	Recreation: open to ORV use.	Recreation: P and SPNM areas closed to ORV use; remainder open.	Recreation: closed to ORV use.	Recreation: open to ORV use.

TABLE 2-9 (Continued)

Alternative A	Alternative B	Alternative Ca	Alternative Db	Alternative E
<p><u>Cross Canyon WSA</u></p> <p>Special designations: none. Minerals: open to leasing, sales, and entry.</p> <p>Grazing: at past 5 years average licensed use.</p> <p>Recreation: open to ORV use.</p>	<p><u>Cross Canyon WSA</u></p> <p>Special designations: none. Minerals: stipulated no surface occupancy for leasing and sales; open to entry with provisions to protect sensitive soils.</p> <p>Grazing: at total preference.</p> <p>Recreation: open to ORV use.</p>	<p><u>Cross Canyon WSA</u></p> <p>ROS class present: SPNM.</p> <p>Special designations: none. Minerals: stipulated no surface occupancy for leasing and sales; open to entry with provisions to protect sensitive soils.</p> <p>Grazing: at 50% of past 5 years averaged licensed use.</p> <p>Recreation: closed to ORV use.</p>	<p><u>Cross Canyon WSA</u></p> <p>WSA is within an identified natural succession area.</p> <p>Special designations: none. Minerals: closed to leasing and sales; segregated from entry.</p> <p>Grazing: at 25% of past 5 years average licensed use.</p> <p>Recreation: closed to ORV use.</p>	<p><u>Cross Canyon WSA</u></p> <p>ROS classes present: SPNM.</p> <p>Special designations: none. Minerals: open to leasing, sales, and entry with provisions to protect sensitive soils.</p> <p>Grazing: at past 5 years average licensed use.</p> <p>Recreation: open to ORV use.</p>
<p>PLANNING ISSUE: Wilderness Study Area Management (Concluded)</p> <p>DECISIONS NEEDED: How should areas within the SJRA now designated as ISAs and WSAs be managed if not designated as wilderness by Congress?</p>	<p>Vegetation Management</p> <p>Where should uses of the public lands within SJRA be allowed to affect vegetative resources, and where should management actions be prescribed to alter present vegetative patterns?</p>	<p>See the Livestock Management issue for grazing use of forage.</p>	<p>See the Livestock Management issue for grazing use of forage.</p>	<p>See the Livestock Management issue for grazing use of forage.</p>

<p>Special management designations to maintain relic plant communities:</p> <ul style="list-style-type: none"> - none. 	<p>Special management designations to maintain relic plant communities:</p> <ul style="list-style-type: none"> - Bridger Jack Mesa RNA (partial) - Lavender Mesa RNA 	<p>Special management designations to maintain relic plant communities:</p> <ul style="list-style-type: none"> - Bridger Jack Mesa ACEC - Lavender Mesa ACEC 	<p>Special management designations to maintain relic plant communities:</p> <ul style="list-style-type: none"> - Bridger Jack Mesa RNA - Lavender Mesa RNA 	<p>Special management designations to maintain relic plant communities:</p> <ul style="list-style-type: none"> - Bridger Jack Mesa RNA - Lavender Mesa RNA
<p>Limitations on surface disturbance to protect vegetation:</p> <ul style="list-style-type: none"> - crucial wildlife habitat areas (oil and gas only). 	<p>Limitations on surface disturbance to protect vegetation:</p> <ul style="list-style-type: none"> - standard. 	<p>Limitations on surface disturbance to protect vegetation:</p> <ul style="list-style-type: none"> - crucial wildlife habitat areas; - identified mesa tops; - riparian areas; - slopes greater than 10%. - Bridger Jack and Lavender Mesa ACECs; 	<p>Limitations on surface disturbance to protect vegetation:</p> <ul style="list-style-type: none"> - identified natural succession areas; - reclamation requirement throughout SJRA; - Bridger Jack and Lavender Mesa RNAs. 	<p>Limitations on surface disturbance to protect vegetation:</p> <ul style="list-style-type: none"> - crucial wildlife habitat areas; - slopes greater than 10%; - Bridger Jack and Lavender Mesa RNAs.
<p>Maintenance of existing land treatments: allowed.</p>	<p>Maintenance of existing land treatments: allowed.</p>	<p>Maintenance of existing land treatments: allowed.</p>	<p>Maintenance of existing land treatments: allowed only outside natural succession areas.</p>	<p>Maintenance of existing land treatments: allowed.</p>
<p>Implementation of new land treatments: allowed where identified in AMPs.</p>	<p>Implementation of new land treatments: allowed on specified allotments.</p>	<p>Implementation of new land treatments: allowed on specified allotments.</p>	<p>Implementation of new land treatments: not allowed.</p>	<p>Implementation of new land treatments: allowed on specified allotments.</p>
<p>Forest product harvest:</p> <ul style="list-style-type: none"> - excluded from existing primitive areas; - allowed in designated areas, except for dead fuelwood in Beef Basin. 	<p>Forest product harvest:</p> <ul style="list-style-type: none"> - excluded from developed recreation sites; - limited onsite use allowed in RNAs; - allowed elsewhere with provisions to protect riparian areas. 	<p>Forest product harvest:</p> <ul style="list-style-type: none"> - excluded from developed recreation sites; - limited onsite use allowed on identified mesa tops, in riparian areas, and in P and SPM class areas; - allowed elsewhere with provisions to protect wildlife habitats, sensitive soil areas, SPM class and Lockhart Basin, Alkali Ridge, and North Abajo ACECs. 	<p>Forest product harvest:</p> <ul style="list-style-type: none"> - excluded from developed recreation sites; - limited onsite use allowed in identified natural succession areas, riparian areas, sensitive soil areas, in Lockhart Basin, Grand Gulch, Alkali Ridge, and Hovenweep ACECs, and in RNAs. - allowed elsewhere with provisions to protect vegetation resources. 	<p>Forest product harvest:</p> <ul style="list-style-type: none"> - excluded from developed recreation sites; - limited onsite use allowed in certain P class areas, in Grand Gulch, Dark Canyon, and Cajon Pond ACECs, in RNAs, in San Juan River and Pearson Canyon SRMAs, and adjacent to Hovenweep NM; - allowed elsewhere with provisions to protect crucial big game habitat, riparian areas, sensitive soil areas, certain SPM class areas, and in Alkali Ridge and Shay Canyon ACECs.

TABLE 2-9 (Continued)

PLANNING ISSUE: DECISIONS NEEDED:	Alternative A	Alternative B	Alternative C ^a	Alternative D ^b	Alternative E
Vegetation Management (Concluded) Where should uses of the public lands within SJRA be allowed to affect vegetative resources, and where should management actions be prescribed to alter present vegetative patterns?					
	<p>Sustained yield management: - where forest products are sold.</p> <p>Reclamation after surface disturbance: - standard reclamation practices, native and exotic seed mixes.</p> <p>Protection of riparian vegetation: - as required by executive order.</p>	<p>Sustained yield management: - where forest products are sold, but without curtailing forage production.</p> <p>Reclamation after surface disturbance: - slope reducing practices and seed mixes that emphasize forage plants and rapid ground cover potential.</p> <p>Protection of riparian vegetation: - as required by executive order.</p>	<p>Sustained yield management: - where forest products are sold, but without curtailing wildlife habitat or altering ROS classes.</p> <p>Reclamation after surface disturbance: - slope reducing practices and native seed mixes in P class areas and in Bridger Jack Lavender Mesa, and Lockhart Basin ACECs.</p> <p>Protection of riparian vegetation: - as necessary to increase wildlife habitat and watershed values.</p>	<p>Sustained yield management: - where forest products are sold, but without infringing on identified criteria.</p> <p>Reclamation after surface disturbance: - slope reducing practices and native seed mixes in identified natural succession areas and in Lockhart Basin ACEC.</p> <p>Protection of riparian vegetation: - as necessary to increase vegetation density and extent.</p>	<p>Sustained yield management: - where forest products are sold, while protecting ACECs and SPNM class areas.</p> <p>Reclamation after surface disturbance: - slope reducing practices and native seed mixes in certain P class areas and in RNAs.</p> <p>Protection of riparian vegetation: - as necessary to increase certain wildlife habitats and watershed values.</p>
Wildlife Habitat Management How should special wildlife habitat areas within SJRA be managed, and where should management actions be prescribed to alter or maintain present habitat area?					
	<p>Wildlife population goals: - none specified.</p>	<p>Wildlife population goals: - subordinate to livestock population goals.</p>	<p>Wildlife population goals: - attempt to approach UDWRS prior stable numbers.</p>	<p>Wildlife population goals: - none specified.</p>	<p>Wildlife population goals: - none specified.</p>

Crucial habitat protection: - stipulations and special lease conditions (oil and gas only).	Crucial habitat protection: - standard.	Crucial habitat protection: - stipulations, special lease conditions, grazing exclusions, and offsite mitigation requirements.	Crucial habitat protection: - standard.	Crucial habitat protection: - stipulations and special conditions.
Riparian/aquatic habitat management: see the vegetation issue.	Riparian/aquatic habitat management: see the vegetation issue.	Riparian/aquatic habitat management: see the vegetation issue.	Riparian/aquatic habitat management: see the vegetation issue.	Riparian/aquatic habitat management: see the vegetation issue.
Grazing exclusions and areal allotments: see the livestock management issue.	Grazing exclusions and areal allotments: see the livestock management issue.	Grazing exclusions and areal allotments: see the livestock management issue.	Grazing exclusions and areal allotments: see the livestock management issue.	Grazing exclusions and areal allotments: see the livestock management issue.
ORV use restrictions to protect wildlife habitat: see the recreation management issue.	ORV use restrictions to protect wildlife habitat: see the recreation management issue.	ORV use restrictions to protect wildlife habitat: see the recreation management issue.	ORV use restrictions to protect wildlife habitat: see the recreation management issue.	ORV use restrictions to protect wildlife habitat: see the recreation management issue.

PLANNING ISSUE: Recreation Management
 DECISIONS NEEDED: Which recreational opportunities on the public lands should be maintained, increased, or decreased, and where should management actions be prescribed to preserve this mix of opportunities?

Alternative A	Alternative B	Alternative C _a	Alternative D _b	Alternative E
Recreation management areas: - continue current management of Dark Canyon, Grand Gulch, and San Juan River SRMAs;	Recreation management areas: - limit recreation use in Dark Canyon, Grand Gulch, and San Juan River SRMAs if conflicting with livestock use or mineral development;	Recreation management areas: - manage Dark Canyon, Grand Gulch, and San Juan River SRMAs to maintain existing ROS classes;	Recreation management areas: - manage Dark Canyon, Grand Gulch, and San Juan River SRMAs to meet identified criteria;	Recreation management areas: - manage Dark Canyon and Grand Gulch SRMAs to maintain existing P ROS class areas and to protect SPNM class areas where possible;
				- manage SPM class areas within San Juan River SRMA as P class areas;
				- designate Beef Basin, Indian Creek, and Pearson Canyon as SRMAs and manage to maintain existing P class areas and to protect existing SPNM class where possible;

TABLE 2-9 (Continued)

PLANNING ISSUE: DECISIONS NEEDED:	Recreation Management (Continued) Which recreational opportunities on the public lands should be maintained, increased, or decreased, and where should management actions be prescribed to preserve this mix of opportunities?	Alternative A	Alternative B	Alternative C ^a	Alternative D ^b	Alternative E
Recreation management areas (Concluded):		Recreation management areas (Concluded):	Recreation management areas (Concluded):	Recreation management areas (Concluded):	Recreation management areas (Concluded):	Recreation management areas (Concluded):
- manage remainder of SJRA as an extensive RMA.	- provide no specific management guidance for remaining extensive RMA.	- manage remaining extensive RMA to maintain existing ROS classes.	- provide no specific management guidance for remaining extensive RMA.	- eliminate surface disturbance and grazing use from Pearson Canyon SRMA;	- manage remaining extensive RMA to maintain certain P class areas and protect certain SPNM class areas where possible.	- eliminate surface disturbance and grazing use from Pearson Canyon SRMA;
Developed recreation sites: - continue current management.	Developed recreation sites: - eliminate surface disturbance, livestock use, and fuelwood harvest; - limit ORV use to designated roads and trails.	Developed recreation sites: - improve 2 existing sites and develop 5 additional sites; - eliminate surface disturbance, livestock use, and fuelwood harvest; - limit ORV use to designated roads and trails.	Developed recreation sites: - eliminate surface disturbance, livestock use, and fuelwood harvest; - limit ORV use to designated roads and trails.	Developed recreation sites: - improve 2 existing sites and develop 5 additional sites; - eliminate surface disturbance, livestock use, and fuelwood harvest; - limit ORV use to designated roads and trails.	Developed recreation sites: - improve 2 existing sites and develop 5 additional sites; - eliminate surface disturbance, livestock use, and fuelwood harvest; - limit ORV use to designated roads and trails.	Developed recreation sites: - improve 2 existing sites and develop 5 additional sites; - eliminate surface disturbance, livestock use, and fuelwood harvest; - limit ORV use to designated roads and trails.
Special management designations to protect primitive recreation values: ^c	Special management designations to protect primitive recreation values: ^c - no new designations.	Special management designations to protect primitive recreation values: ^c - no new designations.	Special management designations to protect primitive recreation values: ^c - designate 8 ONAs: Dark Canyon and Grand Gulch Primitive Areas, Slickhorn Canyon, Johns Canyon, Fish and Owl Canyons, Road Canyon, Lime Canyon, and Mule Canyon.	Special management designations to protect primitive recreation values: ^c - designate 9 ONAs: Dark Canyon and Grand Gulch Primitive Areas, Slickhorn Canyon, Johns Canyon, Fish and Owl Canyons, Road Canyon, Lime Canyon, Mule Canyon, and Dark Canyon.	Special management designations to protect primitive recreation values: ^c - designate 2 ACECs: Dark Canyon and Grand Gulch Primitive Areas.	Special management designations to protect primitive recreation values: ^c - designate 2 ACECs: Dark Canyon and Grand Gulch Primitive Areas.

ORV use designations:
 - closed to ORV use: existing primitive areas;

ORV use designations:
 - closed to ORV use: RNAs;

ORV use designations:
 - closed to ORV use: identified mesa tops, P and SPNM class areas, Bridger Jack Lavender Mesa, and Grand Gulch ACECs;

ORV use designations:
 - limited to designated roads and trails: developed recreation sites;

ORV use designations:
 - limited to designated roads and trails: developed recreation sites;

ORV use designations:
 - limited to existing roads and trails: riparian areas, sensitive soil areas, and Lockhart Basin, Allali Ridge, and North Abajo ACECs.

ORV use designations:
 - limited with seasonal restrictions: crucial wildlife habitat areas;

ORV use designations:
 - open for ORV use: all other areas.

ORV use designations:
 - closed to ORV use: identified natural succession areas, North Abajo and Grand Gulch ACECs, and RNAs;

ORV use designations:
 - limited to designated roads and trails: Alkali Ridge and Hovenweep ACECs and developed recreation sites;

ORV use designations:
 - limited to existing roads and trails: riparian areas, sensitive soil areas, and Lockhart Basin ACEC; and North Abajo ACECs;

ORV use designations:
 - limited with seasonal restrictions: crucial wildlife habitat areas;

ORV use designations:
 - open for ORV use: all other areas.

ORV use designations:
 - closed to ORV use: certain P class areas, an area adjacent to Hovenweep NM, Dark Canyon ACEC, and the SPM area of San Juan River SRMA;

ORV use designations:
 - limited to designated roads and trails: Grand Gulch and Cajon Pond ACECs, Pearson Canyon SRMA, and developed recreation sites;

ORV use designations:
 - limited to existing roads and trails: riparian areas, certain SPNM class areas, and Alkali Ridge and Shay Canyon ACECs;

ORV use designations:
 - limited with seasonal restrictions: crucial wildlife habitat areas;

ORV use designations:
 - open for ORV use: all other areas.

^aRecreation Opportunity Spectrum (ROS) classes mentioned in alternative C are P (primitive), SPNM (semiprimitive nonmotorized), SPM (semiprimitive motorized), RN (roaded natural), and U (urban).

^bThe identified criteria mentioned in alternative D include limitation of new surface disturbance throughout SJRA to that which can be reclaimed within 5 years to match the initial conditions; and within identified natural succession areas, protection of natural succession of plant species and VRM class I objectives. Disturbed areas would be reclaimed to meet these requirements, using only native species in the identified areas. See appendix A.

^cPrimitive area designations will be rescinded (Dark Canyon and Grand Gulch) upon completion of wilderness review by Congress.

TABLE 2-10

Summary Comparison of Impacts, by Alternative
(By the Year 2000)

Environmental Component/Specific Indicator	Unit	Alternative A Total Quantity (Baseline)	Alternative B Total Quantity (Change)	Alternative C Total Quantity (Change)	Alternative D Total Quantity (Change)	Alternative E Total Quantity (Change)
MINERAL COMPONENTS						
Oil and Gas						
Area available for lease:						
Category 1	acres (change)	1,508,480	1,775,280 (+266,800)	1,066,600 (-441,880)	509,190 (-999,290)	1,525,850 (+ 17,370)
Category 2	acres (change)	114,120	2,550 (-111,570)	711,230 (+597,110)	213,770 (+99,650)	251,980 (+137,860)
Category 3	acres (change)	155,230	0 (-155,230)	0 (-155,230)	1,054,870 (+899,640)	0 (-155,230)
Oil Production:	barrels per year (change)	unquantified	unquantified (+significant)	unquantified (-significant)	unquantified (-significant)	unquantified (+insignificant)
Gas Production:	MCF/year (change)	unquantified	unquantified (+significant)	unquantified (-significant)	unquantified (-significant)	unquantified (+insignificant)
Geophysical operations (seismic line)	miles/year (change)	750	750 (no change)	725 (-25)	725 (-25)	750 (no change)
Coal						
Area available for lease:						
	acres (change)	0	212,000 (+212,000)	0 (no change)	0 (no change)	0 (no change)
Production:	tons per year (change)	0	unquantified (+unknown)	0 (no change)	0 (no change)	0 (no change)

Tar Sand

Area available for lease:

Category 1	acres (change)	7,700	7,980 (+280)	5,910 (-1,790)	1,520 (-6,180)	7,900 (+200)
Category 2	acres (change)	120	0 (-120)	2,070 (+1,950)	0 (-120)	80 (-40)
Category 3	acres (change)	160	0 (-160)	0 (-160)	6,460 (+6,300)	0 (-160)

Mineral Materials

Area available for material disposal:	acres (change)	1,679,340	1,776,640 (+97,300)	1,067,960 (-611,380)	510,550 (-1,168,790)	1,527,210 (-152,130)
Production:	cubic yards per year (change)	192,000	192,000 (no change)	192,000 (no change)	96,000 (-96,000)	192,000 (no change)

Locatable Minerals

Area available for location:	acres (change)	1,674,480	1,776,190 (+101,710)	1,538,430 (-136,050)	730,280 (-944,200)	1,660,890 (-13,590)
Gold Production:	ounces (change)	50	50 (no change)	unquantified (-insignificant)	unquantified (-insignificant)	unquantified (-insignificant)

Other Nonenergy Leasable Minerals

Area available for lease: Standard conditions	acres (change)	1,777,830	1,773,240 (-4,590)	385,750 (-1,392,080)	0 (-1,777,830)	594,950 (-1,182,880)
Special conditions	acres (change)	0	2,040 (+2,040)	680,850 (+680,850)	509,190 (+509,190)	930,900 (+930,900)
No Surface Occupancy	acres (change)	0	2,550 (+2,550)	711,230 (+711,230)	213,770 (+213,770)	251,980 (+251,980)
Closed to Lease	acres (change)	0	0 (no change)	0 (no change)	1,054,870 (+1,054,870)	0 (no change)
Potash area available for development:	acres (change)	300,000	300,000 (no change)	262,820 (-21,380)	97,700 (-202,300)	298,080 (-1,920)

TABLE 2-10 (Continued)

Environmental Component/Specific Indicator	Unit	Alternative A Total Quantity (Baseline)	Alternative B Total Quantity (Change)	Alternative C Total Quantity (Change)	Alternative D Total Quantity (Change)	Alternative E Total Quantity (Change)
BIOTIC COMPONENTS						
Air						
Air quality: NAAQS and PSD class II increments	(change)	high	high (-insignificant)	high (no change)	high (no change)	high (no change)
Soils						
Soils loss:	tons per year (change)	643,720	834,820 (+191,100)	564,000 (-76,420)	557,910 (-83,420)	581,975 (-61,745)
Water						
Surface water quality:						
Sediment yield	acre-feet per year (change)	160	200 (+40)	140 (-20)	137 (-23)	130 (-30)
Salt yield	tons/year (change)	630	800 (+170)	560 (-70)	550 (-80)	540 (-90)
Ground water quality:						
Total dissolved solids	milligrams per litre (change)	unquantified	unquantified (+500 to 2,000)	unquantified (no change)	unquantified (no change)	unquantified (no change)

<u>Vegetation</u>						
Vegetation disturbance: (short-term loss)	acres (change)	39,400	176,050 (+136,650)	40,370 (+970)	23,655 (-15,745)	44,800 (+5,400)
(residual loss)	acres (change)	5,130	6,740 (+1,340)	8,150 (+3,020)	4,340 (-790)	8,550 (+3,420)
Area available for forest product use:						
Private dead wood harvest	acres (change)	476,160	449,900 (-26,260)	243,520 (-232,640)	110,320 (-365,840)	361,110 (-115,080)
Commercial fuelwood harvest	acres (change)	476,160	449,900 (-26,260)	142,270 (-333,890)	110,320 (-365,840)	361,080 (-115,080)
Other forest product harvest	acres (change)	536,810	449,900 (-86,910)	142,270 (-307,630)	110,320 (-426,490)	361,080 (-175,730)
<u>Wildlife</u>						
Desert bighorn sheep:	animals (change)	1,200	930 (-270)	2,000 (+800)	1,500 (+300)	1,400 (-200)
Crucial bighorn sheep habitat	acres (change)	329,750	306,240 (-23,510)	329,850 (+100)	349,750 (+20,000)	328,750 (-1,000)
Antelope:	animals (change)	50	27 (-23)	100 (+50)	75 (+25)	85 (+35)
Crucial antelope habitat	acres (change)	12,930	12,930 (no change)	12,960 (+30)	12,930 (no change)	12,930 (no change)
Deer:	animals (change)	7,357	3,760 (-3,597)	10,000 (+2,643)	9,162 (+1,805)	8,000 (-643)
Crucial deer habitat	acres (change)	191,920	181,170 (-10,750)	195,000 (+3,080)	192,150 (+230)	187,800 (-4,120)
Riparian/aquatic and T/E species habitat:	acres (change)	1,460	1,440 (-20)	1,900 (+440)	1,900 (+440)	1,600 (+140)

TABLE 2-10 (Continued)

Environmental Component/Specific Indicator	Unit	Alternative A Total Quantity (Baseline)	Alternative B Total Quantity (Change)	Alternative C Total Quantity (Change)	Alternative D Total Quantity (Change)	Alternative E Total Quantity (Change)
HUMAN USES						
<u>Grazing</u>						
Area available for grazing	acres (change)	1,720,970	1,776,640 (+55,670)	1,683,130 (-37,840)	1,746,930 (+25,960)	1,620,570 (-100,400)
Livestock forage	AUMs (change)	56,735	97,504 (+40,769)	43,805 (-12,930)	38,176 (-18,559)	57,102 (+367)
Cultural Resources						
<u>Archaeologic/ historic sites damaged:</u>						
	sites (change)	15,764	17,154 (+1,390)	15,030 (-734)	14,289 (-1,475)	15,678 (-86)
<u>Archaeologic/ historic sites protected:</u>						
	sites (change)	25,380	25,360 (-20)	42,940 (+17,560)	42,960 (+17,580)	28,110 (+2,730)
Recreation						
<u>Area in each ROS class:</u>						
P	acres (change)	61,190	38,840 (-22,350)	198,520 (+137,330)	198,520 (+137,330)	195,810 (+134,690)
SPNM	acres (change)	561,750	522,110 (-39,640)	512,360 (-49,390)	512,360 (-49,390)	421,040 (-140,710)
SPM	acres (change)	393,330	353,400 (-39,930)	326,630 (-66,700)	324,810 (-68,520)	289,020 (-104,310)
RN	acres (change)	747,880	849,800 (+101,920)	726,640 (-21,240)	728,460 (-19,420)	858,280 (+110,400)

R	acres (change)	14,720	14,720 (no change)	14,720 (no change)	14,720 (no change)	14,720 (no change)
U	acres (change)	320	320 (no change)	320 (no change)	320 (no change)	320 (no change)
Area available for ORV recreation:						
Open	acres (change)	1,679,340	1,776,640 (+97,300)	484,320 (-1,195,020)	421,940 (-1,257,400)	651,000 (-1,028,340)
Limited	acres (change)	0	150 (+150)	542,390 (+542,390)	302,380 (+302,380)	853,470 (+853,470)
Closed	acres (change)	99,850	2,400 (-97,450)	752,480 (+652,630)	1,054,870 (+955,020)	274,720 (+174,870)

Visual Resources

Area in each VRM class:						
I	acres (change)	99,850	104,290 (+4,440)	686,860 (+587,010)	1,325,570 (+1,225,720)	223,260 (+123,410)
II	acres (change)	523,270	523,270 (no change)	317,980 (-205,290)	141,240 (-382,030)	434,570 (-88,700)
III	acres (change)	618,570	618,570 (no change)	439,790 (-178,780)	166,580 (-451,990)	611,480 (-7,090)
IV	acres (change)	537,500	533,060 (-4,440)	334,560 (-202,940)	145,800 (-391,700)	509,880 (-27,620)
V	acres (change)	0	0 (no change)	0 (no change)	0 (no change)	0 (no change)
Visual contrast rating scores exceeding VRM objectives for any class						
	scores (change)	271	271 (no change)	206 (-65)	203 (-68)	271 (no change)

TABLE 2-10 (Continued)

Environmental Component/Specific Indicator	Unit	Alternative A Total Quantity (Baseline)	Alternative B Total Quantity (Change)	Alternative C Total Quantity (Change)	Alternative D Total Quantity (Change)	Alternative E Total Quantity (Change)
<u>Lands</u>						
Lands available for rights-of-way						
Within corridors	acres (change)	0	85,760 (+85,760)	85,760 (+85,760)	85,760 (+85,760)	85,760 (+85,760)
Outside corridors	acres (change)	1,679,340	1,690,880 (+11,540)	982,200 (-697,140)	424,790 (-1,254,550)	1,441,450 (-237,890)
Avoidance areas	acres (change)	0	2,550 (+2,550)	512,460 (+512,460)	213,620 (+213,620)	128,810 (+128,810)
Exclusion areas	acres (change)	99,850	0 (-99,850)	198,770 (+98,920)	1,055,020 (+955,170)	123,170 (+23,320)
Lands available for disposal	acres (change)	2,880	4,270 (+1,390)	5,950 (+3,070)	2,870 (-10)	6,350 (+3,470)
Withdrawals/revocations						
Area withdrawn from entry	acres (change)	101,910	200 (-101,710)	237,960 (+136,050)	1,046,110 (+944,200)	115,500 (+13,590)
<u>ECONOMIC CONSIDERATIONS</u>						
<u>Minerals:</u>						
Income	dollars (change)	7,216,000	8,726,000 (+1,510,000)	7,128,000 (-88,000)	4,133,000 (-3,083,000)	unquantified (insignificant)
Employment	jobs (change)	250	311 (+61)	246 (-4)	103 (-147)	unquantified (insignificant)
Tax Revenues	dollars (change)	4,322,000	4,837,000 (+515,000)	4,264,000 (-58,000)	2,588,000 (-1,734,000)	unquantified (insignificant)

Soil and Water:									
Sediment Cost	dollars (change)	17,500	22,000 (+4,500)	15,500 (-2,000)	15,200 (-2,300)	14,900 (-2,600)			
Salinity Cost	dollars (change)	36,500	46,400 (+9,900)	32,500 (-4,000)	31,900 (-4,600)	31,300 (-5,200)			
Livestock:									
Returns to labor and investment	dollars (change)	403,300	682,600 (+279,300)	174,800 (-228,500)	36,400 (-366,900)	384,200 (-19,100)			
Health	dollars (change)	6,753,000	7,821,000 (+1,068,000)	4,582,000 (-2,171,000)	4,218,000 (-2,535,000)	5,282,000 (-1,471,000)			
Income	dollars (change)	1,013,000	1,133,000 (+120,000)	753,000 (-260,000)	573,000 (-440,000)	896,000 (-117,000)			
Employment	jobs (change)	176	199 (+23)	161 (-15)	149 (-27)	175 (-1)			
Tax Revenues	dollars (change)	4,322,000	74,000 (+12,000)	55,000 (-7,000)	49,000 (-13,000)	61,800 (-200)			
Recreation:									
Income	dollars (change)	307,000	unquantified (unknown)	unquantified (+insignificant)	unquantified (unknown)	unquantified (+insignificant)			
Employment	jobs (change)	23	unquantified (unknown)	unquantified (+insignificant)	unquantified (unknown)	unquantified (+insignificant)			
Tax Revenues	dollars (change)	10,600	unquantified (unknown)	unquantified (+insignificant)	unquantified (unknown)	unquantified (+insignificant)			
Wildlife:									
Income	dollars (change)	59,100	41,100 (-18,000)	44,500 (+14,600)	68,500 (+9,400)	62,500 (+3,400)			
Employment	jobs (change)	4	2 (-2)	5 (+1)	5 (+1)	4 no change			
Tax Revenues	dollars (change)	3,000	2,000 (-1,000)	3,800 (+800)	3,500 (+500)	3,200 (+200)			

TABLE 2-10 (Continued)

Environmental Component/Specific Indicator	Unit	Alternative A Total Quantity (Baseline)	Alternative B Total Quantity (Change)	Alternative C Total Quantity (Change)	Alternative D Total Quantity (Change)	Alternative E Total Quantity (Change)
ECONOMIC CONSIDERATIONS (Continued)						
Other Land Uses:						
Income	dollars (change)	unquantified	unquantified (+insignificant)	unquantified (insignificant)	unquantified (-unknown)	unquantified (insignificant)
Employment	jobs (change)	unquantified	unquantified (+insignificant)	unquantified (insignificant)	unquantified (-unknown)	unquantified (insignificant)
Tax Revenues	dollars (change)	unquantified	unquantified (+insignificant)	unquantified (insignificant)	unquantified (-unknown)	unquantified (insignificant)
Plan Budget:						
Income	dollars (change)	609,000	665,000 (+56,000)	852,000 (+243,000)	840,000 (+231,000)	724,000 (+115,000)
Employment	jobs (change)	31	34 (+3)	44 (+13)	43 (+12)	37 (+6)
Land Disturbing Activities:						
Costs	dollars (change)	unquantified	unquantified (-unknown)	unquantified (+unknown)	unquantified (+unknown)	unquantified (+unknown)
SOCIAL CONSIDERATIONS						
Community:	Lifestyle (change)	unquantified	unquantified no change	unquantified no change	unquantified (unknown)	unquantified no change
Individuals:	Lifestyle (change)	unquantified	unquantified (insignificant)	unquantified (unknown)	unquantified (unknown)	unquantified (insignificant)

CHAPTER 3 — AFFECTED ENVIRONMENT

INTRODUCTION

The affected environment is the area that will be directly or indirectly affected by the proposed project. This includes the area within the project boundary and the area immediately surrounding the project. The affected environment is the area that will be directly or indirectly affected by the proposed project. This includes the area within the project boundary and the area immediately surrounding the project.

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ENVIRONMENTAL SETTING

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CHAPTER 3

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CHAPTER 2



CHAPTER 3 — AFFECTED ENVIRONMENT

INTRODUCTION

The affected environment is that which would be significantly changed by implementing any of the alternatives described in chapter 2 of this draft resource management plan/ environmental impact statement (RMP/EIS). The affected environment was determined through the analysis in chapter 4 and is described by environmental indicators (table 3-1), which are the basis for table 2-10. The entire spectrum of the environment of the San Juan Resource Area (SJRA) is described in the management situation analysis (MSA). Laws referenced are fully cited in appendix C.

For convenience, the environmental indicators are divided into groups: mineral components, biotic components, human uses, and economic and social considerations. Both the existing condition and the assumed changes over time (until the year 2000) are given for each indicator. These provide a basis for measuring changes and comparing the alternatives. Most of the general indicators are broken down into more narrow topics called specific indicators (table 3-1).

MINERAL COMPONENTS

OIL AND GAS

Leasing, Production, and Current Management

Oil and gas resources are allocated in three stages, the first of which is determining what public lands should be leased.

The Bureau of Land Management (BLM) in Utah established four leasing categories in 1975, to determine which areas would be leased and under what conditions. In 1984, leasing categories

within the White Canyon Special Tar Sand Area (STSA) were modified by the Utah Combined Hydrocarbon Leasing EIS [BLM, 1984c]. The BLM is in the process of changing the current system to include just three categories. The San Juan RMP will use the new system (appendix L).

The list in table 3-2 shows current category acreages in the SJRA and the resource conflicts responsible for the acres under restrictive and no lease categories (figure 3-1). The stipulations and special conditions are explained in appendix A.

The second stage of resource allocation involves actual leasing by three means: noncompetitive, lottery, and competitive, based on the tract's past lease status and relationship to known geologic structures (KGSs). Rights to explore for and produce oil and gas from the lease are granted at this stage. Lessees pay rent annually to the Federal Government, based on lease acreage. Half of the money collected from lease rental is returned to the state in which the lease is situated. The BLM's Utah State Office (USO) issues leases.

The third stage of resource allocation occurs at production. The Minerals Management Service collects a royalty from the lease owner on all produced oil and gas, 12.5 to 33.3 percent for oil and 12.5 to 25 percent for gas. Half of all royalties are returned to the state.

Geophysical activity is measured in miles of seismic line and may occur before or after a lease is issued. No allocation process is involved. Approximately 1,400 miles of seismic line per year were run in 1982, 1983, and 1984, mostly in the southeast portion of the SJRA.

TABLE 3-1

General and Specific Environmental Indicators

<u>Category</u>	<u>General</u>	<u>Specific</u>	
MINERAL COMPONENTS	Oil and Gas.....	Area available for lease Production Geophysical operations	
	Coal.....	Area available for lease Production	
	Tar Sand.....	Area available for lease	
	Mineral Materials.....	Area available for material disposal Production	
	Locatable Minerals.....	Area available for location Gold production	
	Other Nonenergy.....	Area available for lease	
	Leasable Minerals.....	Potash area available for development	
BIOTIC COMPONENTS:	Air.....	Air quality	
	Soils.....	Soil loss	
	Water.....	Surface water quality Ground water quality	
	Vegetation.....	Vegetation disturbance Area available for forest product use	
	Wildlife.....	Bighorn sheep Crucial bighorn sheep habitat Antelope Crucial antelope habitat Deer Crucial deer habitat Riparian/aquatic and T/E species habitat	
		HUMAN USES:	Grazing.....	Area available for grazing use Livestock forage
Cultural Resources.....			Archaeologic/historic sites damaged Archaeologic/historic sites protected
Recreation.....			Area in each ROS class Area available for ORV recreation
Visual Resources.....	Area in each VRM class Visual contrast rating scores		
Lands.....	Lands available for rights-of-way outside corridors Lands available for disposal Withdrawals/revocations		
ECONOMIC CONSIDERATIONS	Minerals.....	Income Employment Tax Revenues	
		Soil and Water.....	Sediment Cost Salinity Cost

TABLE 3-1 (Concluded)

<u>Category</u>	<u>General</u>	<u>Specific</u>
ECONOMIC CONSIDERATIONS (Concluded)	Livestock.....	Returns to labor and investment Wealth Income Employment Tax Revenues
	Recreation.....	Income Employment Tax Revenues
	Wildlife.....	Income Employment Tax Revenues
	Other Land Uses.....	Income Employment Tax Revenues
	Plan Budget.....	Income Employment
	Land Disturbing Activities.....	Costs
	SOCIAL CONSIDERATIONS.....	Community Individuals

TABLE 3-2

Oil and Gas Leasing Category Areas

	Values Protected (acres)							Total
	Bighorn Sheep	Recreation	Deer	Sage Grouse	U-95 Scenic Corridor			
<u>Public Lands Administered by SJRA</u>								
Category 1	NA	NA	NA	NA	NA	NA	891,310	
Category 2	368,737	329,904	216,191	0	2,340	0	617,172	
Category 3	327,075	85,325	0	1,720	0	0	114,120	
Category 4	320,731	134,495	0	0	0	0	155,226	
TOTAL							1,777,828	
<u>Public Lands in White Canyon STSA</u>								
Category 1	NA	NA	NA	NA	NA	NA	3,078	
Category 2	2,281	0	0	0	2,340	0	4,621	
Category 3	120	0	0	0	0	0	120	
Category 4	0	160	0	0	0	0	160	
TOTAL							7,979	

Other Areas of Federal Mineral Acreage Administered by SJRA

Glen Canyon NRA

Federal acreage open to mineral leasing by NRA Minerals Plan
 Federal acreage closed to mineral leasing by NRA Minerals Plan

Total acreage open to the mineral leasing laws

101,718
 158,532
 260,250

Manti-LaSal NF

Federal acreage open to the mineral leasing laws

366,854

Navajo Indian Reservation

Federal acreage open to the mineral leasing laws

51,607

a Includes lands in White Canyon STSA.

FIGURE 3 - 1
Oil and Gas Leasing Categories

-  Category 1 - Open to Leasing with Standard Conditions (891,310 acres)
-  Category 1 - Open to Leasing with Special Conditions (617,170 acres)
-  Category 2 - Open to Leasing with No Surface Occupancy Stipulations (114,120 acres)
-  Category 3 - Closed to Leasing (155,230 acres)
-  White Canyon Special Tar Sand Area (7,980 acres)

Note: All acreage figures are public land/federal minerals acres.

SAN JUAN RESOURCE AREA

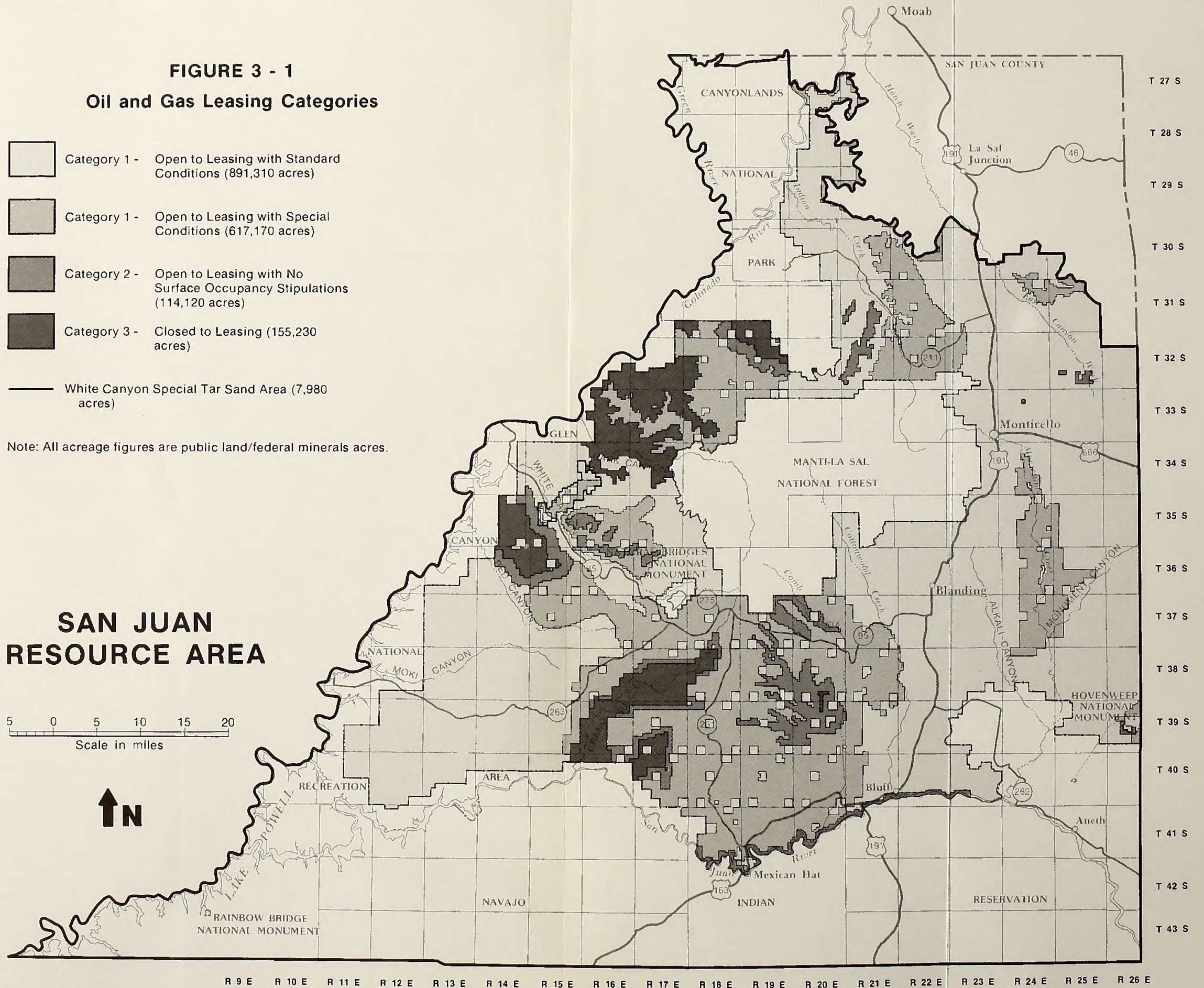
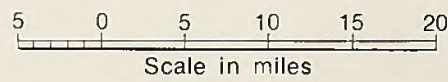


FIGURE 3 - 1
Oil and Gas Leasing Categories

A R I Z O N A

C O L O R A D O



FIGURE 3-1
San Juan Resource Area

Approximately 1,255,935 acres in the SJRA were under lease as of April 1985, including BLM administered leases on U.S. Forest Service (USFS) lands. Production in 1983 from 53 leases was approximately 7,068,740 barrels of oil and 27,296,000 million cubic feet of gas (table 3-3).

When areas are determined to be logical prospects for exploratory drilling, several leases can be combined into a unit covering the exploratory prospect. SJRA contains the largest unitization program in the state. Unitized areas are constantly changing as they either expire for lack of discoveries or become producing units.

The SJRA applies surface management practices to each application for permit to drill (APD), and the Moab District Office (MDO) approves or denies APDs based on legal operational lease rights, acceptable downhole practices, and surface concurrence from the SJRA.

Three other federal agencies and the State of Utah enter into management of oil and gas minerals in the SJRA (table I-4).

Geologic Potential for Oil and Gas Resources

The eastern part of the SJRA has proven potential for oil and gas reserves; potential is unknown in the central and western portions. Potential as used here is a qualitative assessment, not intended to imply quantification of production reserves. Areas of probable potential are shown in figure 3-2.

Table 3-3 lists the 29 oil and gas fields, or KGSs, in SJRA and gives production statistics (figure 3-2 uses the field numbers given in table 3-3).

The SJRA is geologically located on the southwestern edge of the Paradox Basin of the Colorado Plateau, which formed during the Pennsylvanian Period, 270 to 300 million years ago. Geologic formations are shown in figure 3-3.

The occurrence of petroleum in the SJRA appears to be related to two geologic features: the deep structural framework of the Colorado

Plateau; and the depositional patterns of the Paradox Formation within the Paradox Basin. Shoaling conditions along the southwestern edge of the ancient seas aided formation of bioherms, thick mounds of debris, algae, and other marine organisms.

The Pennsylvanian aged Paradox Formation is the principal oil and gas producer in SJRA. It has four major cycles of importance to oil and gas occurrences: the Barker Creek, Akah, Desert Creek, and Ismay Zones.

Production in the Barker Creek Zone is associated with structural anomalies and occurs from both the algal mounds along the marine shelf and the structural traps along the margins of the salt deposits.

The Akah Zone is similar to the Barker Creek Zone, but most oil and gas production is along the shallow margins of the salt deposits, with only a minor part occurring in the marine shelf. All production coincides with multi-pay structural anomalies.

The Desert Creek Zone contains the largest accumulations of oil and gas found in the Paradox Basin. Most production is from algal mounds along the marine shelf, such as that from the Aneth Field, which has produced 350 million barrels of oil since its discovery in 1956 [Petersen and Ohlen, 1963].

The Ismay Zone contains the second largest accumulation of oil and gas fields in the Paradox Basin. Most of its production occurs from algal mounds. Separate but overlapping mounds have been stacked on top of each other and cover an area of about 12 square miles.

The Paradox Basin can be split into four tectonic divisions within the SJRA (figure 3-2). These are the Paradox Fold and Fault Belt in the northern and northeastern sections, the Blanding Basin in the southern and southeastern sections, the Monument Upwarp in the central western section, and the White Canyon Slope of the Monument Upwarp on the extreme western end of the SJRA. Potential for oil and gas occurrence is believed to be high in the Blanding Basin and the Paradox Fold and Fault Belt; low to moderate in the

TABLE 3-3

Known Geologic Structures and Oil and Gas Field Production Statistics

Known Geologic Structures San Juan Resource Area	Other Published Field Names	Approximate Location	Date of Discovery	Public Land Acres	Status (3/1/85)	1983 Production		Cumulative Production (as of 12/83)	
						Oil (barrels)	Gas (MCF)	Oil (barrels)	Gas (MCF)
1 Alkali Canyon ^a		T37S,R23-24E	1965	6,791	Producing	0	0	3,919	40,085
2 Aneth	Includes Bluff Field	T39-42S, R23-25E	1956	13,642	Producing	6,047,148	5,310,813	325,587,105	308,761,044
3 Black Steer ^c Canyon		T39S,R25E	1984	160	Producing	N/A	N/A	29,289	39,100
4 Bluff Bench I ^d		T40S,R22E	1957	40	Abandoned	0	0		
5 Bluff Bench II ^d		T40S,R22E	1957	40	Abandoned	0	0	16,436	7,526
6 Bluff Bench III		T40S,R21E	1959	40	Abandoned	0	0		
7 Bradford Canyon		T37S,R24E	1983	1,920	Producing	3,634	17,078	15,015	57,056
8 Broken Hills		T40S,R22E	1959	7,923	Producing	2,039	656	104,437	55,968
9 Bug		T35-36S,R26E	1983	3,542	Producing	192,768	333,602	959,595	1,581,423
10 Cave Canyon ^a		T37-38S,R24E	1984	925	Producing	N/A	N/A	9,247	18,135
11 Cowboy		T39S,R22E	1968	840	Producing	5,769	0	147,522	108
12 Grayson		T38S,R22E	1961	40	Abandoned	0	0	6,441	5,331
13 Horsehead Point ^a		T36S,R25E	1984	2,490	Shut-In	N/A	N/A	0	3,500
14 Mexican Hat		T42S,R19E	1908	2,640	Producing	6,664	0	56,948	316
15 Mustang		T36S,R33E	1983	1,760	Producing	829	20,690	50,425	291,115
16 North Lisbon	Lisbon	T29-30S,R24E	1960	8,639	Producing	629,493	20,117,430	44,656,584	409,128,511

17	Patterson Canyon	Little Nancy	T37-38S,R25E	1981	9,565	Producing	42,928	193,550	87,915	424,595
18	Recapture Creek		T40S,R23E	1956	1,640	Producing	49,391	154,398	1,842,582	2,665,060
19	Squaw Canyon	Tin Cup Mesa	T38S,R25-26E	1980	4,800	Producing	32,201	92,918	196,262	406,583
20	Turner Bluff I		T40S,R22-23E	1957	1,988	Producing	28,070	11,440	524,713	535,593
21	Turner Bluff III		T40S,R22-23E	1963	360	Producing	18,496	14,230	93,039	44,578
22	Unnamed	Little Valley	T30S,R25E	1961	1,000	Producing	9,309	1,029,204	90,806	9,300,921
23	Unnamed ^e	SW Lisbon	T30-31S,R24E	1981	372	Shut-In	0	0	522	0
24	Unnamed ^f	Johnson Ck.	T35S,R22E	1983	640	Abandoned	0	0	425	0
25	Unnamed	Hatch	T38S,R24E	1957	360	Abandoned	0	0	15,446	40,891
26	Unnamed	Black Mesa	T39S,R21E	1962	40	Abandoned	0	0	2,640	0
27	Unnamed ^g	Hovenweep	T39S,R25E	1981	1,440	Shut-In	0	0	0	0
28	Unnamed ^h	Lime Ridge	T40S,R20E	1958	40	Abandoned	N/A	N/A	N/A	0
29	Unnamed ⁱ	Butler Wash	T40S, R21E	1959	40	Abandoned	0	0	603	0
TOTALS					73,717		7,068,739	27,296,009	374,497,313	733,291,049

NOTE: MCF = 1,000 cubic feet.

^aField back on production, March 1984.

^bTotal KGS is 69,576 acres; 13,642 acres are on public lands managed by SJRA, and 55,934 acres are on the Navajo Indian reservation and are managed by the Farmington Resource Area, Albuquerque District, BLM.

^cCumulative production as of January 1985, since field discovery.

^dCombined cumulative production.

^eOne-well oil field; initial production 12 barrels per day.

^fOne-well oil field; initial production 6 barrels per day.

^gGas field never produced; initial production 4.7 million cubic feet per day.

^hNever produced; high CO₂ potential; initial production 1.45 million cubic feet of gas per day.

ⁱField watered out.

Sources: D006M, 1984; Riggs, 1978; and internal BLM oil and gas records.

Monument Upwarp; and low to unknown in the White Canyon Slope.

The Paradox Fold and Fault Belt is a series of northwest-trending, salt-cored anticlines along the northern edge of the SJRA. Movement of the underlying salt and faulting of the basement rocks pushed the black, organic-rich shales of the Paradox Formation against older porous rocks (of Mississippian and Devonian age). Oil and gas formed in the black shales and then migrated into the adjacent reservoir rocks. Oil and gas reservoirs also formed in structural traps in the Paradox Formation itself. Productive fields in the Paradox Fold and Fault Belt range downward in size from the Lisbon Field in SJRA.

The Blanding Basin has producing fields with a wide range of sizes. The largest, Aneth, covers roughly 100 square miles. Probably no large to intermediate fields remain to be found. The more favorable locations for new oil and gas fields in the Blanding Basin are north and northwest of the currently producing fields around the Aneth.

The Monument Upwarp is a large uplift in the central part of the SJRA [Woodward and Clyde, 1982]. Its only known fields, Mexican Hat and Lime Ridge, are both very small [Four Corners Geological Society, 1975]. However, drilling results indicate that new producing fields could be discovered. Much of the upwarp has never been drilled due to the rugged terrain; overall, it has been only sparsely tested. Potential reservoirs would probably be small. Deep erosion, which has breached favorable formations and allowed oil and gas to escape, has reduced potential, but it is unlikely that all reserves in the structure were lost. Therefore, potential remains for new field discoveries in the Monument Upwarp.

The White Canyon Slope forms a gentle westward slope off the the Monument Upwarp's western flank and has similar oil and gas potential, with one exception. Immediately north of this area lies the Tar Sand Triangle, found in the pinch-out of the White Rim Sandstone. The oil that had formed in the area migrated into the White Rim Sandstone and formed the tar sand deposit. In the White Canyon Slope area, no

wells have penetrated the White Rim Sandstone; the potential is completely unknown. Because the White Rim has not been breached by erosion, the existence of a tar sand field as large as the Tar Sand Triangle is remotely possible, but there is no evidence from which to work.

Industry activity in the Paradox Basin coincides with the geologic ranking of potential. A great deal of seismic work continues in the Blanding Basin and Paradox Fold and Fault Belt. The Monument Upwarp has been sparsely drilled, largely because of its rugged terrain.

Specific Indicators Affected

The specific environmental indicators related to oil and gas management that could be affected by the alternatives described in chapter 2 are (1) areas available for lease; (2) production; and (3) geophysical activity.



COAL

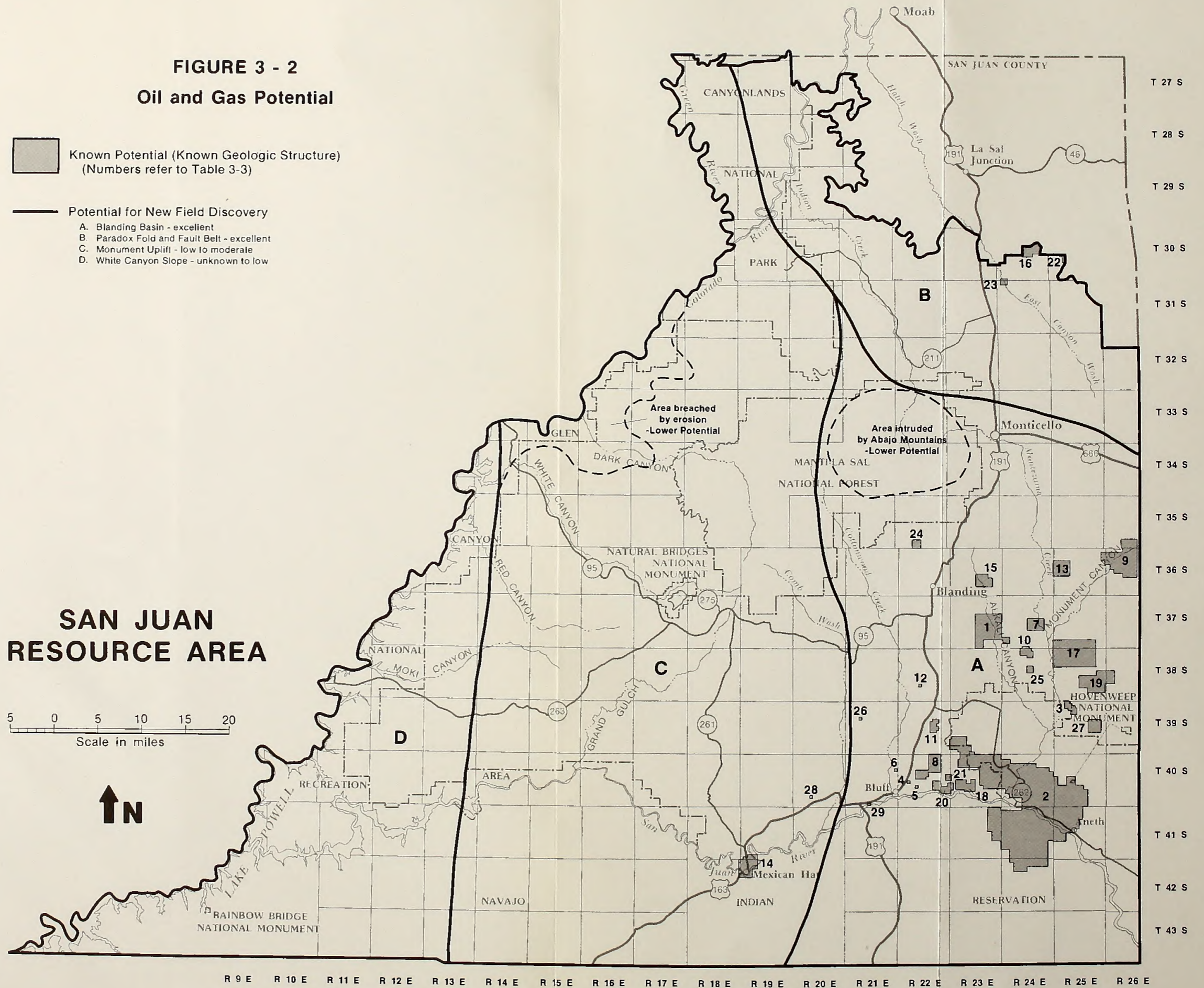
Coal resources are allocated through leasing, but exploration can occur under license before a lease is issued.

Production of coal from the San Juan region has been insignificant [Doelling and Graham, 1972]. The coal mines and prospects of this area have been inactive since 1971. Past coal activity was limited to the San Juan Coal Field (figure 3-4), which contains about 530,000 acres. About 318,000 acres are privately owned (surface and mineral estates), and about 212,000 acres where federal minerals underlie public lands (figure I-6).

Coal in the San Juan Coal Field is found in Cretaceous strata (figure 3-3), made up of the Burro Canyon Formation, the Dakota Sandstone, and the Mancos Shale. From data available on the San Juan Coal Field, no reserves occur in beds 4 feet or more thick; because of the discontinuity of coal beds, reserves are difficult to calculate. However, in 1971 the U.S. Geological Survey (USGS) showed the field as prospectively valuable for coal.

FIGURE 3 - 2
Oil and Gas Potential

-  Known Potential (Known Geologic Structure)
(Numbers refer to Table 3-3)
-  Potential for New Field Discovery
 - A. Blanding Basin - excellent
 - B. Paradox Fold and Fault Belt - excellent
 - C. Monument Uplift - low to moderate
 - D. White Canyon Slope - unknown to low



**SAN JUAN
RESOURCE AREA**

Scale in miles
0 5 10 15 20



FIGURE 3 - 2
Oil and Gas Potential

A R I Z O N A

C O L O R A D O



FIGURE 2-3
San Juan Resource Area

FIGURE 2-3
San Juan Resource Area

The San Juan Resource Area is located in the southeastern part of the State of New Mexico. It is bounded by the Colorado River to the west, the Mexican border to the south, and the San Juan Mountains to the east. The area is rich in natural resources, including timber, minerals, and wildlife. The San Juan Resource Area is managed by the Bureau of Land Management, U.S. Department of the Interior.

The San Juan Resource Area is a large, diverse landscape. It features a mix of high-altitude mountains, lower-altitude plateaus, and river valleys. The area is home to a variety of plant and animal species, many of which are rare or endangered. The San Juan Resource Area is also an important area for recreation, including hunting, fishing, and hiking.

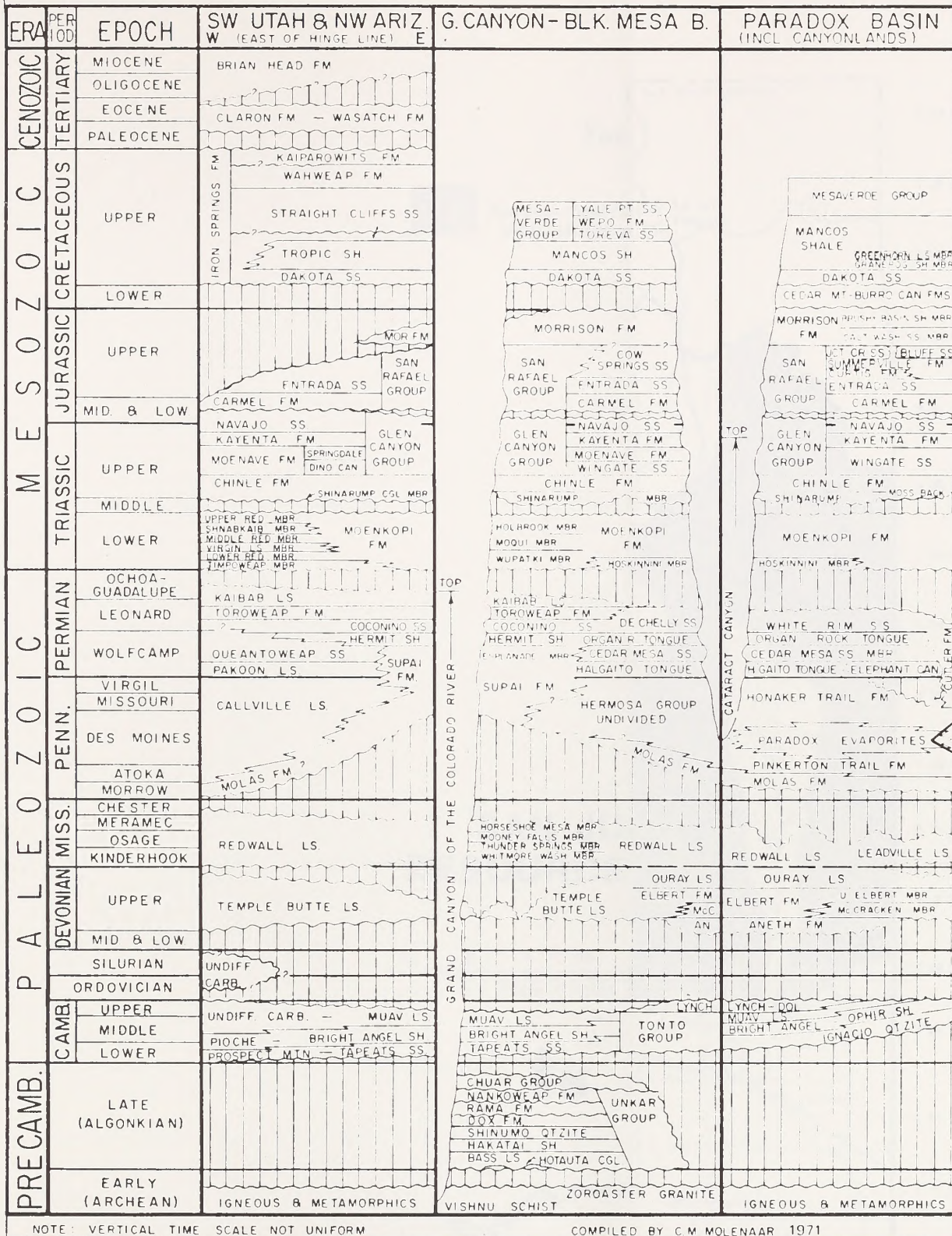
The San Juan Resource Area is a critical area for the State of New Mexico. It provides a source of timber, minerals, and wildlife. It also provides a source of recreation for millions of people each year. The San Juan Resource Area is a valuable asset to the State of New Mexico, and it is important that it be managed in a way that ensures its long-term sustainability.

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NOMENCLATURE CHART OF THE CANYONLANDS & ADJACENT AREAS



Stratal diagram showing the depths major canyons have cut into the section.

FIGURE 3 - 3
Geologic Formations of Southeast Utah

FIGURE 3 - 4
Favorable Coal Area

San Juan Coal Field (212,000 acres public lands; 530,000 acres total)

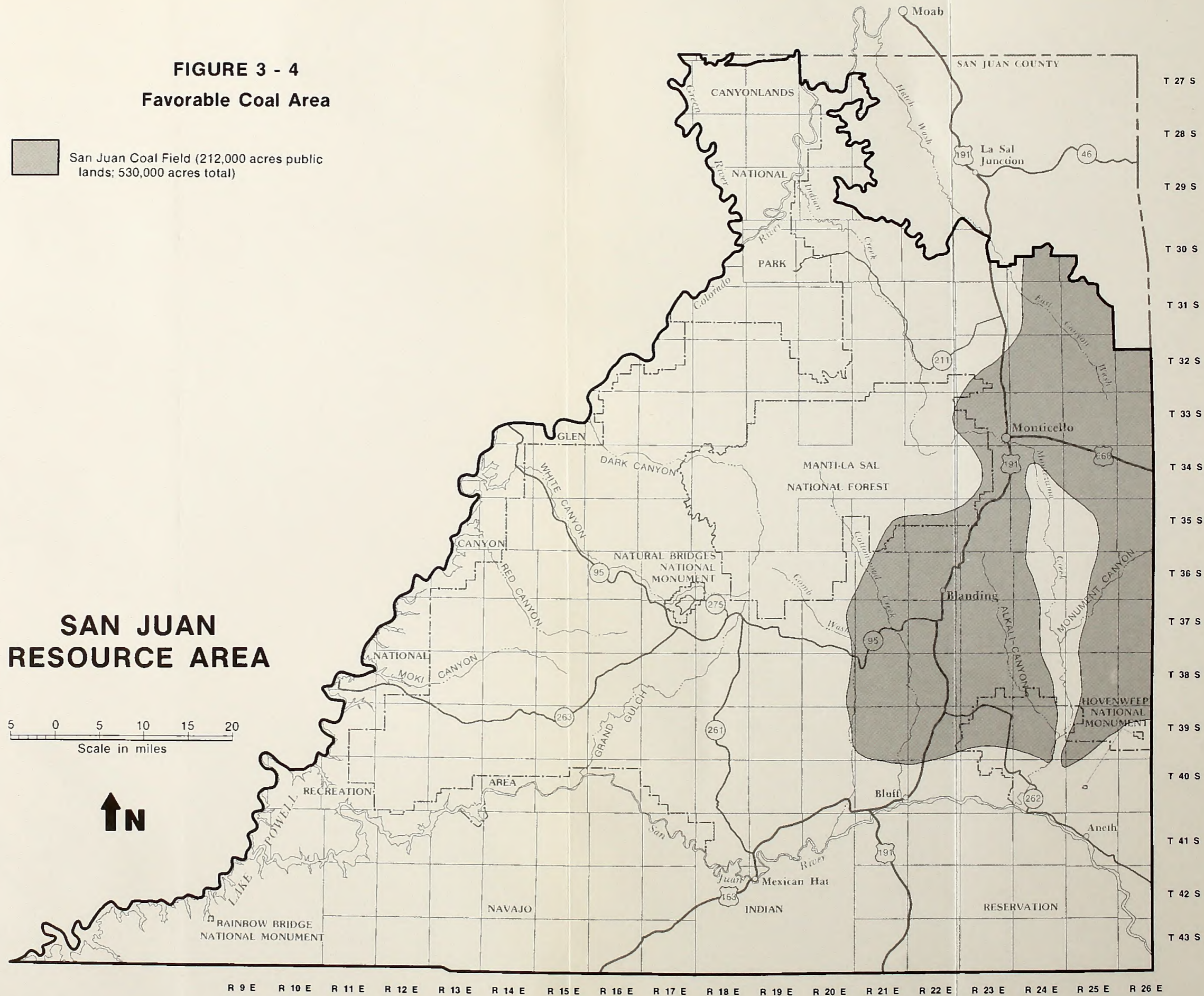


FIGURE 3 - 4
Favorable Coal Area

A R I Z O N A

C O L O R A D O



The poor showing of coal in the San Juan Coal Field has prompted little previous work in the SJRA. Up to the present (1985), indications are that not enough coal is present to develop a commercial field in the area. The probability that a coal leasing program will be initiated within the SJRA is further diminished because approximately 60 percent of the San Juan Coal Field's surface and mineral estate in Utah is privately owned.

Before issuing coal leases, the BLM is required to delineate areas considered unsuitable for all or certain stipulated methods of coal mining. The requirements for this review, called coal unsuitability criteria, are mandated by Section 522(a) of the Surface Mining Control and Reclamation Act and are found at 43 CFR 3461. The RMP would be amended to include the unsuitability criteria before coal leases could be issued.

Specific Indicators Affected

Specific environmental indicators related to coal that could be affected by the alternatives described in chapter 2 are (1) area available for lease and (2) production.

TAR SAND

Tar sand resources are known to occur in the White Canyon area in the western part of the SJRA (see related discussion under Oil and Gas, specifically potential of the White Canyon Slope). USGS established White Canyon STSA, an area of approximately 10,469 acres, in November 1980 (figure 3-1). Within the STSA, 2,400 acres are state lands and minerals, 90 acres are private lands and minerals, and the remaining 7,979 acres are public lands and minerals. Only federal minerals are subject to combined hydrocarbon lease (CHL) requirements.

Tar sand development can take place on oil and gas leases issued after passage of the Combined Hydrocarbon Leasing Act on November 16, 1981. On leases issued prior to that, tar sand development can take place only on a CHL in an STSA. USGS created STSAs in 1980 and 1981 to facilitate converting oil and gas leases to CHLs.

Holders of oil and gas leases and tar sand mining claims within an STSA at the time of designation were given an opportunity to convert their holdings to CHLs between November 1981 and November 1983. No applications for conversion were received for the White Canyon STSA.

After the present leases expire, any future oil and gas or tar sand leases issued within the STSA will be CHLs obtained through competitive bonus bidding. CHLs are subject to leasing categories, the same as for oil and gas leasing (appendix L). The Utah Combined Hydrocarbon Leasing EIS [BLM, 1984c] assigned leasing categories to lands within the White Canyon STSA (table 3-2 and figure 3-1).

The White Canyon area rests on the west flank of the Monument Upwarp. The tar sand deposit itself lies on an isolated mesa bounded by Long and Short Canyons on the southeast and by Fortknocker Canyon on the northwest.

The stratigraphy exposed in the area of the tar sand deposit ranges in age from the Permian Cutler Formation to the Triassic Chinle Shale. The tar sand deposit is found in the basal Hoskinnini Member of the Triassic Moenkopi Formation. The Hoskinnini has been measured in several White Canyon locations and appears to maintain a consistent 80-foot thickness; however, no known measurement of the bituminous zone itself has been made. There is no known quality or quantity of reserve.

Specific Indicators Affected

The specific environmental indicator related to tar sand that could be affected by the alternatives described in chapter 2 is area available for lease.

MINERAL MATERIALS

Mineral materials (also called salable minerals) are present in most of the SJRA. Clay, building stone, topsoil, blow sand, decorative stone, petrified wood, and gravel are all salable commodities found within the SJRA. The currently utilized deposits of sand, gravel, and clay are shown in figure 3-5.

Mineral materials are allocated through sale or free use permit. These are issued in response to public demand and cannot be anticipated through the planning process. Only about 30 percent of the total volumes permitted or sold since 1983 have actually been produced.

The mineral materials most commonly in demand are sand and gravel aggregate for road construction. The majority of mineral materials disposals in the SJRA go to the county and state highway departments in the form of free use. In some locations, particularly west of Comb Ridge and north of Monticello, known volumes of good grade material are insufficient to resurface or maintain roads.

Community pits have been designated to provide centrally located supplies of large quantities of material, principally for road construction and maintenance. Smaller outlying sites are used for short-term projects. There are presently nine designated community pits for sand and gravel totaling about 2,427 acres within the SJRA (figure 3-5), and there are plans to establish at least two more. This designation restricts certain other surface uses, notably mining, so that use of the gravel resource would not be encumbered.

About 896 acres in seven locations have been designated as material site rights-of-way for use by the Federal Highway Administration (FHWA). It is expected that none of these would be relinquished before 2000. Material site rights-of-way are appropriated by the FHWA and are closed to public land laws, including mineral entry. Other surface uses are subject to the approval of the FHWA. The FHWA will release a site when the gravel resource is depleted, or at the end of 10 years if the site is not used; the site returns to BLM jurisdiction upon completion of reclamation.

The sand and gravel in the SJRA come from the base of the Abajo Mountains and along the course of the San Juan River. The river material is very hard and of good quality, while the Abajo material is much softer and not adaptable to as wide a range of uses. In areas where neither of these sources of material is available, sand-

stones are excavated and crushed to provide a substitute.

Conflicts with cultural and visual resources throughout the SJRA restrict disposals of mineral materials. Every material site must have a cultural resource clearance before a disposal can be made, and the placement of material use sites is limited by the compatibility of that use with the visual quality of the surrounding area.

Some areas that are valuable for their gravel deposits are covered by placer or lode mining claims, and disposal of mineral materials from the surface of a mining claim is not allowed.

Petrified wood is considered to be a mineral material. In free use areas, up to 250 pounds of petrified wood per person per year can be collected for personal use without a permit. Commercial use, collection of more than the specified limit, or collection within a designated fee area, would require purchase of a permit.

The SJRA has recorded no production of petrified wood, building stone, or topsoil during fiscal years 1983, 1984, and 1985, but approximately 6,000 cubic yards of clay and other fill material were produced during that period. Some applications for purchase of building stone were rejected during those years because of conflicts with mining claims.






Specific Indicators Affected

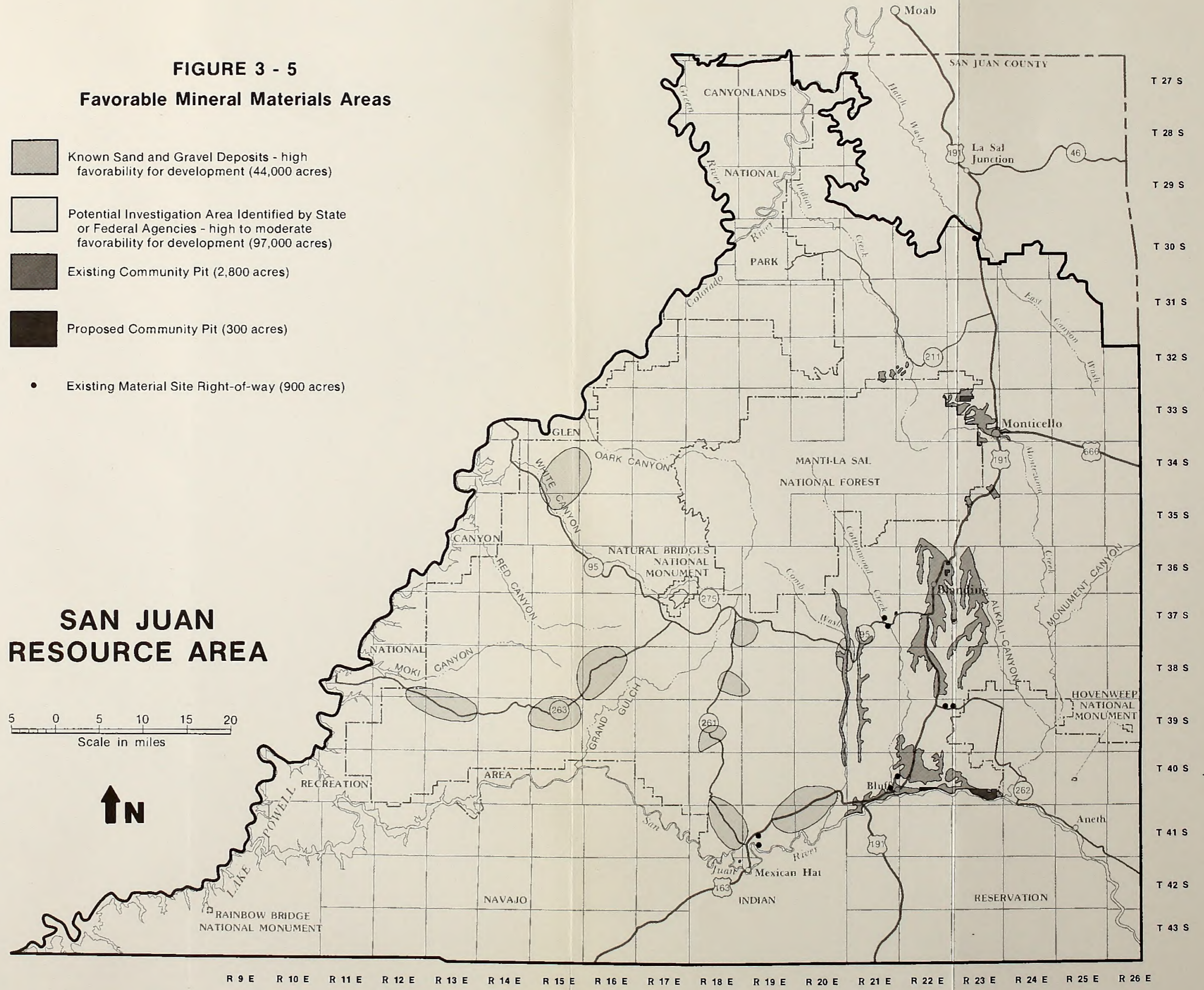
The specific environmental indicators related to mineral materials that could be affected by the alternatives described in chapter 2 are (1) area available for disposal and (2) production.

LOCATABLE MINERALS

Locatable minerals are those that can be claimed through a mineral entry (mining claim). Prospecting, exploration, and even development can take place without a claim, but an unclaimed discovery would be pre-empted by location of a claim. By law, all public lands are open to mineral entry (mining claim location) unless

FIGURE 3 - 5
Favorable Mineral Materials Areas

-  Known Sand and Gravel Deposits - high favorability for development (44,000 acres)
-  Potential Investigation Area Identified by State or Federal Agencies - high to moderate favorability for development (97,000 acres)
-  Existing Community Pit (2,800 acres)
-  Proposed Community Pit (300 acres)
-  Existing Material Site Right-of-way (900 acres)



**SAN JUAN
 RESOURCE AREA**

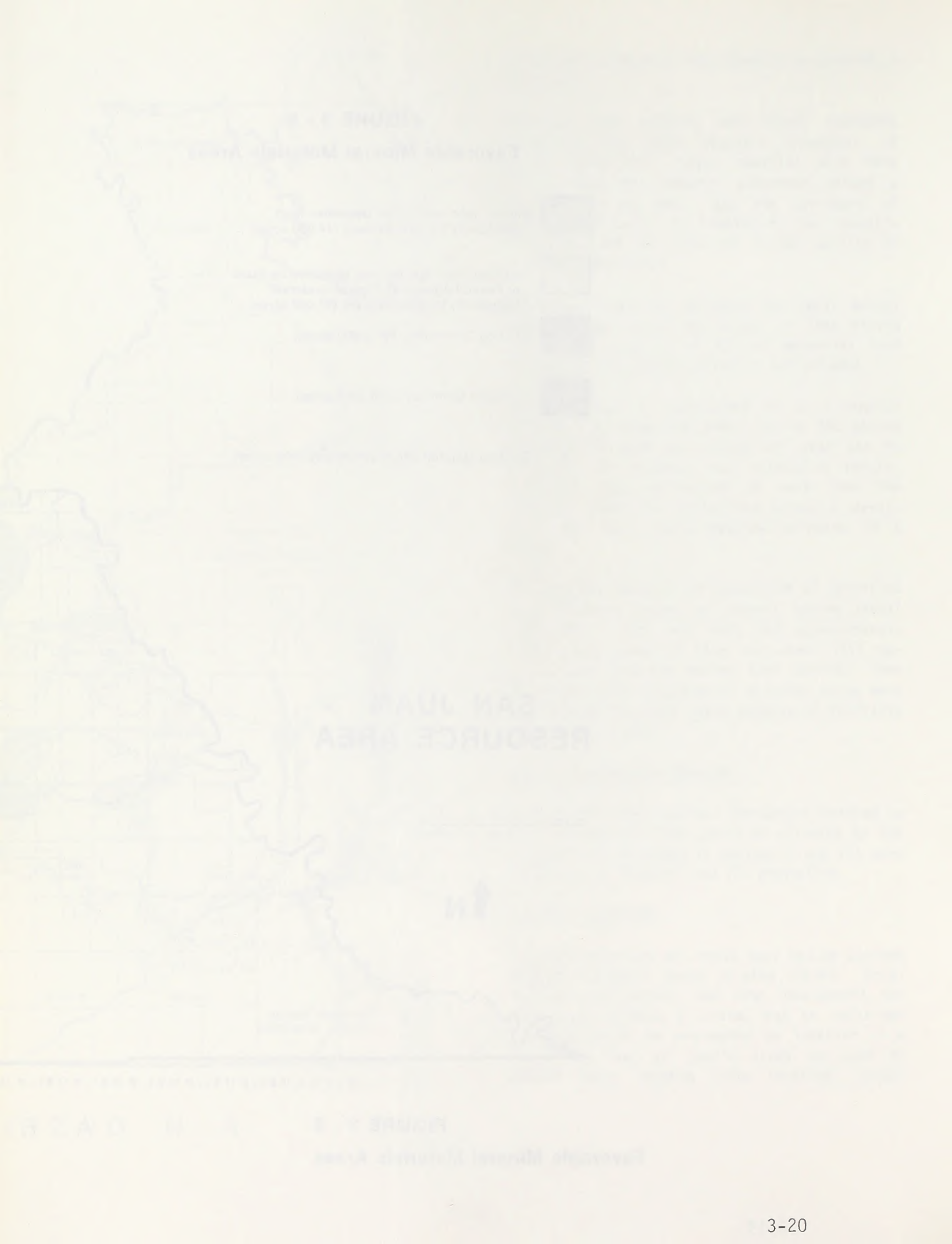
5 0 5 10 15 20
 Scale in miles



C
O
L
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D
O

FIGURE 3 - 5
Favorable Mineral Materials Areas

A
R
I
Z
O
N
A



SAN JUAN
RESOURCE AREA

specifically segregated or withdrawn. Acquired lands are not part of the public domain and are not open to entry. Segregations, withdrawals, and acquired lands are shown in figure 3-6 and listed in table 3-4.

A segregation is made through Secretarial Order in response to an application for certain forms of land disposal on a case-by-case basis. The purpose of a segregation from mineral entry, if applied, would be to prevent new mining claim locations from clouding title to the lands which are to be classified for disposal or for a specific use.

Withdrawals of land from appropriation under the mining laws are governed by Section 204 of the Federal Land Policy and Management Act of 1976 (FLPMA). Only Congress or the Secretary of the Interior can withdraw public lands. Land is withdrawn from mineral entry to protect certain resource values from the effects of mining or to prevent the land from passing from federal ownership through patent.

Uranium/vanadium and gold are the locatable minerals most frequently claimed within San Juan County. Claims have also been located for other minerals, such as copper and limestone. Lode claims are located for uranium, placer claims for gold. Figure 3-7 shows established uranium mining districts and strata favorable for uranium and gold.

The principal hosts for bedded uranium deposits in the SJRA are the Morrison Formation and the Chinle Shale [Doelling, 1969] (figure 3-3). Uranium shows have also been found in the Cutler Formation within the SJRA, but it is not thought to be a significant host. Uranium properties have thus far been developed only where surface exposures of favorable formations occur, such as in canyon walls or on cliff faces. The largest historical production has been from Lisbon Valley, White Canyon, Deer Flat, and Montezuma Creek [Doelling, 1969].

Uranium and other ores are also found in collapse structures. These localized structures and their relationship to ore deposition are not well understood. They are found in Lean-To Canyon, Gypsum Canyon, Beef Basin, and Lockhart

Basin within the SJRA, and in Spanish Valley just north of the SJRA [Sugiura and Kitcho, 1981]. They are not known to be associated with past ore production in SJRA, but are associated with significant production in northern Arizona. Impacts to these structures have not been assessed because of lack of data regarding their location and ore potential.

Gold in San Juan County is found principally in gravel terraces along the San Juan and Colorado Rivers and in pediment deposits on the flanks of the Abajo Mountains. There has been interest in gold, particularly along the river, since 1892 [Baars, 1973]. Since 1980 interest in gold along the San Juan River has been renewed, with new mining claims and some actual testing.

In 1985 some interest was expressed in development of limestone from mining claims near the San Juan River. Since development would be for specialized uses, the mineral could qualify for a locatable claim. Claims have been staked over about 4,000 acres. Because the area is not great and no production has occurred, neither impacts to nor disturbance from this use has been assessed.

Unpatented mining claims (there are currently about 50,000 in the SJRA) are continuously being located or abandoned. Because mining claimants can prospect for locatable minerals and locate mining claims without governmental approval, BLM's management is minimal. Patented mining claims leave the public domain and are not subject to BLM management of surface resources. The BLM's USO records and adjudicates mining claims.

Mining claims themselves represent an irreversible and irretrievable commitment of resources for as long as a mining claimant retains an interest in the claims by meeting the filing and assessment requirements. The claimant has an inherent right to explore for and remove mineral commodities and to patent the surface if the claim can meet the patent requirements.

The BLM has some management responsibility for federal locatable minerals under lands administered by the USFS, the National Park Service











TABLE 3-4

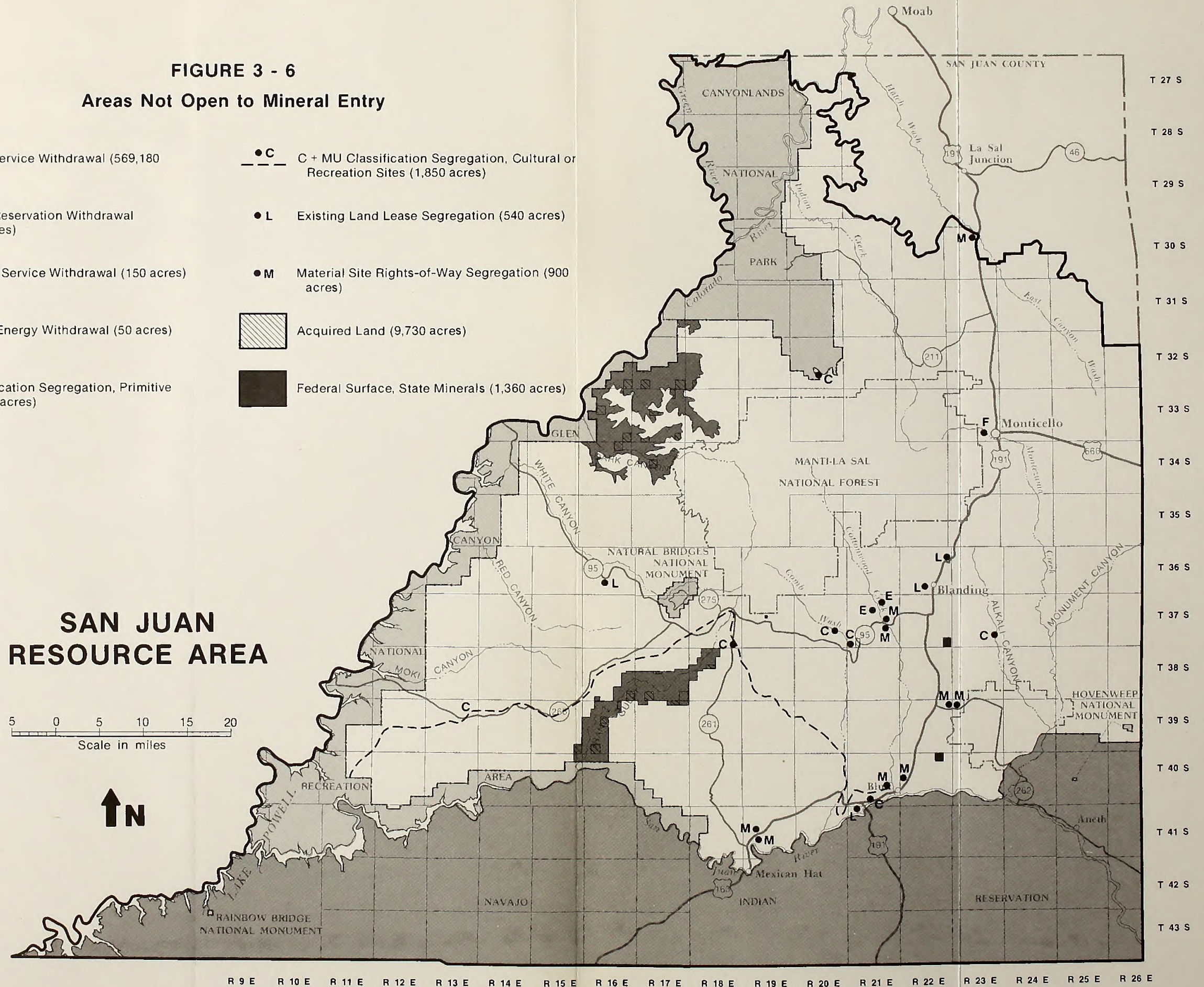
Areas Not Open to Mineral Entry

	Federal Lands Within SJRA Boundary (acres)	Public Lands in SJRA (acres)
Withdrawals		
National Park Service	569,180	0
U.S. Forest Service	150	0
Navajo Indian reservation (BIA)	1,168,890	0
Department of Energy	50	50
	<hr/>	<hr/>
Subtotal	1,738,220	50
Segregations		
R&PP leases	140	140
Bluff airport lease	400	400
Small business lease	(less than 10)	(less than 10)
Material site rights-of-way	900	900
C&MU classifications	92,130	92,130
	<hr/>	<hr/>
Subtotal	93,570	93,570
Acquired lands	9,730	9,730
	<hr/>	<hr/>
TOTAL	1,841,520	103,350

Source: Master Title Plats

FIGURE 3 - 6
Areas Not Open to Mineral Entry

- | | | | |
|---|---|---|---|
|  | National Park Service Withdrawal (569,180 acres) |  | C + MU Classification Segregation, Cultural or Recreation Sites (1,850 acres) |
|  | Navajo Indian Reservation Withdrawal (1,168,890 acres) |  | Existing Land Lease Segregation (540 acres) |
|  | National Forest Service Withdrawal (150 acres) |  | Material Site Rights-of-Way Segregation (900 acres) |
|  | Department of Energy Withdrawal (50 acres) |  | Acquired Land (9,730 acres) |
|  | C + MU Classification Segregation, Primitive Areas (90,270 acres) |  | Federal Surface, State Minerals (1,360 acres) |



**SAN JUAN
 RESOURCE AREA**

5 0 5 10 15 20
 Scale in miles



FIGURE 3 - 6
Areas Not Open to Mineral Entry

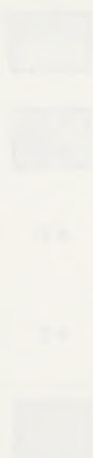
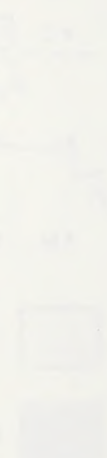
A R I Z O N A



FIGURE 2 - 2

Area Not Open to Mineral Entry

Scale



SAN JUAN RESOURCE AREA


10

FIGURE 2 - 2

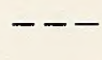
Area Not Open to Mineral Entry


FIGURE 3 - 7
Favorable Locatable Mineral Areas


Placer Gold Deposits

 Known Placer Deposits - high potential for placer gold occurrence

Bedded Uranium Deposits

 Mining District Boundary - high potential for uranium occurrence

 Morrison Formation - moderate potential for uranium occurrence

 Chinle Formation - moderate potential for uranium occurrence

SAN JUAN RESOURCE AREA

5 0 5 10 15 20
 Scale in miles

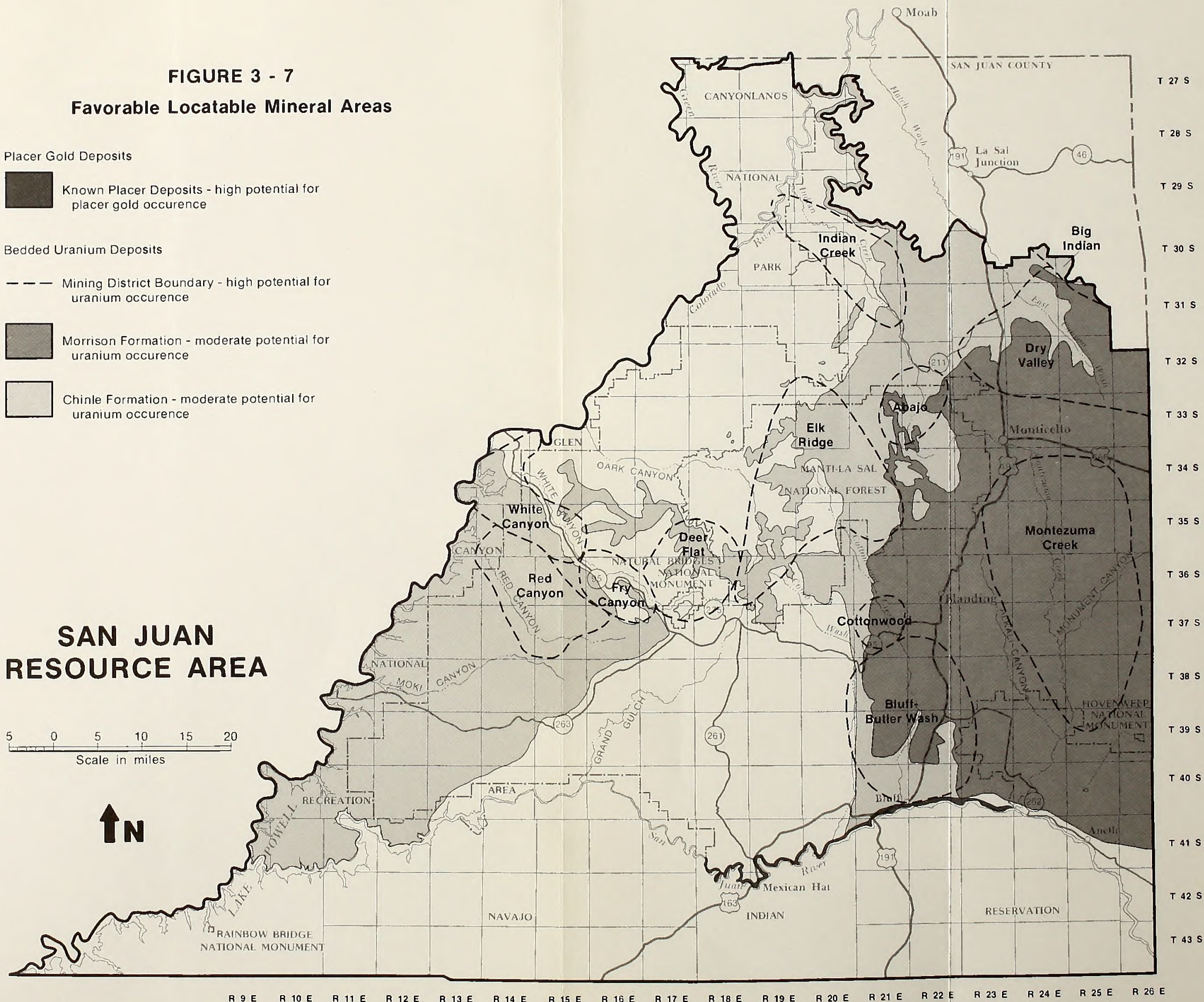


FIGURE 3 - 7

Favorable Locatable Mineral Areas

A R I Z O N A

C O L O R A D O



FIGURE 2-1

Estimated Economic Activity Areas

- 1. Economic Activity Area
- 2. Economic Activity Area
- 3. Economic Activity Area
- 4. Economic Activity Area

ESTIMATED ECONOMIC ACTIVITY AREAS

SW

Estimated Economic Activity Areas

FIGURE 2-1

Estimated Economic Activity Areas

(NPS), and the Navajo Indian reservation (table I-4).

The demand for domestically produced uranium is presently very low, causing a downward trend in exploration and production. Production has been decreasing nationwide since about 1980, when the price for yellowcake began to fall. Activity in San Juan County has followed the national trend, but public lands are still explored by companies and individuals responding to foreign markets or performing annual assessment work to maintain blocks of mining claims.

The market for gold fluctuates widely, but gold generally retains a fairly high value. The scarcity of placer gold deposits limits SJRA's capability to meet the demand for gold production. The gold along the San Juan River is very fine and cannot be removed in quantity by conventional methods [Baars, 1973].

Specific Indicators Affected

The specific environmental indicators related to locatable minerals that could be affected by the alternatives described in chapter 2 are (1) area available for location and (2) production.

OTHER NONENERGY LEASABLE MINERALS

Potash is the only other nonenergy leasable mineral present in significant quantities within the SJRA (figure 3-8).

Potash is allocated through leasing. A lease may be issued either within or outside of a known potash leasing area (KPLA). Exploration may be done outside a KPLA under a prospecting permit. If commercial quantities of potash are discovered, a preference right lease is issued.

BLM would define a KPLA where there is evidence that the presence of a commercially workable potash deposit can be established without prospecting. The KPLA evaluation is based on geologic information and data from drilling and mining. Within a KPLA, competitive leases are issued.

Parts of two KPLAs (figure 3-8) lie within the SJRA: 2,040 acres of federal surface and

minerals within the Cane Creek KPLA, and 2,400 acres of federal surface and minerals within the Lisbon Valley KPLA. These KPLAs, established by the USGS in 1960, cover the Lisbon Valley and Cane Creek anticlines in the north of the SJRA.

Bedded potash deposits exist over approximately 300,000 acres in the eastern part of the SJRA in the Paradox Formation (figure 3-3). All of the SJRA east of the edge of known potash deposition in the Paradox Basin has a moderate favorability for potash occurrence, and the KPLAs a high favorability. (Potash favorability is explained in the MSA.) However, there are no leases or prospecting permits for potash, and there has been no production of potash and no exploration specifically for potash resources in the SJRA.

Due to the depth and undulating nature of potash deposits in the Paradox Basin, solution mining is the most likely method of development. In this method, water is injected to induce solution of potash, which is then circulated to the surface where the potash is precipitated out of the solution.

Like potash, other nonenergy leasable minerals are allocated through prospecting permits and subsequent preference right leases. These minerals could include halite or other salts found in the same formation as the potash. No interest has been expressed in other leasable minerals in the SJRA.

Specific Indicators Affected

The specific environmental indicators related to other nonenergy leasable minerals that could be affected by the alternatives described in chapter 2 are (1) area available for lease and (2) production.

BIOTIC COMPONENTS

AIR

BLM's management of the air resource is based on the premise that human activities in the natural environment can affect air quality. Air quality above the public lands affects and is affected by activities on public lands and on adjoining federal, state, and private lands. The air

resource is generally described in terms of air quality or air pollution. The higher the quality of air, the greater the visual range within an area.

The air resource can be allocated by prevention of significant deterioration (PSD) classifications and visibility protection regulations. Changes in PSD classifications, generally from class II to class I, would result from a state or congressional decision, and visibility protection from any state regulations that may be formulated.

The entire SJRA is a class II air quality area. However, Canyonlands NP, adjacent to the SJRA, is a class I area and therefore protected against air quality degradation. The class I designation prevents any activity that would allow sulfur dioxide or particulate matter concentrations to exceed allowable limits in the park. Visibility considerations can also restrict activities affecting Canyonlands NP.

Most of the SJRA is included in the Upper Colorado River airshed, bounded on the west by the Wasatch Plateau and Range and on the north and east by the Roan Plateau and Rocky Mountains. A small portion is included in the San Juan airshed, bounded on the north by the San Juan River drainage.

SJRA air is clean because populations are small and spread out and because industrial activity is extremely limited. The State of Utah defines a major polluting source as one that emits more than 100 tons of a pollutant in a year. Major polluting sources in the SJRA include the Energy Fuels uranium mill near Blanding and compressor engines for oil well reinjection systems and natural gas pipelines.

Construction, road development activity, and sand and gravel operations are potential sources of particulate matter. Particulate concentrations can be a local problem, but are not considered major pollution sources. The national ambient air quality standards are considered to have been attained over the entire SJRA.

Specific Indicators Affected

The specific environmental indicator related to air that could be affected by the alternatives described in chapter 2 is air quality.

SOILS

The use of soils is not directly allocated, but is an inherent part of any land development activity.



Soils in the SJRA are described in the Soil Survey of the Canyonlands Area [Lammers, 1982] and in the Soil Survey of San Juan County, Central Part [Hansen, 1986]. Soils in the SJRA can be broken into four major groups, based on climate, as shown in table 3-5.

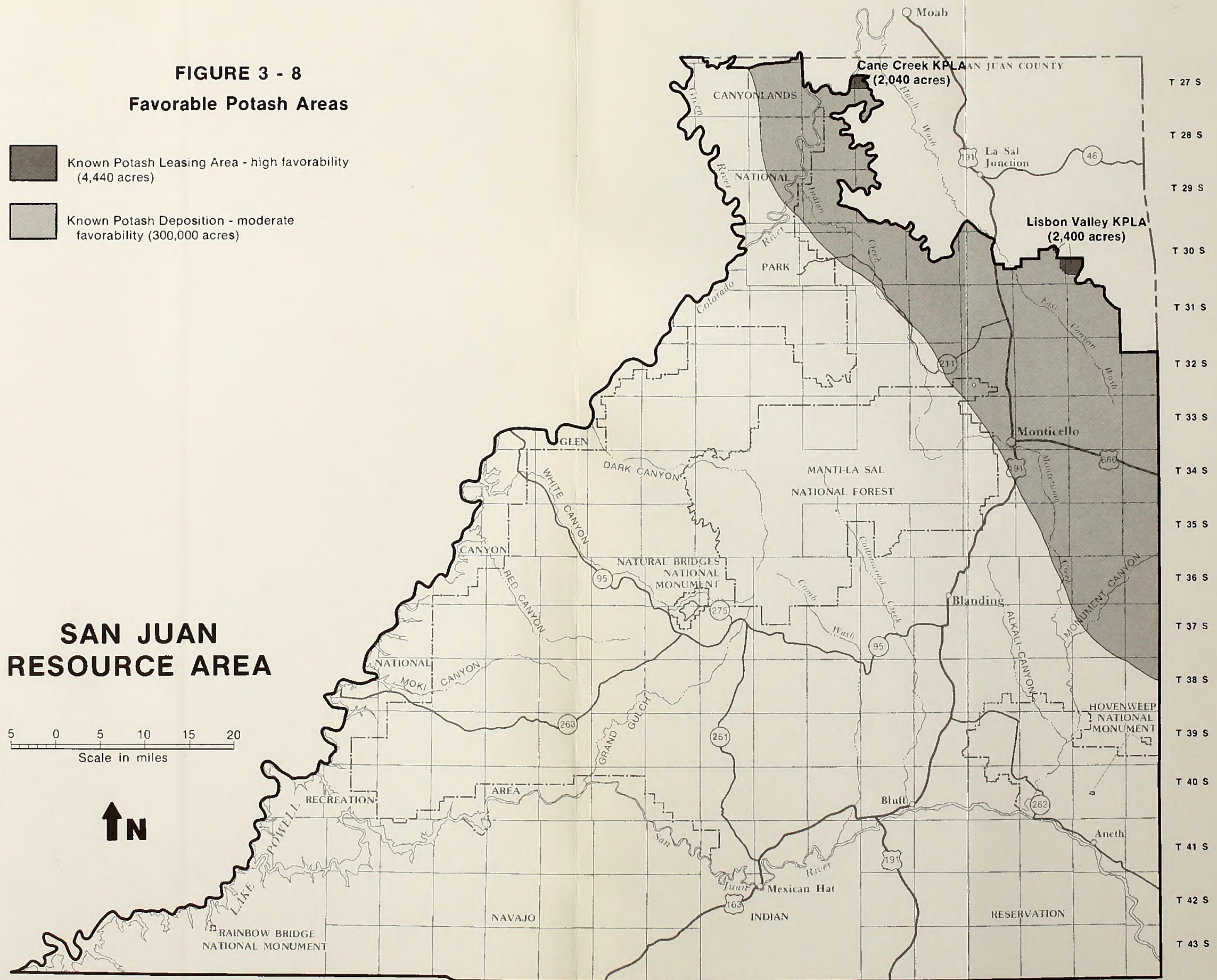
The general soil groups can be used as an area-wide planning guide for estimating (1) potential erosion rates; (2) rehabilitation potential for disturbed areas; and (3) success in vegetation manipulation. Erosion in the SJRA can increase both the salt in the surface water and the sediment suspended in the water. These, in turn, can affect the water's suitability for irrigation, livestock, or culinary purposes. The soils can be stabilized and erosion reduced with vegetative cover, cryptogamic cover, or a surface cover of rock fragments.

Some of the sediment and salt lost from a site is carried into the drainages and then directly into the Colorado River, Lake Powell, or the San Juan River; some of it is simply carried down-slope or deposited in the intermittent drainage system.

Within the SJRA, sensitive soils occur only in certain soils delineation areas totaling about 195,000 acres (figure 3-9); about 45,000 acres (23 percent) of the soils within these areas are classified as sensitive. These erodible sensitive soils have a relatively high content of clay and silt and are slightly to moderately saline. They are subject to compaction when wet and contribute significant salt and sediment to the drainage system when disturbed.

FIGURE 3 - 8
Favorable Potash Areas

-  Known Potash Leasing Area - high favorability (4,440 acres)
-  Known Potash Deposition - moderate favorability (300,000 acres)



**SAN JUAN
RESOURCE AREA**

5 0 5 10 15 20
Scale in miles





C O L O R A D O

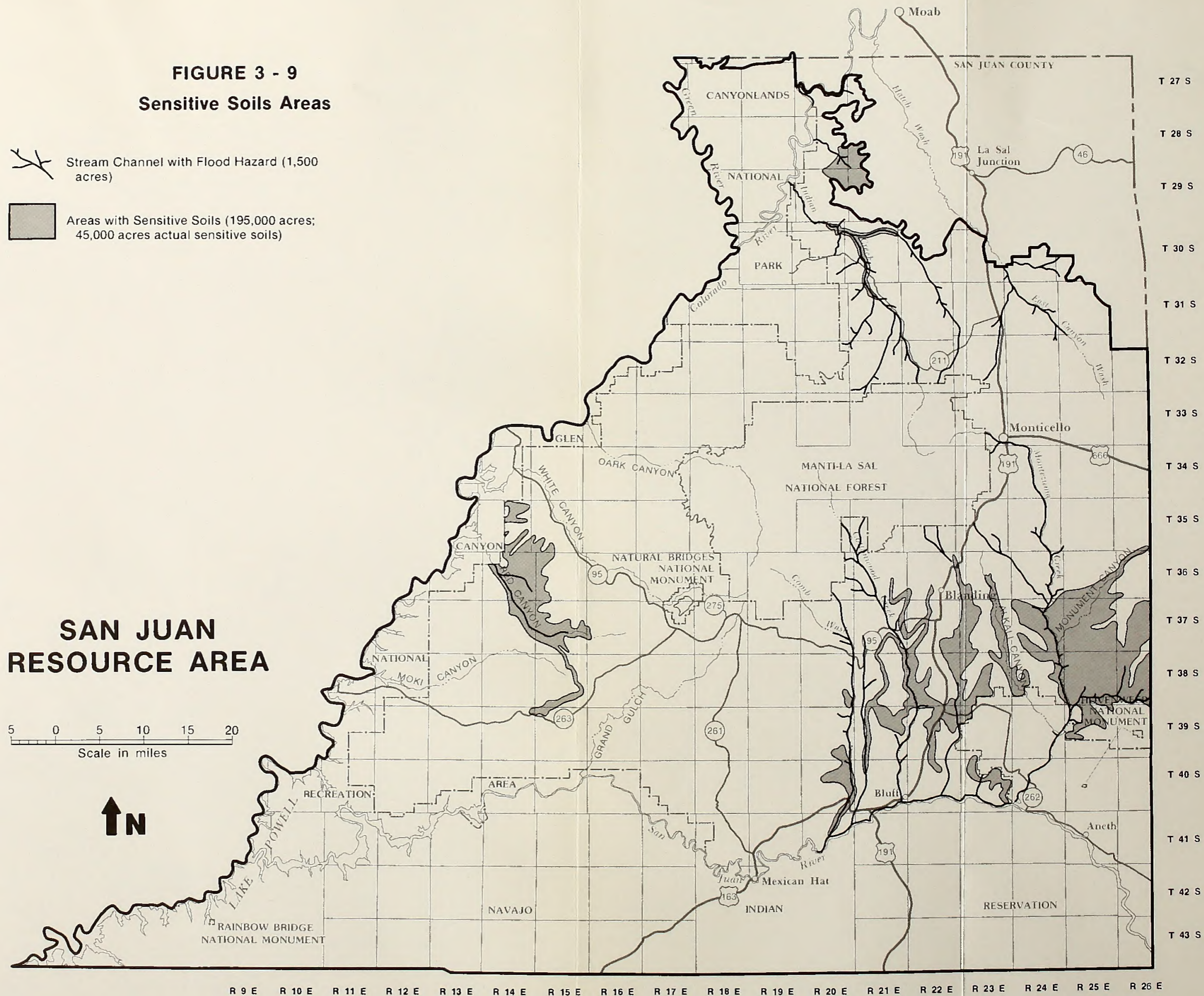
R 9 E R 10 E R 11 E R 12 E R 13 E R 14 E R 15 E R 16 E R 17 E R 18 E R 19 E R 20 E R 21 E R 22 E R 23 E R 24 E R 25 E R 26 E

FIGURE 3 - 8
Favorable Potash Areas

A R I Z O N A

FIGURE 3 - 9
Sensitive Soils Areas

-  Stream Channel with Flood Hazard (1,500 acres)
-  Areas with Sensitive Soils (195,000 acres; 45,000 acres actual sensitive soils)



**SAN JUAN
RESOURCE AREA**

5 0 5 10 15 20
Scale in miles



FIGURE 3 - 9
Sensitive Soils Areas

A R I Z O N A

C O L O R A D O



FIGURE 3-8
San Juan Resource Area

Compaction reduces infiltration and increases runoff, thereby making the soil more susceptible to erosion. Heavy grazing pressure or surface disturbance can increase salt and sediment loading to the Colorado Basin. In addition, soil losses from erosion reduce soil productivity. Continued soil losses in excess of 1 ton per acre per year would reduce soil productivity. Soil loss from disturbed areas could approach 15 tons per acre per year. Salt contribution could approach 0.05 tons per acre per year.

Within the SJRA are about 19,000 acres of badland and gypsumland, natural sources of sediment and salt. Sediment loss is presently estimated at 5 to 50 tons per acre per year. Surface disturbance in these areas could increase the loss rates to 10 to 75 tons per acre per year.

The main areas of concern are along the lower portion of Comb Wash on its west flank (about 6,000 acres); portions of Butler, Cottonwood, and Recapture Creeks and their tributaries (about 46,000 acres); Montezuma Creek and Alkali Canyon and their tributaries (about 88,000 acres); Red Canyon (about 46,000 acres); and the upper end of Lockhart Basin (about 7,000 acres). Sensitive soils occur intermixed with more stable and nonsaline soils in all these drainages.

Most of the affected area is public land, with tracts of state and private land scattered throughout. It is used primarily for grazing and oil and gas exploration and development. Proper grazing management, lease conditions, and surface reclamation requirements can protect the special values.

Also in the SJRA are 754,900 acres of soil types highly susceptible to water erosion when disturbed. Under good vegetative cover these soils can be expected to lose less than 1 ton per acre per year. Under poor cover, 5 tons of soil per acre per year may be lost; when these soils are disturbed, soil loss could approach 10 tons per acre per year. Continued soil losses in excess of 2 to 5 tons per acre per year would reduce the productivity of these soils.

Many of the soils in the SJRA formed in aeolian material and are subject to wind erosion. Surface disturbance over areas larger than 10 acres can result in wind erosion losses of over 6 tons of soil per acre per year.

Soils in floodplains or with a high seasonal water table (figure 3-9) cover about 55,000 acres (about 3 percent) of the SJRA. Virtually all the soils with a high seasonal water table in the SJRA are on floodplains, primarily along the San Juan River. Under executive order, federal agencies must avoid long- or short-term impacts from development on floodplains. Floodplains are not extensive in the SJRA, even considering dry washes. About 55,000 acres are subject to 100-year floods. Smaller washes can flood during any intense local storm.

Several drainage floodplains (Montezuma Creek, Butler Wash, Cottonwood Wash, Comb Wash, Indian Creek, and portions of the San Juan River) demonstrate significant downcutting, which is a source of sediment to the Colorado River system; it also lowers the ground water table in that part of the drainage, reducing riparian vegetation and affecting the aquatic habitat.

Specific Indicators Affected

The specific environmental indicator related to soils that could be affected by the alternatives described in chapter 2 is soil loss (erosion).

WATER

Waters in the SJRA are used primarily for agricultural, municipal, and industrial purposes. Recreation, livestock, and wildlife uses are also important.

Use of both surface and ground water is allocated through water rights governed by the State of Utah. All water in SJRA has been fully appropriated, but not fully developed. The SJRA is in the process of filing for water rights in three areas. Filings are for both livestock and wildlife uses.

The SJRA lies entirely within the Colorado River drainage system. Almost all stream channels

TABLE 3-5

General Soil Map Units

Description	Map Units in Group	Percent of SJRA	Vegetation	Elevation (feet)	Average Annual Precipitation (inches)	Mean Annual Air Temperature (degrees F)	Average Annual Freeze-Free Season (days)	Uses
Dominantly well drained, somewhat excessively drained, nearly level to moderately steep soils on low benches, terraces, cuestas, and valleys in arid climate zone.	6	34	shrubs grasses	3,700 to 5,600	6 to 8	52 to 56	50 to 220	rangeland wildlife habitat irrigated cropland recreation
Very shallow to very deep; formed in residuum and aeolian deposits derived dominantly from sandstone, shale, and limestone.								
Dominantly well drained to excessively drained, gently sloping to extremely steep soils on benches, cuestas, mesas, escarpments, and canyon walls in semiarid climate zone.	8	36	shrubs grasses	4,500 to 6,000	8 to 12	49 to 54	120 to 160	rangeland wildlife habitat woodland recreation
Very shallow to very deep; formed in colluvium, residuum, and aeolian deposits derived dominantly from sandstone and shale.								

<p>Dominantly well drained, nearly level to very steep soils on up-land benches, fans, cuestas, hill-slopes, and escarpments in dry subhumid climate zone.</p> <p>Very shallow to very deep; formed in aeolian deposits, alluvium, colluvium, and residuum derived dominantly from sandstone and shale.</p>	6	29	shrubs grasses pinyon Utah Juniper	5,500 to 7,500	12 to 16	45 to 52	100 to 150	rangeland woodland wildlife habitat recreation (small areas for irrigated cropland)
<p>Dominantly well drained, gently sloping to very steep soils on high benches, fans, landslides and escarpments in moist sub-humid and humid climate zones.</p> <p>Shallow to very deep; formed in aeolian deposits, alluvium, colluvium, and residuum derived dominantly from igneous and sedimentary rocks.</p>	2	1	Gambel oak ponderosa	7,500 to 8,900	16 to 25	40 to 45	50 to 100	rangeland wildlife habitat woodland recreation

within the SJRA are ephemeral or seasonal, with small segments near springs or headwaters having perennial flow. Dark Canyon, North Cottonwood Creek, Indian Creek, and Harts Draw have perennial streams. The drainage system is divided into three major parts, with about 48 percent flowing directly into the Colorado River or Lake Powell, about 52 percent into the San Juan River or the San Juan arm of Lake Powell, and less than 1 percent into the Dolores River system. Major drainages are shown in figure I-4.

Perennial streams have not been regularly monitored, but a gauging station has been established on Montezuma Creek to determine whether large concentrations of sediment and other contaminants are being delivered from that drainage. Plans for periodic monitoring to assess compliance with water quality standards and establish long-term trends will depend on the funding necessary to accomplish the field and laboratory work.

Irrigation is the primary water use in SJRA. All surface water available for irrigation has been appropriated, and when those waters have been developed, there can be no more development unless it is for 0.25 acre of land or less. No public land in the SJRA is irrigated.

The Bureau of Reclamation [BOR, 1969] studied the feasibility of irrigation projects in the area. Recapture Dam, the only project that has been developed, will provide water for supplemental irrigation of about 2,300 acres, as well as for recreational use. Part of the Recapture Dam watershed is public land.

Industrial uses of water within the SJRA are minimal at this time. Water from the San Juan River is used for oil field reinjection. Incidental drilling operations use local water sources; this temporary use is permitted through the State Division of Water Rights. Other industrial users obtain water from municipal systems.

Surface water developments on public lands have included stock ponds, erosion control structures, rainfall catchments, and guzzlers to provide water for wildlife and livestock and to

protect and improve the condition of degraded watersheds.

Recreational water uses in or adjacent to the SJRA include floatboating on the Colorado and San Juan Rivers, fishing in these rivers and in upper Indian Creek, and swimming in several locations. Recapture Lake is the only recreation related water development on public lands in the SJRA.

Ground water supplies are controlled by precipitation rather than by use. Exposed permeable formations absorb water if sufficient precipitation occurs [USGS, 1984]. In SJRA, the formations that contain aquifers are the Dakota Sandstone; Burro Canyon and Morrison Formations; Bluff, Entrada, Navajo, and Wingate Sandstones; Cedar Mesa Sandstone, and the Hermosa Group (figure 3-3).

Virtually no ground water has been developed for irrigation since 1980. Both ranchers and the BLM continue to develop ground water for livestock use. State law limits these wells to a yield of 0.015 cubic feet per second.

Interactions between water and soils make up watershed resources. Watershed management in the SJRA is concerned primarily with the amount of sediment and salt introduced into the drainage system and the levels of total dissolved solids (TDS) and other chemical substances in the waters of the area. Watershed condition is measured in terms of water quality, which is affected primarily by sedimentation and salinity.

The actual contribution of salt and sediment to the Colorado River Basin from drainages in the SJRA is unknown. The Colorado River Water Quality Improvement Program initiated basic data collection for the San Juan River unit in November 1985. Salt loading appears to be significant between Shiprock, New Mexico and Bluff, Utah [BOR, 1985].

Salinity is a regional issue for the states in the Colorado River Basin, as well as for SJRA, which lies in the upper drainage basin. Public lands in the upper basin contribute an estimated 52 percent of the salinity in the lower basin.

Salts come from naturally saline geologic formations or the soils formed in them.

The salinity level of the Colorado River has two general causes: salt loading and salt concentration. Salt loading is the addition of salt to the river; salt concentration results from consumptive uses that reduce the volume of water without reducing the total salt carried. The salt load in the lower reaches of the upper Colorado River Basin is estimated at 600 to 700 parts per million [USU Experiment Station, 1975]. Management actions or small-scale projects on sensitive lands in the SJRA have the potential to control sediment and salt yields.

The San Juan River and its tributaries between Lake Powell and the Utah-Colorado state line have been impacted by salinity and nutrient contributions from natural and agricultural sources [Gunnell, 1984]. Sediment loads are increased by livestock grazing in the watershed and by runoff over natural rock and sediment and from dryland farms. Poor vegetation cover on grazing lands also contributes to TDS levels.

The watershed for most public drinking water sources in the SJRA is located on USFS land, except the recharge area for the Navajo aquifer, part of which is located below Comb Ridge. However, while this is a major aquifer in the area, it not known to be tapped as a source of domestic water. None of the public lands in the SJRA provide municipal watershed.

Specific Indicators Affected

The specific environmental indicators related to water that could be affected by the alternatives described in chapter 2 are (1) surface water quality and (2) ground water quality.

VEGETATION

Based on BLM inventory and mapping data, vegetation in the SJRA is classified in four broad zones: pinyon-juniper, saltbush, sagebrush, and blackbrush. The zones (figure 3-10) are generally determined by changes in elevation, soils, and precipitation. These broad zones can be further divided into 14 vegetation associations as shown in appendix M.

Five plant species occurring in the SJRA are considered sensitive. This means that they either are being considered for threatened or endangered status or may be considered for such status pending further investigation. These species are: Astragalus cronquistii, Astragalus monumentalis, Erigeron kachinensis, Eriogonum clavellatum, Eriogonum humivagans.

Poisonous and noxious plants are present throughout the SJRA, but generally do not occur in concentrations that would threaten people, livestock, or wildlife. Poisonous plants that occur include locoweed (Astragalus spp.), deathcamas (Zigadenus paniculatus), copperweed (Oxytenia acerosa), halogeton (Halogeton glomeratus), greasewood (Sarcobatus vermiculatus), larkspur (Delphinium spp.), and Gambel oak (Quercus gambelii). Copperweed and grass tetany poisoning from spring grazing on crested wheatgrass have caused some livestock losses.

Besides native plants, many adventive species, such as crested wheatgrass, occur in SJRA. These species were originally introduced as exotics, but have become well established in the vicinity.

Some of the isolated mesa tops scattered throughout the area could be considered relict areas, since inaccessibility limits or prevents livestock and wildlife grazing. Van Pelt's study [1978] of some of these areas contains specific information. Hanging gardens along seeps in canyons contain unique species confined to limited habitats [Holmgren, 1976]. In particular, Lavender Mesa (near Canyonlands NP) hosts a relict plant community, and Bridger Jack Mesa a near-relict plant community.

Lavender Mesa (640 acres shown in figure 2-4) is isolated, inaccessible to man and herbivores by ground routes. Even rabbits and mice appear to be absent. Most of the mesa is a pinyon-juniper woodland with a small sagebrush-grass park (20 acres). The vegetative community is unique because it developed without the influence of grazing animals and most other mammals. It therefore has value for scientific study and as a comparison area for similar vegetative communities that have been grazed.

Bridger Jack Mesa is a rather large mesa (5,200 acres in T. 31 and 32 S., R. 21 E., shown in figure 2-4) consisting of pinyon-juniper woodland and sagebrush-grass parks. It is relatively isolated, accessible only by foot or horseback. It was grazed by saddle horses from the 1920s for about 30 years. Other than trespass grazing by horses in the winter of 1972-73, it has not been grazed since 1957. It supports a population of wintering mule deer, as well as year-round populations of smaller animals. Bridger Jack Mesa is a natural enclosure for study of a vegetative community released from grazing by domestic livestock. BLM proposed the mesa top as an outstanding natural area (ONA) in the early 1970s, but it was never designated as such.

Bridger Jack and Lavender Mesas are thought to have potential for RNA or ACEC designation (table 2-6, figures 2-3, 2-4, 2-5, and 2-6, and appendix H).

Forest resources within the SJRA are timber or woodland species used for fuelwood, fence posts, and Christmas trees. They have incidental value for watershed, wildlife habitat, recreation, and visual resources. Other vegetative products include pinyon nuts, cactus, and wild plants with ornamental or medicinal uses.

SJRA timber stands occur primarily in the pinyon-juniper zone (figure 3-10). Dominant woodland species are pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*); these areas cover approximately 638,700 acres (about 35 percent) of the SJRA [BLM, 1972; BLM, 1974; BLM, 1976]. A few other timber species are scattered throughout the area in very limited concentrations. The most common are cottonwood (*Populus* spp.), oaks (*Quercus* spp.), ponderosa pine (*Pinus ponderosa*), Douglas fir (*Pseudotsuga menziesii*), boxelder (*Acer negundo*), and quaking aspen (*Populus tremuloides*). These species add to the scenic and watershed values of the SJRA, but are too scattered to have commercial value.

Although an extensive forest inventory has not been completed for the SJRA, the forest lands shown in figure 3-10 are assumed to have 10 percent or more canopy cover per acre. All SJRA public lands are classified as nonforest lands.

Because all of the woodland area is classified nonproductive (noncommercial), management for marketable products is generally limited to fuelwood, posts, and Christmas trees.

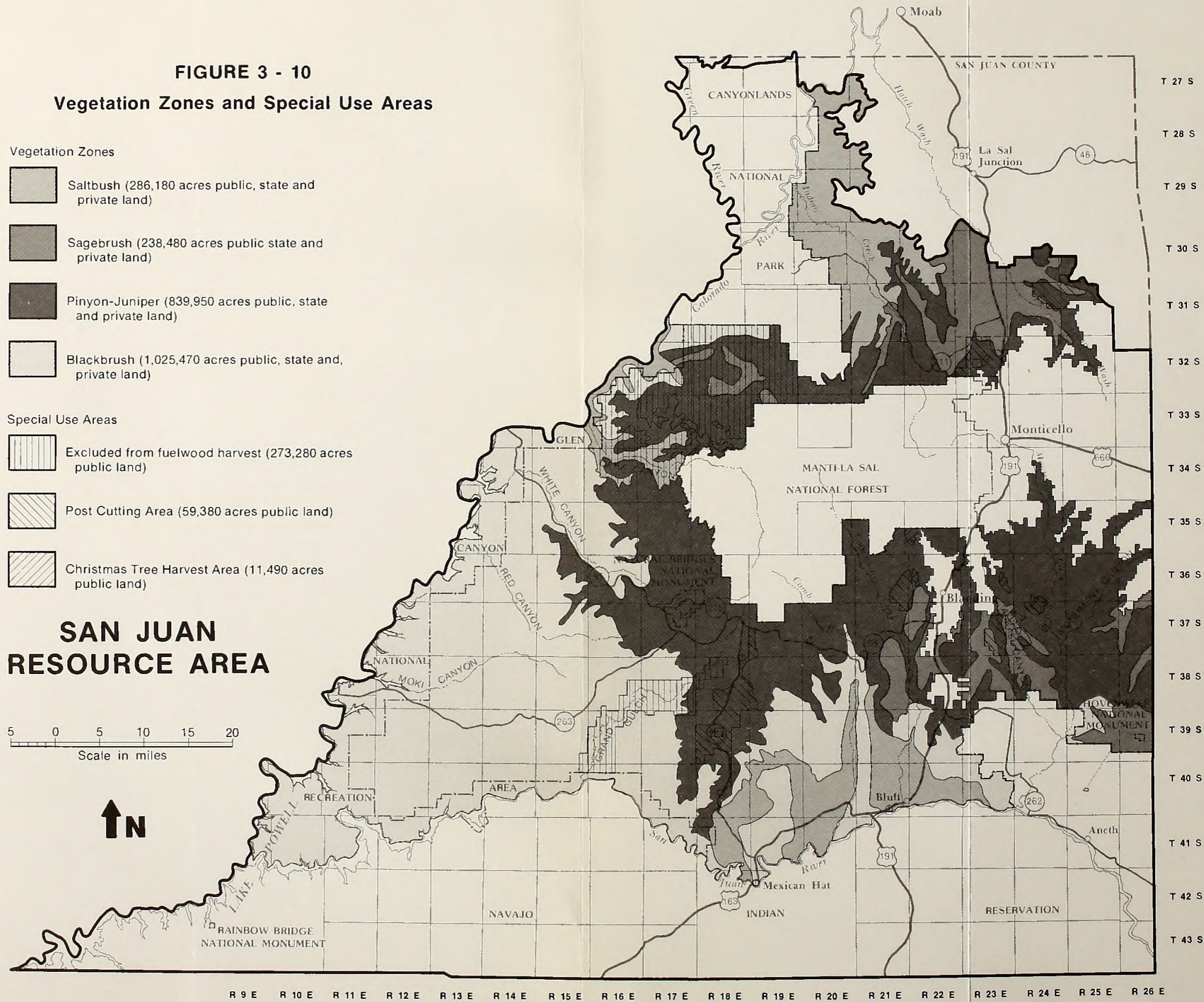
In the past, BLM issued free use permits for collection of dead wood (fuelwood). BLM policy now is to sell, either by bid or by permit, forest products that are in demand. Green wood and lumber are usually offered for sale by bid to establish fair market value. Although dead wood, posts, live specimen plants, and Christmas trees are typically sold by permit, bidding is sometimes used for commercial use. Pinyon nuts are free if gathered for personal consumption; otherwise they are sold by permit.

Areas that are excluded from fuelwood harvesting at this time include Beef Basin (173,280 acres) and two primitive areas (99,850 acres), where limited onsite use for campfires would be allowed; and developed campsites (150 acres) where no collection would be allowed (figure 3-10). The remaining area (1,504,550 acres) is open for private harvest of wood products. Free use was allowed on eight chainings (11,490 acres) until the fall of 1985.

Commercial operations have been restricted to eight designated chainings (totaling 11,490 acres), but could be allowed in other areas if designated (1,506,060 acres total). Harvest is restricted to dead wood, except in isolated areas where live wood is to be removed by land treatments or other surface disturbing activities.

The demand for fuelwood has climbed dramatically over the past several years. Over 95 percent of the fuelwood harvested from the SJRA, both privately and commercially, is used by county residents. Areas of highest demand include the south end of Cedar Mesa and areas near the towns of Monticello and Blanding.

Post cutting is allowed only in seven designated areas totaling 59,380 acres (figure 3-10). Christmas trees can be cut for private use anywhere in the SJRA (total 1,679,340 acres), except in primitive areas. Commercial Christmas tree cutting is now restricted to eight chainings (11,490 acres total, figure 3-10), but



C O L O R A D O

A R I Z O N A

FIGURE 3 - 10
Vegetation Zones and Special Use Areas



FIGURE 3-18
Vegetation Cover and Forest Use Areas

SAM LUAN
RESOURCE AREA

FIGURE 3-19
Vegetation Cover and Forest Use Areas

could be allowed in other areas if designated (1,679,340 acres total).

Private use accounts for approximately 5 percent of existing Christmas tree harvest; the remaining 95 percent is commercial. Over 75 percent of the commercial harvest is for sale outside the area, mostly in the Salt Lake Valley.

Specific Indicators Affected

The specific environmental indicators related to vegetation that could be affected by the alternatives described in chapter 2 are (1) vegetation disturbance (short-term and residual loss), and (2) area available for forest product use. Livestock forage is discussed under Grazing.

WILDLIFE

General

Many terrestrial and aquatic wildlife species [Dalton, et al., 1978] are found in the SJRA. The BLM manages (1) habitat for major big game species (desert bighorn sheep, pronghorn antelope, and deer), (2) riparian habitat; and (3) habitat for threatened or endangered (T/E) species. Figure 3-11 shows habitat areas for desert bighorn sheep and pronghorn antelope, and figure 3-12 shows habitat areas for deer and riparian/aquatic habitat.

Known T/E species in SJRA are the bald eagle and certain fish in the San Juan River. The SJRA provides habitat thought to be suitable for peregrine falcon and black-footed ferret, although these species are not known to be present. Specific data are lacking for golden eagle, ferruginous hawk, prairie falcon, and other species of high federal interest that also inhabit the SJRA.

Use of wildlife resources is either consumptive (hunting or trapping) or nonconsumptive (observation or photography). Hunting is managed by the Utah Division of Wildlife Resources (UDWR).

The BLM does not allocate use of wildlife resources. BLM has responsibility to manage only the habitat for wildlife species, while UDWR manages the animals themselves. The BLM

identifies crucial habitat areas and protects these areas while managing other resource uses.

Wildlife require food, water, cover, space, and special habitat features such as cliffs, large cottonwood trees, snags, or caves. As a wildlife population increases or expands its range, its demand for the various habitat components also increases. When its demands increase beyond the limits of any single habitat component, the population has exceeded the carrying capacity of the habitat, and that component becomes the limiting factor of population size. Human activities often remove or alter habitat components, generally causing habitat degradation or population loss.

Current management of wildlife habitat in SJRA has generally been limited to developing habitat management plans (HMPs) in certain areas and constructing habitat improvement facilities such as wildlife guzzlers and exclosures. Areas under HMPs are shown in figure 3-13, and HMP status is shown in appendix N.

Herd unit boundaries, established by UDWR for bighorn sheep, antelope, and deer, are used for management and administration. UDWR has also established big game population management goals to equal prior stable numbers for the herds in the SJRA. The herd populations cannot reach prior stable numbers without an increase in the various habitat components.

Crucial habitats are discussed separately.

Desert Bighorn Sheep

Desert bighorn sheep inhabit about 1,002,300 acres in the south, southwest, and northwest portions of the SJRA (figure 3-11). There are 672,550 acres of yearlong habitat and 329,750 acres of crucial habitat on public lands. Crucial bighorn sheep habitat consists of areas that are used for rutting and lambing. Bighorn sheep breeding grounds are used from October 15 through December 31, and lambing grounds between April 1 and July 15. These areas are shown in figure 3-11.

These areas are primarily adjacent to the San Juan River, Glen Canyon NRA, and Canyonlands

NP. When NPS lands are included, the total habitat area is 1,320,600 acres (845,700 yearlong and 474,900 crucial). These acreages were calculated through the cooperative efforts of UDWR and BLM personnel.

The SJRA's current bighorn sheep population, the largest in Utah, is estimated to be 1,390 (of which 1,100 inhabit public lands and 290 inhabit NPS lands). Bighorn sheep populations are increasing; however, lamb mortality is significant [King and Workman, 1983]. The prior stable number is estimated at 6,247. The estimated current population for bighorn sheep on BLM grazing allotments within the SJRA is shown in appendix 0.

It has been noted that bighorn sheep are socially intolerant of domestic livestock; however, most evidence of this is circumstantial. In SJRA, bighorn tend to use the higher, steeper slopes, while cattle use the lower, gentler slopes and valley floors [King and Workman, 1983]. Although the reasons for this separation are not known with certainty, bighorn sheep have been known to vacate parts of their ranges when livestock were introduced. When cattle were eliminated from Canyonlands NP, bighorn sheep began to use areas they had previously not occupied [King and Workman, 1983].

Bighorn are sensitive to human intrusions such as hikers or vehicle traffic, especially when the sheep are in small groups [King and Workman, 1983]. Helicopter flights have been another source of disturbance to bighorn.

BLM management for desert bighorn sheep includes protective lease stipulations and development of water sources. Oil and gas leasing categories 2, 3, and 4 protect 114,262 acres of bighorn sheep breeding and lambing grounds.

Water can be a limiting factor to bighorn sheep populations [King and Workman, 1983]. BLM has developed 14 water sources for bighorn in the SJRA (figure 3-11), most of them in the late 1960s; in 1980 BLM filed with the State Engineer for water rights at 17 sources in the Red Canyon drainages.

Hunting is the only consumptive use of bighorn sheep. Until 1982, bighorn sheep in Utah were

hunted only in the SJRA. The State Board of Big Game Control introduced the bid sale of one permit per year in 1980; the highest permit price was in 1983, when the permit sold for \$32,000 [Jense, 1983]. Most nonconsumptive use is incidental to hiking, backpacking, or sightseeing, which take place year-round.

Pronghorn Antelope

Pronghorn antelope are present in the northwestern part of the SJRA (figure 3-11). They are part of the Hatch Point antelope herd, which was established in 1971 [Jense, et al., 1984]. The herd occupies approximately 121,000 habitat acres in both SJRA and Grand Resource Area. Antelope did not previously inhabit this area. About 34,000 acres lie in SJRA. The fawning area (approximately 12,960 acres) identified in figure 3-11 is considered to be crucial habitat.

Antelope prefer to occupy large open areas with flat or rolling terrain where they can rely on their keen eyesight and swift movement to avoid predators. There appears to be very little competition with livestock for forage in these areas. The estimated current population for antelope on BLM grazing allotments in SJRA is shown in appendix 0.







The antelope population has declined. The estimated 1984 population for the Dry Valley area is 50 head. The prior stable population (or UDWR's long-term herd management goal) for the Hatch Point herd is 309 antelope. The estimated current population for antelope on BLM grazing allotments within the SJRA is shown in appendix 0.

A HMP was written for this herd in 1976. As a result, two water developments have been established in SJRA (figure 3-11). Available water is extremely limited.

The Hatch Point antelope herd has not been hunted since 1981. The only known nonconsumptive use is coincidental sightings by visitors traveling through the area.

FIGURE 3 - 11

Wildlife Habitats: Desert Bighorn Sheep and Antelope

-  Desert Bighorn Sheep Yearlong Habitat (1,002,300 acres public land; 1,320,600 acres total)
-  Desert Bighorn Sheep Crucial Habitat (329,750 acres public land; 474,900 acres total)
-  Mesa Tops - potential conflict area between bighorn sheep and cattle (56,740 acres public land)
-  Antelope Yearlong Habitat (34,000 acres public land)
-  Antelope Crucial Habitat (12,960 acres public land)
-  Developed Water Sources for Wildlife

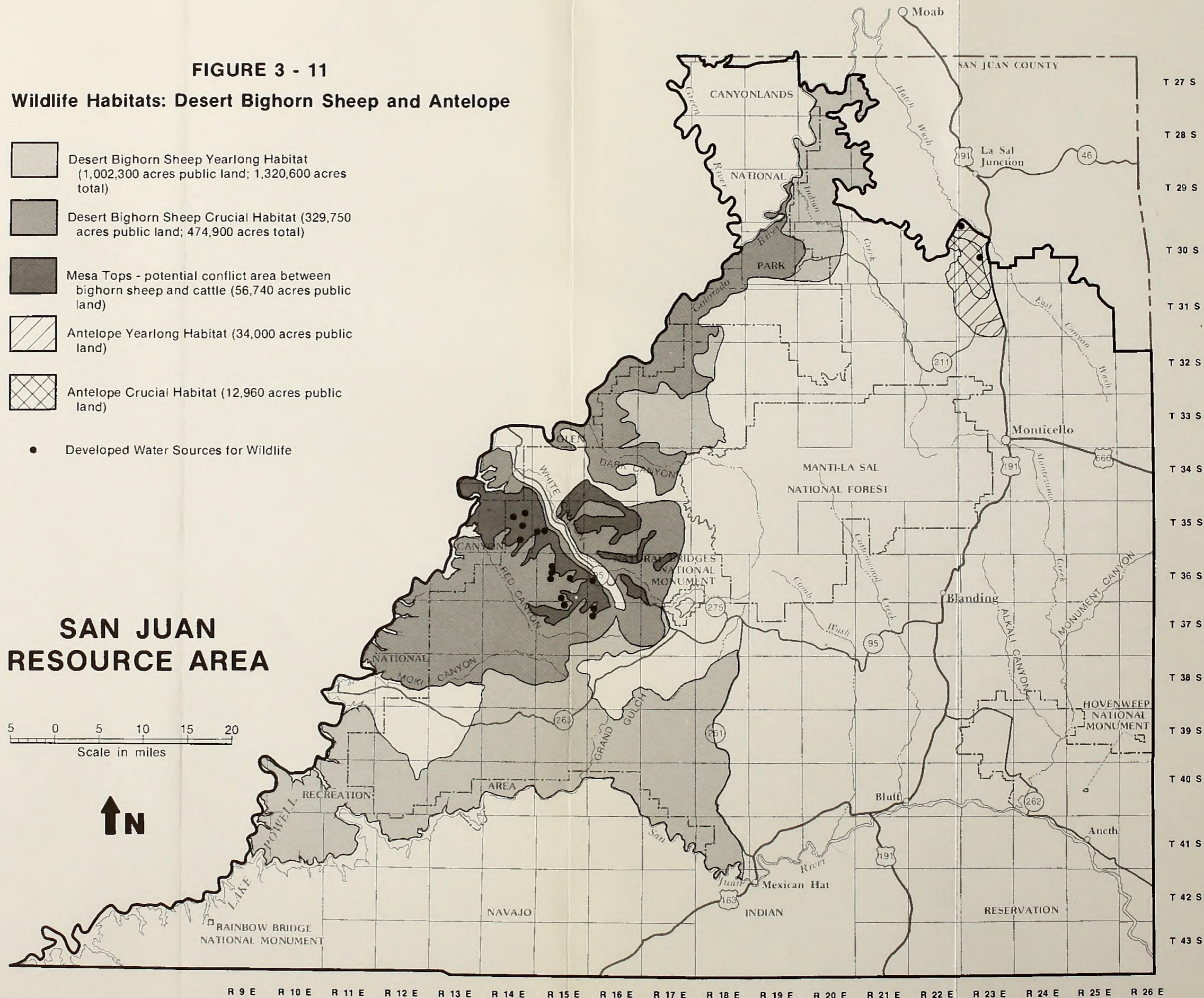


FIGURE 3 - 11

Wildlife Habitats: Desert Bighorn Sheep and Antelope

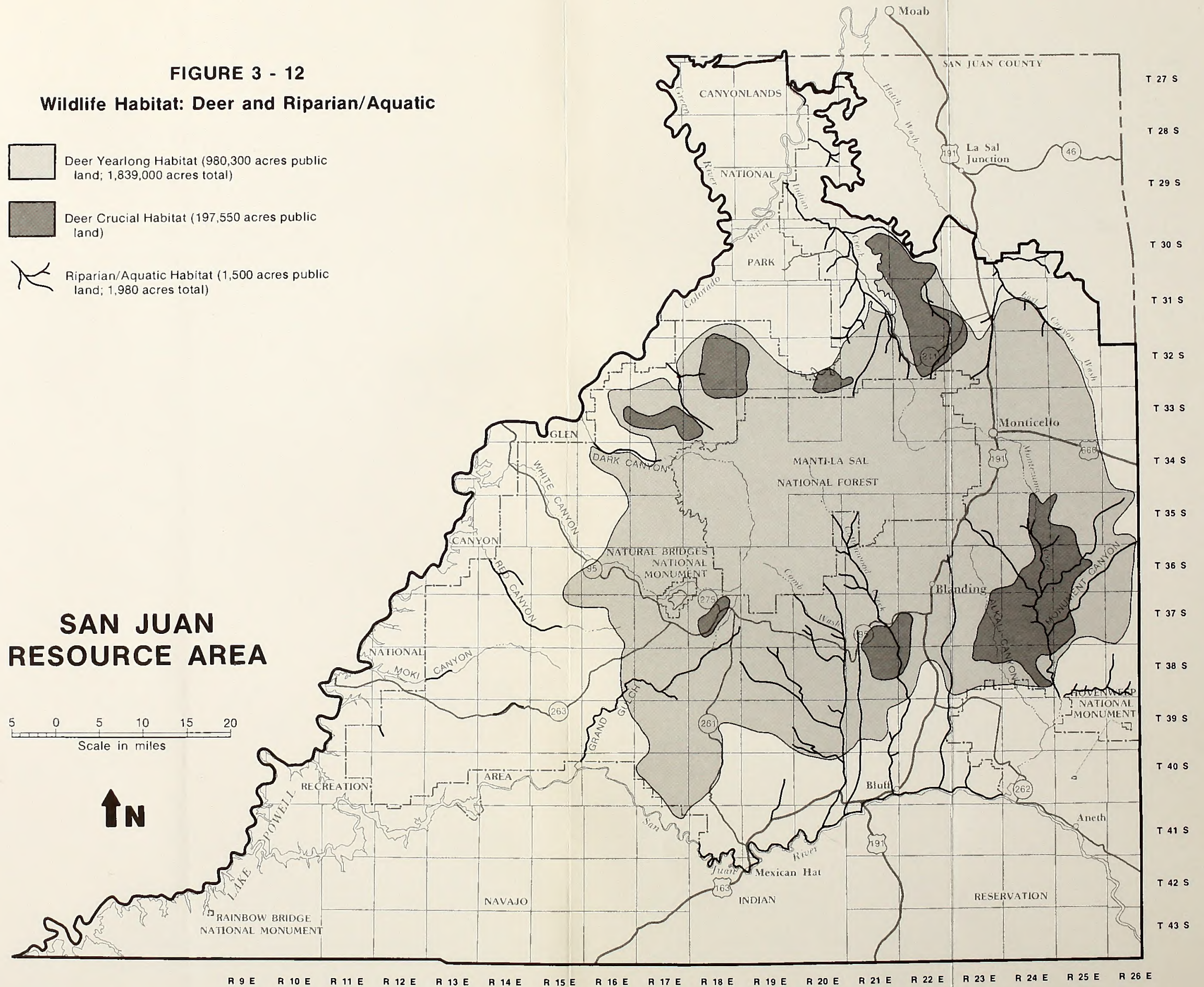


FIGURE 1-11
San Juan Resource Area

FIGURE 3 - 12

Wildlife Habitat: Deer and Riparian/Aquatic

-  Deer Yearlong Habitat (980,300 acres public land; 1,839,000 acres total)
-  Deer Crucial Habitat (197,550 acres public land)
-  Riparian/Aquatic Habitat (1,500 acres public land; 1,980 acres total)



SAN JUAN RESOURCE AREA

Scale in miles



FIGURE 3 - 12

Wildlife Habitat: Deer and Riparian/Aquatic

A R I Z O N A

C O L O R A D O

FIGURE 3-15




Watershed Plan for Deer and Fish Creek Basins

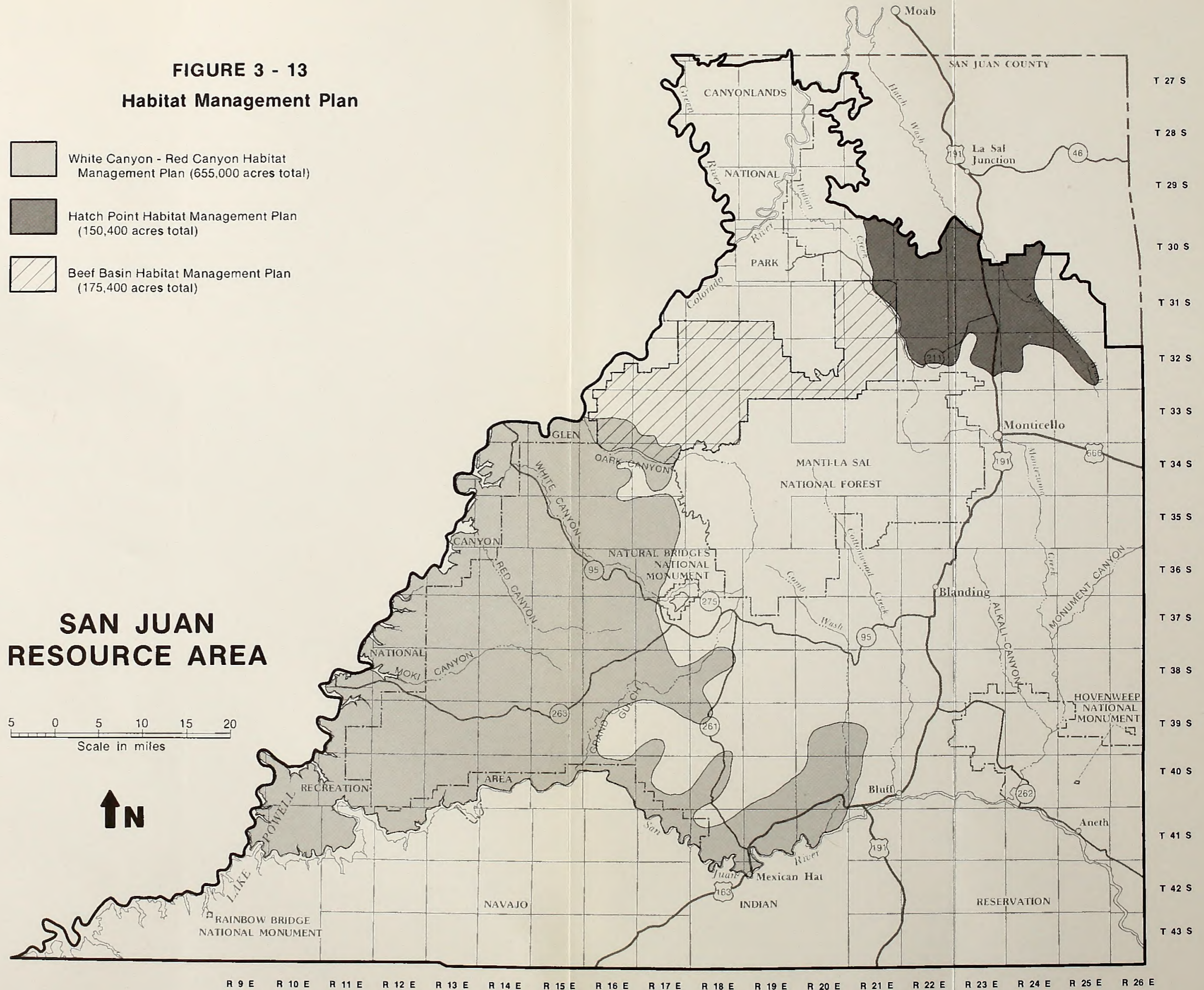


FIGURE 3-15

Watershed Plan for Deer and Fish Creek Basins

FIGURE 3 - 13
Habitat Management Plan

-  White Canyon - Red Canyon Habitat Management Plan (655,000 acres total)
-  Hatch Point Habitat Management Plan (150,400 acres total)
-  Beef Basin Habitat Management Plan (175,400 acres total)



**SAN JUAN
RESOURCE AREA**

5 0 5 10 15 20
Scale in miles

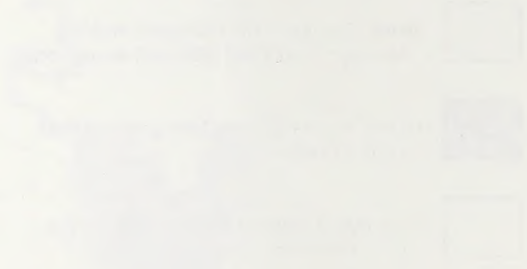


FIGURE 3 - 13
Habitat Management Plan

A R I Z O N A

C O L O R A D O

FIGURE 3-13
Hospital Management Plan



SAN JUAN
RESOURCE AREA



FIGURE 3-14
Hospital Management Plan

Deer

Deer inhabit more than half of the SJRA and are the most common big game species present (figure 3-12). Deer have always occupied their present range. The two deer herd units in SJRA (31A, San Juan-Blue Mountain and 31B, San Juan-Elk Ridge) occupy about 1,839,000 acres, of which 1,616,400 acres are winter range and 222,700 acres are summer range. Of these totals, approximately 979,300 acres of winter range and 1,000 acres of summer range fall on BLM administered lands. These acreages were calculated through cooperative efforts of UDWR and BLM personnel.

Seven geographic areas (about 197,550 acres) provide winter habitat for high concentrations of deer (figure 3-12). Because of the established winter use, these areas are considered to be crucial deer winter habitat.

Summer habitat for small numbers of deer is found in two geographic areas adjacent to the Manti-LaSal National Forest (NF). Public lands provide 1,000 acres (about 1 percent) of the summer habitat used by the two deer herd units. A few deer inhabit parts of the SJRA yearlong.

Deer population estimates were derived through cooperative efforts of BLM and UDWR personnel and are shown by grazing allotment in appendix O. The populations appear to be increasing, as fawn production is approaching its highest level in the past 13 years [Jense, et al., 1984].

Oil and gas leasing category 2 protects 216,190 acres of deer winter range between December 1 and March 31 (figure 3-1). A HMP was developed for Beef Basin in 1982.

Deer are widely hunted in SJRA. In 1985, 2,990 hunters harvested 1,161 bucks in herd unit 31A and 225 bucks and 91 does in herd unit 31B, for a total harvest of 1,477 deer [Jense, 1986]. Nonconsumptive use involves viewing deer in their natural habitat. Nonconsumptive use is incidental to hiking or sightseeing.

Riparian and Aquatic Habitats

Streams, water courses, and rivers on public lands in the SJRA total about 480 miles (table 3-6). This includes one side of the Colorado River, which borders the SJRA on the north, and the San Juan River, which borders on the south. Related riparian areas total about 1,500 acres on public land, using an average corridor width of 25 feet (figure 3-12). Major waterways are shown in figure I-4.

Riparian areas, important wildlife habitat for many species, generally offer all four major habitat components: food, water, cover, and living space. The available water and deeper soils increase production of plant and animal biomass. The contrast with surrounding vegetation increases habitat diversity, and the linear shape of a riparian area increases the ecotone (or "edge") between the contrasting vegetation types. Riparian zones serve as connectors between habitat types and provide travel lanes for wildlife. Relatively undisturbed riparian areas can support far greater populations and far more species of wildlife than can similar areas that have been disturbed.

Livestock prefer riparian habitats because they provide readily available water, palatable vegetation, usually more gently sloping terrain, shade for cooler summer temperatures, and shelter for winter thermal cover. Riparian areas in the SJRA have historically been grazed by livestock, as evidenced by mature cottonwood stands from which the young trees have been consumed. Losses have also occurred because of wood cutting.

Not all riparian areas support aquatic habitat. Aquatic habitat is permanent or semipermanent water found in rivers, perennial streams, spring-fed ponds, or lakes and reservoirs. These habitats vary in size, temperature, turbidity, and velocity and are inhabited by various vertebrate and invertebrate species.

TABLE 3-6

Riparian and Aquatic Habitat Areas

Name of Area	Total Miles	BLM Miles	Allotment	Conflicts				
				L	O	R	M	A
<u>San Juan River</u>	58	49	Perkins Brothers	L	O	R	M	A
McCracken Canyon	3	3	McCracken					
<u>Montezuma Canyon Drainage</u>								
Cross Canyon	16	7	Cross Canyon	L		R	M	
Montezuma Creek	42	14	Cave Canyon	L			M	A
			Montezuma					
			Little Boulder					
Monument Creek	16	15	Monument Canyon	L		R	M	A
Coal Bed Canyon	16	13	Monument Canyon	L		R	M	A
			Montezuma					
Devil Canyon	15	12	Devil Canyon					
			Montezuma					
<u>Recapture Creek Drainage</u>								
Recapture Creek	31	24	East League	L	O	R	M	A
			White Mesa					
			Bulldog					
			Alkali Canyon					
Cottonwood Creek	49	29	Tank Bench-Brushy Basin	L	O	R	M	
			White Mesa					
<u>Butler Wash Drainage</u>								
Butler Wash	24	21	Tank Bench-Brushy Basin	L	O	R	M	
			White Mesa					
			Perkins Brothers					
<u>Comb Wash Drainage</u>								
Comb Wash	30	25	Perkins	L	O	R	M	
			Comb Wash					
			Texas-Muley					
Road Canyon, North Fork	8	7	Comb Wash	L			M	
			Perkins Brothers					
Road Canyon, South Fork	6	4	Comb Wash	L	O	R	M	
			Perkins Brothers					
Fish Creek, North Fork	15	14	Slickhorn	L				
			Comb Wash					
Fish Creek, South Fork	15	14	Slickhorn	L		R	M	
			Comb Wash					
Owl Creek	8	8	Comb Wash					
			Slickhorn					
Dry Wash	3	2	Comb Wash					
Mule Canyon, South Fork	8	4	Comb Wash	L	O		M	
Mule Canyon, North Fork	9	6	Comb Wash	L				
			Texas-Muley					
Arch Canyon	8	7	Comb Wash	L	O	R	M	

Key: L = Livestock grazing; O = ORV use; R = Road construction; M = Mineral Development; A = Agricultural irrigation source.

TABLE 3-6 (Concluded)

Name of Area	Total Miles	BLM Miles	Allotment	Conflicts					
				L	O	R	M	A	
<u>Lime Creek Drainage</u>									
Lime Creek	5	5	Perkins Brothers	L		R	M		
<u>Grand Gulch Drainage</u>									
Grand Gulch	30	30	Slickhorn						
Bullet Canyon	2	2	Lake Canyon						
Kane Creek	4	3	Slickhorn						
			Lake Canyon	L	O	R	M		
<u>Clay Hills Canyon</u>									
Unnamed Creek	4	3	Lake Canyon	L		R	M		
<u>Lake Canyon Drainage</u>									
Lake Canyon	2	1	Lake Canyon	L			M		
<u>Moki Canyon Drainage</u>									
Moki Canyon	5	2	Lake Canyon	L		R	M		
<u>Dark Canyon Drainage</u>									
Dark Canyon	9	9	Indian Creek						
<u>Gypsum Canyon Drainage</u>									
Gypsum Canyon	5	5	Indian Creek	L					
Fable Valley	7	7	Indian Creek	L					
<u>Indian Creek Drainage</u>									
Indian Creek	44	34	Indian Creek	L	O	R	M	A	
			Harts Draw						
Davis Canyon	4	3	Indian Creek	L	O	R	M		
Lavender Canyon	10	8	Indian Creek						
Cottonwood Creek	11	7	Indian Creek	L	O	R	M	A	
Titus Canyon	6	3	Indian Creek						
Harts Draw	24	21	Harts Draw						
<u>Lockhart Canyon Drainage</u>									
Lockhart Creek	8	5	Harts Draw	L	O	R	M		
<u>East Canyon Drainage</u>									
East Canyon Wash	17	13	Monticello Cowboy						
			East Canyon						
Big Indian Wash	9	8	Big Indian	L		R	M		
			Indian Rock						
Peters Canyon	14	5	Peters Point	L		R	M		
			Monticello Cowboy						
			Harts Draw						
<u>Colorado River</u>	14	14	Hurrah Pass	L					
<u>Red Canyon</u>	19	15	Lake Canyon	L		R	M		
TOTALS	633	481							

Key: L = Livestock grazing; O = ORV use; R = Road construction; M = Mineral Development; A = Agricultural irrigation source.

Permanent aquatic habitat is found in perennial streams and in permanent pools that occur intermittently along most drainages. Some permanent or intermittent streams have no riparian vegetation because the stream cuts through slickrock.

Both introduced and native fish species are found in the SJRA. Upper Indian Creek supports trout fisheries near the Manti-LaSal NF border. Catfish are caught in the San Juan River, and some private ponds are stocked with game fish.

Threatened and Endangered Animal Species

Habitat is managed in SJRA for bald eagle and four fish species in the San Juan River. It is possible that peregrine falcon and black-footed ferret habitat also occur in SJRA. The Endangered Species Act prohibits consumptive use of T/E species. Nonconsumptive use involves observing the species in their natural habitat and is incidental to other outdoor activities.

The bald eagle (classified as endangered) is a winter resident in the SJRA; its winter habitat is fairly widespread. Most wintering bald eagles are sighted near water or along drainages with cottonwood trees. Half of the observations in the SJRA were in Cottonwood Wash; some eagles were also seen along the San Juan River and Montezuma Creek [FWS, 1983]. Stands of cottonwood trees in riparian areas are crucial to bald eagles wintering in the SJRA. The trees are needed as nocturnal roosts and perches from which to forage for mammals and waterfowl.

The eagle population in the SJRA appears stable. Ten birds were observed in 1983.

Oil and gas leasing categories along the San Juan River were intended to protect 85,325 acres of bald eagle habitat (figure 3-1), but do not coincide exactly with habitat areas.

The peregrine falcon (classified as endangered) may be a yearlong resident of the SJRA, but the species is not known to be present. There is evidence that migrant birds inhabit the area during the fall and spring.

The current population of peregrine falcons in southeastern Utah is unknown; however, peregrine falcon populations have declined in Utah as they have nationally [FWS, 1983]. No peregrine falcons or nest sites have been confirmed within the SJRA. A survey of the SJRA was made by FWS in 1983, and no peregrine falcons or eyries were discovered on public lands within the SJRA; however, two eyries have been located on adjacent USFS lands and in Canyonlands NP. The SJRA does, however, contain suitable habitat for peregrine falcons. The canyons of Grand Gulch offer the best potential habitat of any surveyed parts of the SJRA.

The black-footed ferret (classified as endangered) has been confirmed historically in the SJRA [Fortenbery, 1971], but there is no conclusive evidence that the animals still inhabit the SJRA. Because the prairie dog is the primary food source of the black-footed ferret, black-footed ferret habitat is presumed to coincide with prairie dog habitat. White-tailed prairie dog colonies have been found within the SJRA, and approximately 2,210 acres of prairie dog colonies have been mapped and searched for black-footed ferrets [FWS, 1983]. It is possible that black-footed ferrets could inhabit areas with dense populations of other ground burrowing rodents that would provide a food supply.

The San Juan River is historical range for humpback chub, bonytail chub, Colorado squawfish and humpback sucker. The humpback chub and bonytail chub are listed as endangered. Both species may still be present; however, they have not been reported. The Colorado squawfish, listed as endangered, has been reported in recent years. The humpback sucker, listed as sensitive, has also been reported.

The Colorado River system, including the San Juan River, provides a harsh environment. Flow levels fluctuate widely, temperatures range from near freezing to over 90 degrees F, it carries heavy sediment loads after spring thunderstorms, and it has periods of high salinity. Only a few native species of fish have been able to adapt to these conditions. The endangered and

sensitive species listed above are among these few.

As measures have been taken to improve water quality through impoundments and other sediment reduction efforts, river water conditions have been altered. The lower flows, clearer water, and colder temperatures appear to benefit introduced species over the native endangered and sensitive species. The generalized loss of river habitat conditions favored by the endangered and sensitive fish is known to have occurred, but has not been quantified.

Specific Indicators Affected

The specific environmental indicators related to wildlife that could be affected by the alternatives described in chapter 2 are (1) desert bighorn sheep; (2) crucial bighorn sheep habitat; (3) antelope; (4) crucial antelope habitat; (5) deer; (6) crucial deer habitat; and (7) riparian/aquatic habitat and T/E species habitat.

HUMAN USES

GRAZING

One of the two purposes of this EIS is to make rangeland management decisions, as required by the U.S. District Court (see Purpose and Need, in the Introduction). The RMP/EIS will fulfill the court requirement for a grazing EIS for SJRA.

BLM administers grazing on units called grazing allotments. Allotment boundaries are defined by topography and fences. An allotment is assigned for use by a single permittee or a group (sometimes organized as a grazing association).

The SJRA administers grazing on 69 allotments held by 58 permittees (figure 3-14; allotment numbers are listed in appendix 0). Approximately 17,300 acres in the Peters Canyon and East Canyon areas have been allotted to wildlife. Approximately 3,200 acres of scattered isolated tracts are not included in any grazing allotment.

The Monucolo and Willow Creek allotments are entirely in Colorado, but are managed by Utah because of their proximity to the SJRA office

and because the operator resides in the SJRA. They were included in the San Juan/San Miguel RMP/EIS [BLM, 1984b]. Two other allotments straddle the state line, with Utah responsible for grazing management of the Bug-Squaw Canyon Allotment and Colorado responsible for the Squaw Canyon Allotment [BLM, 1982]. However, for planning purposes, the state line was used as the boundary, so the Colorado portions of both allotments were included in the San Juan-San Miguel RMP/EIS. The Utah portions of these allotments are included in the San Juan RMP/EIS.

The SJRA also administers grazing on the Hurrah Pass Allotment, part of which is in the adjoining Grand Resource Area of the Moab District, and on the East Summit Allotment which is entirely in the Grand Resource Area. Both of these allotments are included in the San Juan RMP/EIS.

The BLM has the responsibility to administer grazing within Glen Canyon NRA. This responsibility was given in Public Law 92-593 and clarified with later memorandums of understanding between the two agencies [BLM and NPS, 1972 and 1984]. (Refer to chapter 5, Consultation and Coordination.)

Grazing preference is attached to base property (private land used as a base for the grazing operation) and stay with the base property through change of land owners unless the privileges are transferred off the base property. Base properties for BLM grazing operations are generally private lands in San Juan County, Utah with some in southwestern Colorado. In some instances, leased State of Utah lands are utilized as base property.

A permittee may not graze livestock on BLM lands without authorization. This authorization is an annual grazing license or 10-year-term grazing permit which is renewable annually to the same grazing permittee, so long as the grazing regulations are met. A change can occur if the permittee (1) loses grazing preference because of serious infractions of the grazing regulations; (2) transfers grazing preference to another permittee; or (3) leases or sells the base property.

Allotment boundaries can be changed to combine allotments or parts of allotments due to transfer of grazing preference or changed to correspond to natural or cultural barriers to livestock. This is an administrative agreement and is not done through the planning process.

All allotments in the SJRA are presently used by cattle except one, which is used by sheep (appendix O). Season of use on most allotments is fall, winter and spring. Twenty-one allotments, or 3 percent of the SJRA allotted acreage (on both BLM and Glen Canyon NRA), have summer use. Four allotments, or 11 percent of the SJRA allotted acreage, are licensed for year-round use. These are generally smaller allotments of less than 2,600 acres, except for one which is approximately 226,000 BLM and Glen Canyon NRA acres.

All of the allotments were adjudicated in the 1960s based on range surveys conducted at that time. This generally resulted in a reduction in active preference of 10 to 50 percent on about half the allotments. Four allotments received increases in active preference of 20 to 250 percent. The Perkins Brothers and Indian Rock Allotments were proposed for reductions, but these were never made. Spring grazing was generally not eliminated by adjudication. The Lake Canyon Allotment had summer grazing eliminated in the early 1970s.

All grazing allotments in the SJRA are categorized to establish priorities for distributing available funds and personnel to achieve cost-effective improvement of rangeland condition and production. This process is called selective management and will put the emphasis (work force and dollars) on those allotments with the most need and where the most positive benefit could result from public investment. The SJRA groups similar allotments into one of three management categories: Maintain (M) (8 allotments, 3 percent of SJRA); Improve (I) (29 allotments, 95 percent of SJRA); or Custodial (C) (30 allotments, 2 percent of SJRA). The criteria used in allotment categorization are given in appendix D. The current management category for each allotment in SJRA was shown in appendix O.

Ecological condition of each allotment is shown in appendix O. Monitoring studies are being established on all allotments so that trend can be determined over the next 5 or more years, to 1990 or 1995 (appendix J). Ecological site trend will be used to judge the need for adjustments to livestock numbers. The condition of the range in the SJRA cannot be determined prior to evaluation of monitoring studies. BLM cannot identify specific management programs until completion of ecological site trend determinations after monitoring.

Requirements for livestock forage in the SJRA has been considered to be the average of the past 5 years licensed use, which totals 54,844 animal unit months (AUMs). This amount depends on forage production and economics in any one year. Present SJRA forage production could not meet the demand represented by total active and suspended preference (100,486 AUMs).

The relationship of livestock use to vegetation (forage) depends on the vegetative associations. All four vegetative zones are used by livestock in SJRA (figure 3-10). Three other areas of concern are riparian areas, poisonous and noxious plants, and ecologically unique areas. See the Wildlife and Vegetation sections.

The pinyon-juniper zone produces very little forage for livestock. This is due to the scarcity or absence of understory forage species caused when trees sap the moisture and nutrients and, in some areas, by shallow soils unsuitable for livestock forage species.

In many of these pinyon-juniper areas the soils and precipitation are adequate to support desirable forage species if the overstory is removed. This has been done by chaining and seeding in many areas (figure 3-10). In the 20 to 25 years since most of these seedings were completed, pinyon-juniper and sagebrush have become re-established.

Crested wheatgrass seedings have been used in these areas to increase forage. Seeded areas are grazed primarily in the fall and spring. Cattle distribution problems in these seedings

FIGURE 3 - 14
Grazing Allotments

- 4811 Grazing Allotment Number (Names given in Appendix O)
-  Grazing Category I
-  Grazing Category M
-  Grazing Category C
-  Allotted to Wildlife (17,300 acres)
-  Allotment Management Plan Prepared (1,282,520 acres)
-  Allotment Managed by Colorado BLM (10,200 acres)

SAN JUAN RESOURCE AREA

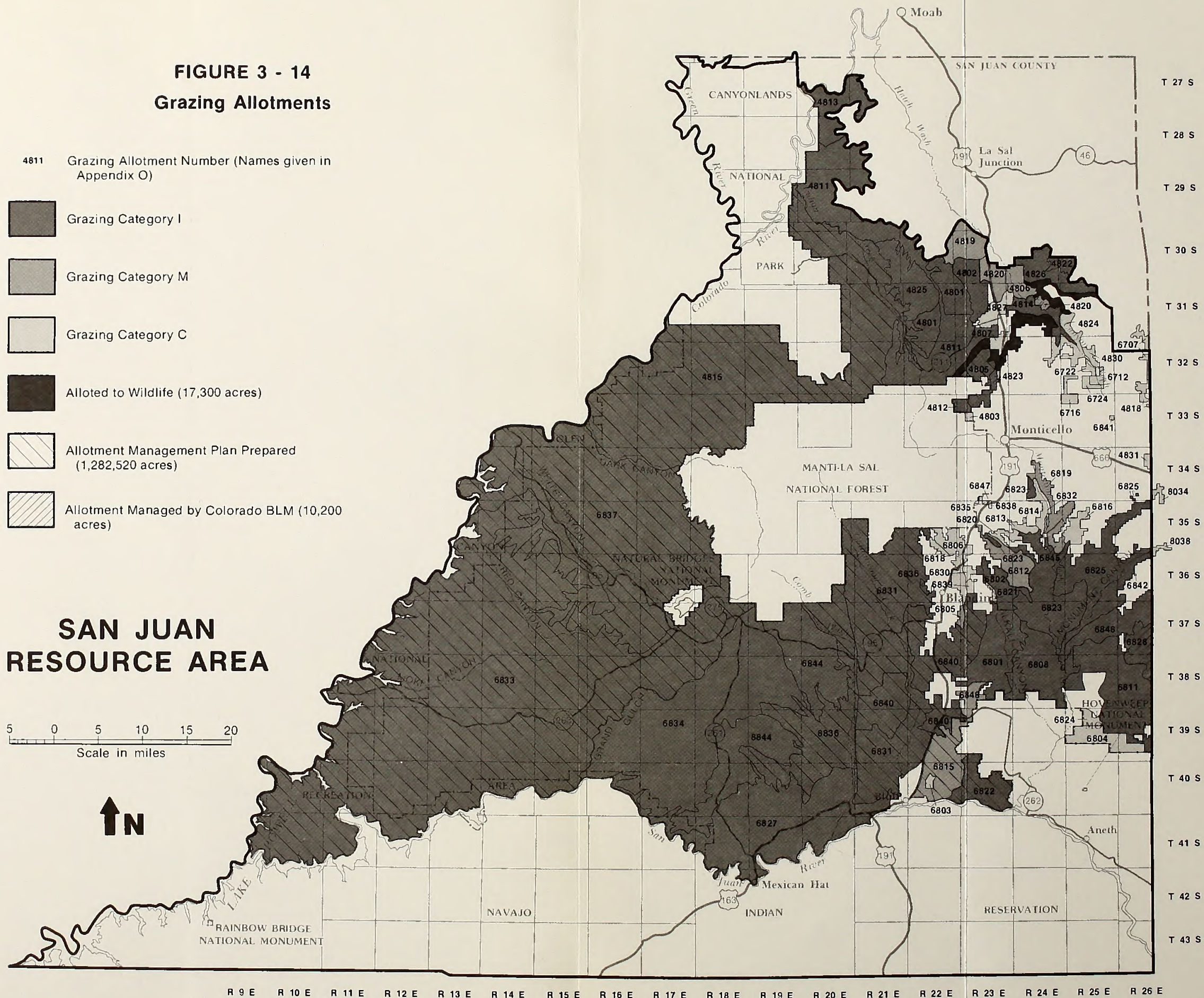
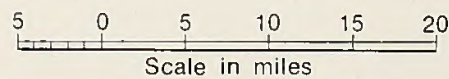


FIGURE 3 - 14
Grazing Allotments

A R I Z O N A



FIGURE 3 - 12
 San Juan River Basin Resource Data

result from lack of stock water. Some permittees haul stock water to these seedings.

Most of these seedings are losing their value for grazing and should be treated within the next 5 to 10 years to control reinvasion of trees and shrubs, if their usefulness for livestock grazing is to be maintained.

The saltbush zone generally produces a mixture of browse and grass species for livestock. Most of these areas are accessible to livestock, but use is often limited or precluded by a lack of stock water. Reservoirs are the main source of water. The one sheep allotment in the SJRA includes a saltbush zone. All other use in this zone is by cattle.

The sagebrush zone includes some of the better winter grazing areas in the SJRA, as well as areas with very little grazing value. These areas are generally accessible to cattle, but often lack adequate stock water. Most of these areas are now used by cattle during fall, winter, and spring, except one allotment which is still used by sheep during this same season. Areas with little grazing value are primarily big sagebrush with very little perennial grass understory.

Blackbrush zones support stands of forage species and are useful for livestock grazing during fall, winter, and spring. Blackbrush itself is generally not used by cattle if other forage is available.

Riparian areas are generally accessible to livestock and are heavily utilized because of their lush vegetation, available water, and shade.

Poisonous and noxious plants are present throughout the SJRA, but generally do not occur in concentrations that would pose a significant threat to livestock. The most serious known incident caused the loss of 24 cattle from copperweed poisoning in 1967 [BLM, 1976]. Losses from grass tetany are estimated to be fewer than 5 head per year.

Ecologically unique areas include some of the isolated mesa tops scattered throughout the

area. Hanging gardens along seeps in canyons contain unique species confined to limited habitats.

Monitoring will be used to establish forage production figures based on livestock utilization of forage and range trend. The SJRA can produce forage sufficient to meet the demand for full active preference (79,098 AUMs). However, it is believed that implementation of grazing systems on allotments with the potential to respond to intensive management would produce more livestock forage. Vegetative manipulations, such as chaining, plowing, and herbicidal applications, are possible on many areas to increase livestock forage production.

Grazing use in the SJRA is based on historical use and on the availability of forage and water. Grazing use in the area began in 1879. Since the 1950s, cattle have grazed public lands in the SJRA more than sheep.

BLM lands have been used primarily for winter and early spring grazing (November 15 through June 1), and for year-round grazing where livestock water is available. Forest lands provide summer grazing for many of the livestock wintering on public lands [Peterson, 1975].

Distribution of use has been uneven in some allotments. Problems are associated with availability of water or access to livestock forage. Livestock water is generally scarce over the entire area. The overall effect on grazing of the presence and absence of water is to create heavy livestock utilization of forage near the water and little or no use in areas without water. Permittees have used reservoirs, rock tanks, springs, wells, and pipelines where possible.

The availability of surface water tends to be seasonal. Streams with year-round water are uncommon. Some areas have no surface water and can be used by livestock only on snow or when water is hauled to these areas. Where water is hauled in, the permittee sometimes has problems with vehicular access within the allotment.

Springs and seeps are dependable water sources, but usually do not produce adequate water for

the number of livestock that could use the area, or are inaccessible to livestock. Many of the more productive springs have been developed to collect water for livestock use.

Wells provide dependable water but they are not numerous. Drilling for water has a low success rate in much of the SJRA because the aquifers are absent or are too deep.

Season of use is a concern in some allotments where grazing extends into the spring growing period (generally March 15 through May 30). These allotments are listed in table 3-7. Season of use is also a concern in winter use pastures where shrubs are present. Reducing the number of livestock in an allotment or in a pasture is not a viable alternative to achieve rest for plants. Desirable livestock forage plants are grazed first regardless of the number of livestock in a parcel of range. Total forage production is therefore reduced, with a resultant loss of carrying capacity. Reductions in active grazing preference would then be necessary. Specific allotments that require adjustments in grazing preference will be identified at the RPS or AMP level after completion of the RMP/EIS.

Land treatment and management facilities in the area serve to provide additional livestock forage; make unusable areas usable (addition of water and access); provide for more uniform distribution of livestock; provide for more intensive management, including rest periods for improved ecological condition; and aid in control and handling of livestock. These facilities have been funded and constructed either (1) entirely by the grazing permittees, (2) entirely by BLM, (3) with use of Grazing Advisory Board funds (a 12.5 percent amount derived directly from paid grazing fees), or (4) by a combination of any of these sources. Generally the grazing permittees are responsible for maintaining most structural improvements such as fences, wells, and reservoirs, while BLM has is responsible to maintain nonstructural improvements such as seedings. No new seedings have been initiated since 1972.

AMPs give specific guidance for management of a grazing allotment. There are nine AMPs in the

SJRA that were written in the late 1960s and early 1970s. Seven are no longer followed to the letter of the plan because of changes in land status and operators, limited project funding, moratoriums against vegetation treatments, and the fact that some plans have been found to be unworkable. Informal changes have been made to compensate for these situations, but the AMPs have not been formally revised. AMP status is shown in appendix P.

Allotments with potential to respond to livestock manipulation techniques, and those with potential for vegetation treatments, are shown in table 3-7.

Development conflicts between oil and gas exploration and livestock grazing have been identified in the McCracken Wash, Cross Canyon, Alkali Canyon, and White Mesa Allotments. Most of the forage loss or disturbance is short-term, and grazable livestock forage is re-established in 2 to 10 years. Long-term forage loss from oil and gas production facilities in this area has occurred on approximately 500 acres.

Cattle and desert bighorn sheep or antelope do not compete for forage, space, or water at present, because they generally do not occupy the same areas at the same time. However, there is the potential for conflict to occur if livestock water developments, trails, or vegetation treatments lead to occupation of the same areas at the same time.

Specific Indicators Affected

The specific environmental indicator related to grazing that could be affected by the alternatives described in chapter 2 are (1) area available for grazing and (2) amount of livestock forage (in AUMs).

CULTURAL RESOURCES

Cultural resources include both historic and prehistoric sites. The BLM also manages natural history and paleontological resources.

Cultural resources are the remains of human activity, occupation, or endeavor reflected in districts, sites, structures, buildings,

TABLE 3-7

Grazing Allotments with Potential for Special Management

Livestock Manipulation Techniques ^a		Vegetation Treatments ^c		Season of Use Problems ^d	
	Acres ^b		Acres		Season of Use
Alkali Canyon	23,910	Alkali Canyon	8,600	Alkali Canyon	11/1 to 5/31
Alkali Point	7,690	Alkali Point	3,000	Big Indian	12/5 to 5/25
Big Indian	12,100	Big Indian	700	Black Steer	12/1 to 4/30
Black Steer	4,300	Cave Canyon	1,700	Bug-Squaw	1/1 to 5/20
Bug-Squaw	20,300	Comb Wash	13,140	Cave Canyon	11/1 to 5/15
Cave Canyon	29,400	Cross Canyon	11,600	Church Rock	12/1 to 5/31
Comb Wash	65,600	East Canyon	1,360	Cross Canyon	11/1 to 5/15
Cross Canyon	25,200	Harts Draw	4,760	Dry Valley-Deer Neck	12/1 to 5/10
Dry Valley-Deer Neck	3,600	Harts Point	3,080	East Canyon	12/1 to 4/30
East Canyon	4,500	Lake Canyon	22,160	Harts Draw	10/16 to 6/15
East League	16,100	Lone Cedar	4,460	Harts Point	12/5 to 5/31
Harts Draw	80,500	Montezuma Canyon	2,800	Hurrah Pass	11/25 to 4/15
Harts Point	20,500	Monument Canyon	6,700	Indian Rock	11/15 to 5/15
Hurrah Pass	14,000	Perkins Brothers	200	Lone Cedar	12/1 to 4/30
Indian Creek	234,700	Peters Point	2,480	Mail Station	11/1 to 5/15
Lake Canyon	610,800	Slickhorn	68,060	Montezuma Canyon	11/1 to 5/31
Lone Cedar	18,000	Spring Creek	1,280	Monticello Cowboy	11/16 to 4/30
Mail Station	9,200	Spring Creek West	1,360	Owens Dugout	11/25 to 5/20
McCracken	15,300	Tank Bench-Brushy Basin	14,780	Peters Canyon	11/16 to 5/15
Montezuma Canyon	29,400	Texas-Muley	38,540	Perkins Brothers	11/1 to 5/31
Monticello Cowboy	4,000	White Canyon	32,890	Slickhorn	10/16 to 6/15
Monument Canyon	33,500	White Mesa	21,160	Tank Draw	12/1 to 4/30
Perkins Brothers	109,000	Total acreage	264,810	Texas-Muley	11/15 to 5/31
Peters Point	4,000				
Slickhorn	133,000				
Squaw Canyon	10,200				
Tank Bench-Brushy Basin	94,000				
Tank Draw	9,100				
Texas Muley	67,700				
White Canyon	226,000				
White Mesa	52,000				
Total Acreage	1,997,600				

^aLivestock manipulation techniques would include fencing, water developments and grazing rotation schemes.

^bBLM and Glen Canyon NRA acres.

^cVegetation treatments would include chaining, plowing, and application of herbicides. All allotments listed are in the "I" category.

^dGrazing occurs in all or part of the allotment every year during the spring growing season, and the allotment is not under an AMP.

objects, artifacts, ruins, works of art, architecture, and natural features that were important 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. Cultural resources provide a record of events from the earliest evidences of man to the near present. They are a nonrenewable resource; historic or prehistoric sites can be re-created, but they cannot be replaced.

Cultural resource uses can be allocated through nomination to the National Register of Historic Places; special designations such as areas of critical environmental concern (ACECs) and conservation areas; or identification of American Indian tribal, religious, or cultural sites.

Natural history resources are ecologic or geologic features significant to the nation's natural heritage. Many natural history resources in southeast Utah are managed by the NPS, such as Natural Bridges National Monument (NM). Significant ecologic or geologic features can also be found on public lands in SJRA, such as in Dark Canyon, Grand Gulch, or isolated rock arches.

Paleontological resources are fossils; these can be found in almost all surface geologic formations in SJRA. In particular, the Morrison Formation is known for dinosaur fossils, and the Chinle Formation for petrified wood.

Use allocations of natural history resources can be achieved through national natural landmarks, ACECs, RNAs, ONAs, or other specific designations. Paleontological resources other than petrified wood are not directly allocated.

Archaeologically, SJRA is one of the richest locales under BLM management. Of the approximately 17,000 recorded sites in San Juan County, it is estimated that over 10,000 are situated on public lands. Archaeologists estimate that the SJRA may hold as many as 200,000 sites. Historic resources include the Hole-In-the-Rock (Mormon) Trail, Navajo hogans and sweat houses, and Ute pine nut gathering camps. Prehistoric

resources include isolated Paleo-Indian projectile points, Archaic camps, Basketmaker burial caves, Pueblo rubble mounds, and Hopi pot drops. Table 3-8 lists some of the more important sites; these have been listed in the National Register of Historic Places, or are potentially eligible for listing (figure 3-15).

The condition of cultural resources in the SJRA varies from poor to excellent. Their preservation is aided by the dry climate. Many sites have been disturbed or destroyed through human activity over the past 100 years. It is now difficult to find undisturbed cultural resources.


Current management of cultural resources in the SJRA emphasizes protection from direct and indirect impacts of surface disturbing activities. Since 1982, the most common have been oil and gas exploration and development, pot hunting, and recreation use. Exploration and development for other types of minerals, grazing and related land treatments, and lands disposal actions also carry the potential to interfere with protection of cultural resources. Indirect impacts to cultural resources, such as surface collection of artifacts or inadvertent damage caused by rehabilitation work, can have a profound cumulative adverse effect.


Natural history and paleontological resources in the SJRA are not now actively managed; although no formal inventory has been done, these values would be considered in assessing impacts of site-specific proposals through the NEPA process.


BLM evaluates cultural resources according to seven use categories: current scientific use, potential scientific use, conservation for future use, management use, socio-cultural use, public use, and discharged use.

The SJRA can be broadly divided into five zones based on the cultural resources present. These areas are (1) north of the Abajo Mountains; (2) around Monticello and Blanding; (3) Grand Gulch Plateau; (4) southwest of the Abajos and south of Dark Canyon; and (5) Dark Canyon, Fable Valley, and Beef Basin. Acreages for the zones are given in table 3-9. The zones are shown in

FIGURE 3 - 15
Cultural Resources

-  **Designated National Properties and Districts**
 1. Alkali Ridge National Historic Landmark (2,340 acres)
 2. Sand Island Petroglyph National Register Site
 3. Hole-in-the-Rock Trail National Register Site (6,110 acres)
 4. Butler Wash National Register Archaeologic District (2,030 acres)
 5. Grand Gulch National Register Archaeologic District (4,240 acres)

-  **Potential National Register Eligible Properties and Districts**
 6. River House Ruin
 7. Three Kiva Pueblo
 8. Butler Wash Ruin
 9. Mule Canyon Ruin
 10. Beef Basin Archaeologic District (34,130 acres)
 11. Cedar Mesa Archaeologic District (349,640 acres)
 12. Fable Valley Archaeologic District (5,030 acres)
 13. Indian Creek Canyon Archaeologic District (740 acres)
 14. Montezuma Creek Archaeologic District (9,970 acres)
 15. Tin Cup Mesa Archaeologic District (2,610 acres)

-  **Cultural Resource Use Zone**
 - A. North Abajo Zone (275,000 acres)
 - B. Monticello - Blanding Zone (500,000 acres)
 - C. Grand Gulch Plateau Zone (400,000 acres)
 - D. Southwest Abajo Zone (440,000 acres)
 - E. West Abajo Zone (165,000 acres)

Note: Not all designated or potentially eligible cultural properties and archaeological districts have been shown.

SAN JUAN RESOURCE AREA

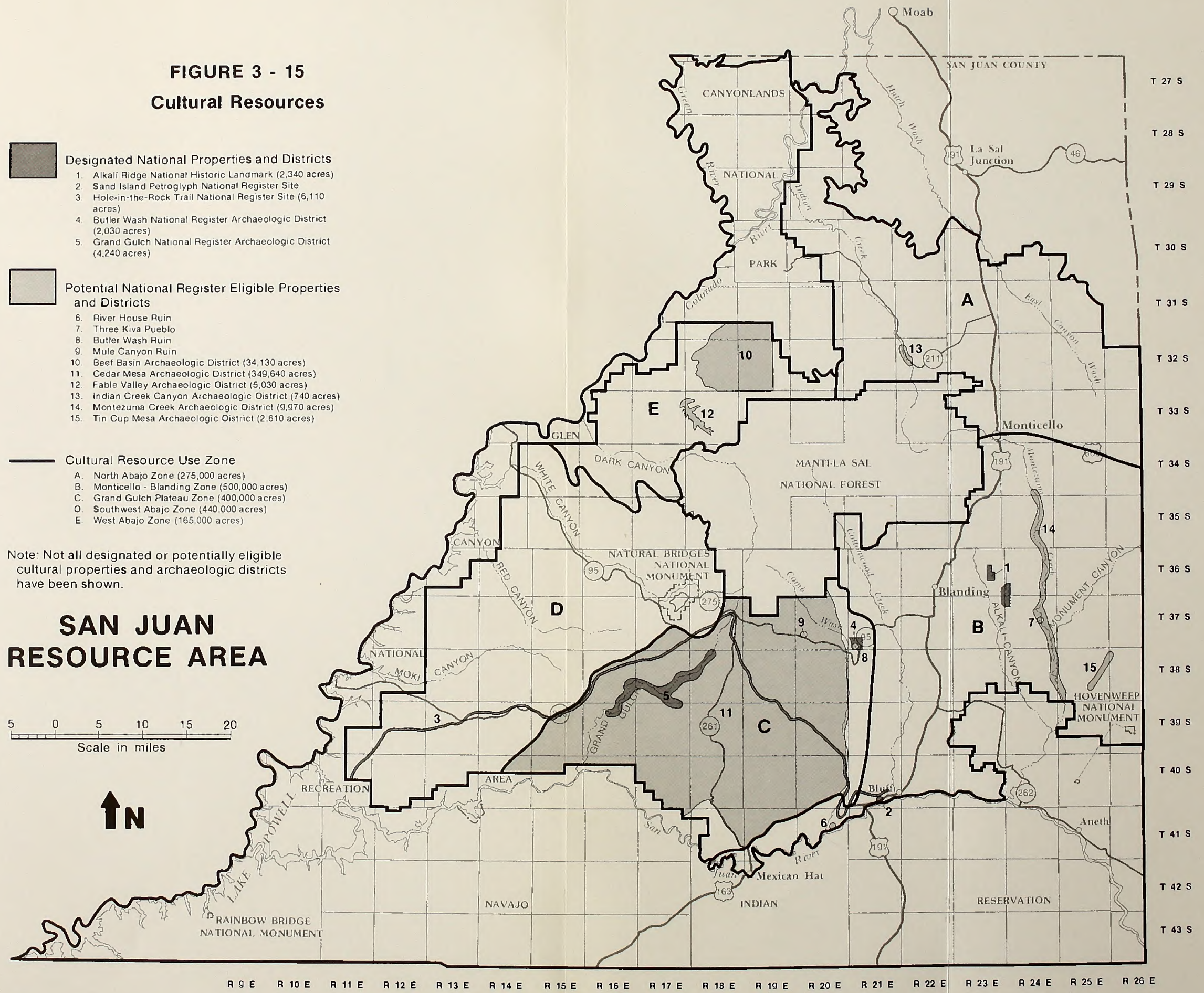
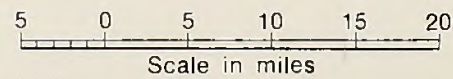


FIGURE 3 - 15
Cultural Resources

A R I Z O N A

C O L O R A D O



PLATE 3-12

San Juan River Basin

SAN JUAN RIVER BASIN AREA

PLATE 3-12

San Juan River Basin

TABLE 3-8

Cultural Resource Properties and Archaeologic Districts

<u>Category and Name of Site or Area</u>	<u>Year of Designation</u>	<u>Acreage</u>
National Historic Landmarks		
Alkali Ridge	1985	2,340
National Register Cultural Properties		
Big Westwater Ruin	1974	less than 1
Sand Island Petroglyph	1980	less than 1
Hole-in-the-Rock Trail	1980	^a 6,110
National Register Archaeological Districts		
Butler Wash	1981	2,025
Grand Gulch	1982	4,240
Potential National Register Eligible Cultural Properties		
Davis Canyon Archaeoastronomy Sites		less than 1
Kachina Panel		less than 1
Monarch Cave		less than 1
Moon House Ruin		less than 1
Mule Canyon Ruin		less than 1
River House Ruin		less than 1
Ruin Springs		10
Shay Canyon Petroglyph		less than 1
Three Kiva Pueblo		less than 1
Three Story Ruin		less than 1
Potential National Register Eligible Archaeological Districts		
Beef Basin		34,130
Cedar Mesa		349,640
Fable Valley		5,030
Indian Creek Canyon		740
Montezuma Creek		9,970
Tin Cup Mesa		2,610
Potential Indian Tribal, Religious, or Cultural Sites/Areas		
Bears Ears		1,000
Sacred Mountain		40

^aWithin SJRA, corridor is 126 miles long and 400 feet wide.

TABLE 3-9

Proposed Cultural Resource Use Zones

<u>Area</u>	<u>Approximate Acres</u>	<u>Approximate % of SJRA</u>	<u>Anticipated Uses</u>
North Abajo	275,000	16	Potential scientific use Public use
Monticello-Blanding	500,000	28	Current scientific use Potential scientific use Management use
Grand Gulch Plateau SRMA	400,000	22	
Grand Gulch			
Archaeological District	(5,000)	(less than 1)	Potential scientific use Management use Public use
Remainder of Grand Gulch Plateau SRMA	(395,000)	(22)	Conservation for future use Socio-cultural use Public use
Southwest Abajo	440,000	25	Potential scientific use
West Abajo	165,000	9	
Dark Canyon	(102,500)	(6)	Potential scientific use
Fable Valley	(2,500)	(less than 1)	Conservation for future use
Beef Basin	(60,000)	(3)	Potential scientific use Public use

NOTE: Acreages include only BLM administered public lands. Numbers in parentheses are components of area total.

figure 3-15. BLM management would concentrate on the cultural resource uses shown in table 3-9.

Some areas have particularly important cultural resources in place, and have potential for specific management uses. The most important are the area north of the Abajo Mountains, the Alkali Ridge-Montezuma Canyon area, and the Grand Gulch Archaeological District. These three areas are believed to have potential for ACEC designation, based on the relevance and significance of cultural resources present (table 2-6, figure 2-4, and appendix H).

The North Abajo area (65,450 acres public land) contains nationally significant rock art sites. It is a transition zone between the northern edge of the Anasazi culture and the southern edge of the Fremont culture. Increasing unsupervised recreational use threatens cultural resources in this area. Use is related to both ORVs and backcountry users. It would be managed for conservation for future use and public use of cultural resources. Newspaper Rock State Park falls into this area, as well as other state and private inholdings (7,120 acres of state and 4,880 acres of private lands). Shay Canyon (about 1,770 acres of public lands), in particular, has well-preserved rock art sites (figure 2-6). There are 40 acres of state inholdings and 200 acres of private land in this area.

The Alkali Ridge-Montezuma Canyon area (170,320 acres public lands) contains the Alkali Ridge National Historic Landmark (figure 3-15). It is nationally significant because of the wealth of Basketmaker and Pueblo village sites. Site densities reach 200 per square mile. Heavy development, particularly related to oil and gas exploration and development, land treatments for livestock grazing, and vandalism have threatened cultural resources in this area. It would be managed for potential scientific use and management use. About 21,040 acres of state land and 23,000 acres of private lands are inheld.

The area between Alkali Canyon and Montezuma Canyon (35,890 acres of public land) is especially significant (figure 2-6). About

4,400 acres of state land and 1,320 acres of private lands are inheld in this area.

South of the Alkali Ridge area, several significant ruins have been included in the Hovenweep NM. The Square Tower ruin is within a 400-acre unit of the NM. Public lands surrounding this unit also have similar types of cultural resources.

The Grand Gulch Archaeological District (4,240 acres, all public land) contains cultural resources of national and worldwide significance because of the wealth of intact Pueblo cliff dwellings. Rock art panels are also significant. The area falls within the Grand Gulch Primitive Area. Intense recreational use and vandalism have threatened cultural resources in the area. It would be managed for potential scientific and public use.

On public lands, a cultural clearance is performed before development activities take place, to identify cultural sites that may be present. The clearance is generally done by either an archaeological contractor or a BLM archaeologist.

Sites are usually avoided instead of being tested or excavated. If it appears to be impossible to redesign a project to avoid a cultural site, the site can be tested to see if it is eligible for the National Register. If the site is found to be eligible, it is either avoided (at the expense of abandoning the project) or more completely excavated. Sites are also excavated prior to stabilization or to assess impacts caused by development activities.

Sites may be stabilized if (1) they are highly visible and heavily visited; (2) money has already been invested in them; (3) they are in imminent danger of destruction, or (4) they present a danger to public safety.

Specific Indicators Affected

The specific environmental indicator related to cultural resources that could be affected by the alternatives described in chapter 2 are (1) the number of archaeological and historic sites damaged and (2) the number protected.

RECREATION

The SJRA attracts recreationists from throughout the United States and abroad. White water rafting, backcountry use, archaeological observation, ORV use, and sightseeing are the major recreational activities in SJRA. The San Juan River, the deeply incised canyons, and the extensive archaeological resource contribute to these activities.

Visitor use, both motorized and nonmotorized, is expected to increase substantially by 2000. A mix of recreational settings will have to be maintained if opportunities for these uses are to be provided.

The BLM uses the recreation opportunity spectrum (ROS) as a tool to characterize demand for various types of recreational settings and opportunities and the capability of the public land to provide such experiences. It provides a conceptual framework for inventory, planning, and management of the recreation resource. To facilitate its use in planning, the ROS is divided into six classes: primitive (P); semi-primitive nonmotorized (SPNM); semiprimitive motorized (SPM); roaded natural (RN); rural (R); and modern urban (U). Each class is defined in terms of a combination of activity, setting, and experience opportunities (appendix F). Table 3-10 gives the factors considered for each ROS class.

The ROS classes are established as a result of an inventory, and while used as an analysis tool in the RMP process, do not derive from it. See figure 3-16 for locations of the various ROS class areas. Table 3-11 shows the approximate acres in each ROS opportunity class in the SJRA.

The settings toward the primitive end of the spectrum tend to be the most crucial in the SJRA because they contain the least acreage and are most in demand, and because many management actions tend to change the setting away from the primitive end of the spectrum. River rafting, back country hiking, camping, and ORV use occur mainly in the P, SPNM, and SPM ROS classes; sightseeing occurs mainly in the RN class.

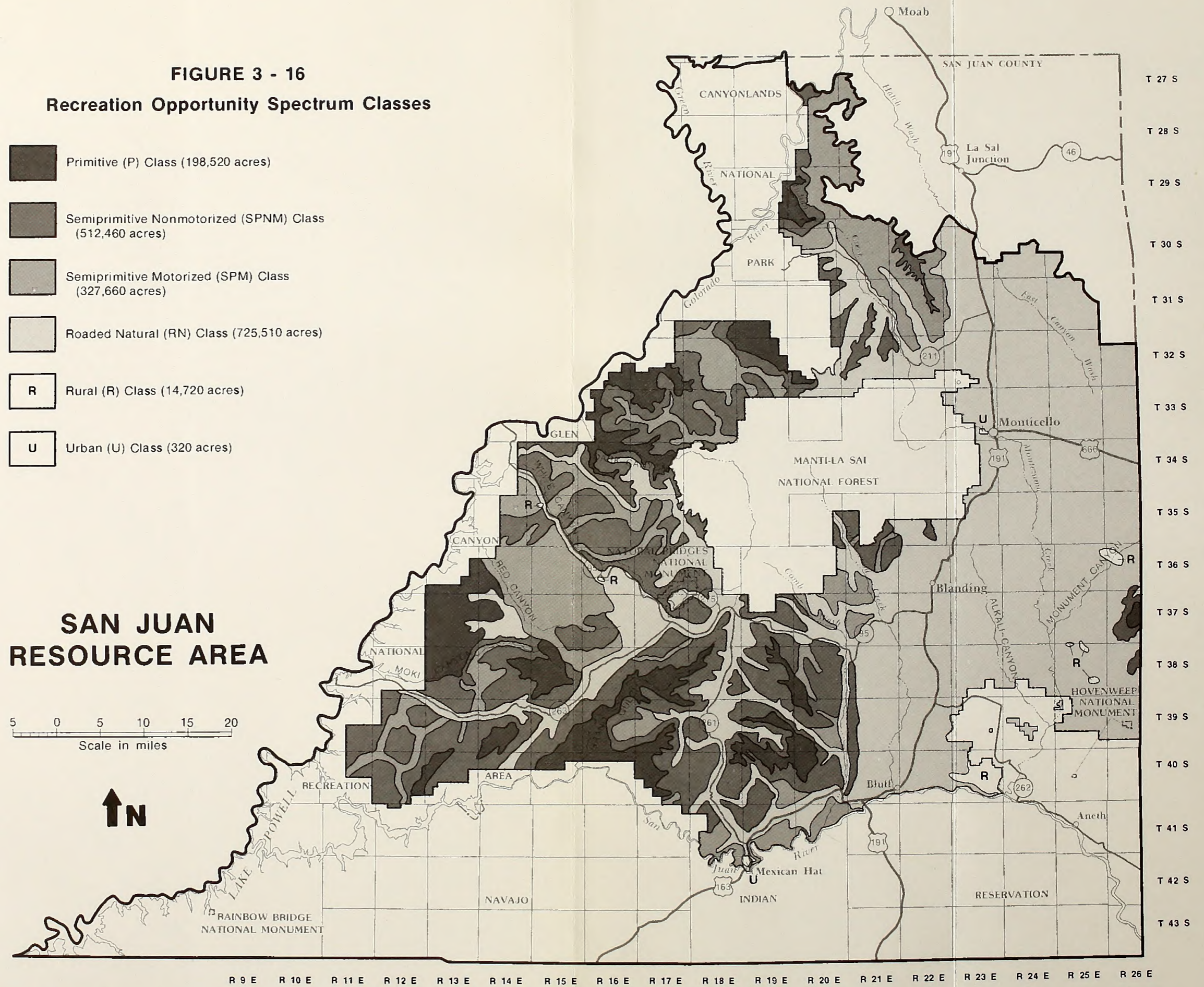
The BLM is required to allocate ORV use by designating all the lands within the SJRA as open, closed, or limited for ORV use (43 CFR 8342). The designations and process are explained in appendix E. Designations are formulated through the RMP process by identifying and resolving conflicts among various surface uses. Designations are implemented a year after the RMP is completed. The designations do not distinguish between recreational and nonrecreational ORV use. They do not refer to nonmotorized mechanical vehicles such as bicycles, nor to licensed motorboats.

In the past the BLM recognized areas with primitive recreation values by designating primitive areas (43 CFR 8352). This type of value will in the future be recognized by Congressional designation of wilderness areas. After completion of the BLM wilderness review, the primitive area designation will be dropped. Primitive areas are managed to maximize primitive recreation use, minimize interference with natural ecological processes, and preserve the primitive recreation values of solitude, inspiration, and mental and physical challenge.

Alternative designations for the primitive areas, if found to be appropriate, can be made through the RMP process, regardless of the eventual action of Congress on wilderness suitability recommendations. The RMP could serve as a basis for designation of ONAs (43 CFR 8352) or other special management designations for the primitive areas or other areas, if qualifying.

Special recreation management areas (SRMAs) are areas used heavily for recreation. They are recognized as requiring special management and control to ensure their protection, solve visitor health and safety problems, mitigate conflicts, or provide the public with scarce recreation opportunities that would be unavailable without special management. An activity plan is prepared to guide management of an SRMA. Recreational use in an SRMA may or may not require a special recreation permit (43 CFR 8372.1). The remainder of the resource area outside an SRMA is called an extensive RMA.

SRMAs are defined and designated by the BLM manager as an administrative action, based on



C O L O R A D O

FIGURE 3 - 16
Recreation Opportunity Spectrum Classes

A R I Z O N A

TABLE 3-10

Recreation Opportunity Spectrum Class Criteria

	<u>Primitive</u>	<u>Semiprimitive Nonmotorized</u>	<u>Semiprimitive Motorized</u>	<u>Roaded Natural</u>	<u>Rural</u>	<u>Modern Urban</u>	
Remoteness	At least 3 miles from all roads or railroads.	At least 0.5 mile from all roads or railroads.	Within 0.5 mile of primitive roads and at least 0.5 mile from better than primitive roads.	Within 0.5 mile of better than primitive roads.	No distance criteria.	No distance criteria.	
Size	5,000 acres ^a .	2,500 acres ^b .	2,500 acres ^b .	No size criteria.	No size criteria.	No size criteria.	
Evidence of Human Use	Unmodified natural environment; surface disturbance rare and small; trails OK, but no roads; structures small and rare.	Setting may have subtle modifications; surface disturbance limited and small; little or no evidence of primitive roads or motorized use; small, isolated structures may be present.	Setting may have subtle modifications; surface disturbance limited and small; primitive roads and motorized use are present; small, isolated structures may be present.	Moderate evidence of human modification harmonious with landscape; surface modification common; roads and highways present; structures scattered and visually subordinate; recreation facilities small and rustic.	Setting substantially modified; surface modifications typical; roads and highways present; cultivated lands common; structures readily apparent in small, dominant clusters; developed recreation facilities.	Natural setting subordinate to culturally modified landscapes.	
Social Setting	Fewer than 6 parties encountered on trail per day; fewer than 3 parties visible at campsite; little evidence of previous recreation use.	Six to 10 parties encountered on trail per day; fewer than 6 parties visible at campsite; limited evidence of previous recreation use.	Low to moderate contact frequency.	Frequency of contact is moderate in developed sites and on roads; low to moderate elsewhere.	Frequency of contact is moderate to high in developed sites and on roads and trails; moderate elsewhere.	Large numbers of users onsite and in nearby areas.	
Managerial Setting	Offsite controls only, none onsite; onsite facilities for resource protection only; no facilities for user convenience or safety.	Offsite controls preferred, onsite controls are avoided but may be provided for resource protection or user safety.	Onsite controls present but subtle; facilities for resource protection and user safety and law enforcement occasionally visible.	Onsite controls noticeable, but harmonious with natural environment; rustic facilities for user convenience, resource protection, and law enforcement occasionally visible.	Onsite controls obvious and numerous; facilities widely available for user convenience, safety, special activities and resource protection; law enforcement moderately visible.	Onsite controls are numerous. Facilities for intensive use are provided. Law enforcement is highly visible.	

^aMay be smaller if adjacent to semiprimitive nonmotorized class.

^bMay be smaller if adjacent to primitive class.

TABLE 3-11

Recreation Opportunity Spectrum Classes, by Area

A R E A	Acres, by Opportunity Class							Area Total
	P	SPNM	SPM	RN	R	U		
<u>Existing SRMAs</u>								
San Juan River SRMA	0	0	9,830	5,100	130	40		15,100
Grand Guich Plateau SRMA	69,700	195,600	37,200	82,500	0	0		385,000
Dark Canyon SRMA	38,550	23,490	0	0	0	0		62,040
San Juan Extensive RMA	<u>90,270</u>	<u>293,370</u>	<u>280,630</u>	<u>637,910</u>	<u>14,590</u>	<u>280</u>		<u>1,317,050</u>
TOTAL EXISTING	198,520	512,460	327,660	725,510	14,720	320		1,779,190
<u>Potential SRMAs</u>								
Indian Creek SRMA	6,540	22,980	27,520	22,960	0	0		80,000
Beef Basin SRMA	13,950	26,710	25,790	0	0	0		66,450
Montezuma Creek SRMA	0	0	0	5,300	0	0		5,300
SUBTOTALS	<u>20,490</u>	<u>49,690</u>	<u>53,310</u>	<u>28,260</u>	<u>0</u>	<u>0</u>		<u>151,750</u>
Revised San Juan Extensive RMA ^a	<u>69,780</u>	<u>243,680</u>	<u>227,320</u>	<u>609,650</u>	<u>14,590</u>	<u>280</u>		<u>1,165,300</u>
TOTALS	90,270	293,370	280,630	637,910	14,590	280		1,317,050
TOTAL PROPOSED	198,520	512,460	327,660	725,510	14,720	320		1,779,190

^aRepresents the remaining acreage. The total acres for potential SRMAs plus the acreage for the revised San Juan Extensive RMA equals the acreage of the existing San Juan Extensive RMA given above.

public intent, high use, and public welfare. This is usually done outside the planning process; however, the RMP could identify areas to be managed as SRMAs.

Three areas (the San Juan River, Grand Gulch Plateau, and Dark Canyon Primitive Area) have been designated SRMAs since 1981 (table 3-11 and figure 3-17). The remaining portion of the SJRA has been designated as the San Juan Extensive RMA. On these lands, most recreation use is dispersed, and resource protection and user conflict resolution needs are at lower levels than within SRMAs. Visitor use data for the SRMAs and the extensive RMA, for 1984, are given in table 3-12.

The SJRA manages six developed recreation sites within the SJRA (totaling about 150 acres) (table 3-13 and figure 3-17). In general, the developed recreation sites are not specifically closed to other resource uses; however, they are closed to woodland product use. Two sites have potential for expansion, and five more sites have potential for development. The decision to develop recreation sites is made in response to actual and potential visitor use and can be made administratively.

The SRMAs and related facilities are discussed individually, along with potential additional SRMAs.

San Juan River SRMA

The San Juan River SRMA (about 15,100 acres) encompasses the north side of the San Juan River from Montezuma Creek to the Glen Canyon NRA boundary (table 3-11). The SJRA patrols the river from Montezuma Creek 104 miles downstream to Clay Hills Crossing. The south bank of the river is within the Navajo Reservation and not managed by BLM. The north side of the river from about 18 miles below Mexican Hat to Clay Hills Crossing (about 15,000 acres) is within Glen Canyon NRA. Recreational use of this stretch of the river is managed jointly with the NPS (table I-5 and chapter 5)).

Within the San Juan River SRMA, 9,830 acres along the river corridor fall within the SPM ROS class. The area is not roaded, and could have

qualified for a P or SPNM designation, except that the river is used by motorized boats.

Criteria for management of the San Juan River were in the Federal Register (Vol. 46, No. 10, page 3642 published January 15, 1981). This outlined the need for commercial and private permits, use limits, party size restrictions, and permit stipulations for resource protection and visitor safety. The San Juan River has been listed as a potential study river under the provisions of the Wild and Scenic Rivers Act amendment of 1975, which allowed the NPS to identify and study potential additions to the wild and scenic rivers system. The NPS has not begun any studies to determine its eligibility, in whole or in part, for designation.

Use in 1984 amounted to 33,599 user days; of this, 9 percent was commercial and 91 percent was private (table 3-12). This mix has remained fairly constant since 1980. The majority of use occurs from April 15 to July 15, when higher river flows occur; however, the river generally can be run year-round.

San Juan River trips originate at three locations: Sand Island (77 percent), Mexican Hat (17 percent), and Montezuma Creek (6 percent). The Clay Hills Crossing (in Glen Canyon NRA) is used as a takeout for San Juan River trips (figure 3-17).

In season, 75 people per day (combined commercial and private use) are allowed to launch at Sand Island, and 75 at Mexican Hat. There are no use limits at Montezuma Creek, but users must reserve space at Sand Island to continue past this point. Sand Island is the most popular launch point, with 77 percent of the trips and 64 percent of the users putting in there. In 1984 the use limit at Sand Island was reached on 9 days in April, 27 days in May, and 27 days in June. Additional demand for Sand Island launches is evident.

Use limits at Mexican Hat were reached on only 9 days. In the lower portion of the river, a shortage of campsites limits use. In crowded conditions, a semiprimitive ROS setting in the Slickhorn area may not be possible because of the social setting.

TABLE 3-12

1984 Recreation Visitor Use Data

<u>Major Canyons and Day Use Sites</u>	<u>Private Use</u>	<u>Noncommercial Organized Groups</u>	<u>Commercial Use</u>	<u>Total</u>
Grand Gulch Plateau SRMA				
Grand Gulch Primitive Area ^a	12,333	2,464	2,724	17,521
Fish and Owl Creek Canyons ^a	3,041	1,412	1,710	6,163
Slickhorn Canyon ^a	380	228	64	672
Arch Canyon ^a	-----	-----	-----	482
Mule Canyon ^b	-----	-----	-----	6,444
Butler Wash Indian Ruins ^b	-----	-----	-----	3,910
Dark Canyon SRMA				
Dark Canyon Primitive Area ^c	2,135	294	301	2,730
San Juan Extensive RMA	-----	-----	-----	41,400

NOTE: Use figures are not additive because of the differing units of measure. Blanks indicate lack of data, not lack of use.

^aVisitor use days.

^bVisitors.

^cUser days.

FIGURE 3 - 17

Existing and Potential Recreation Management Areas

Existing Special Recreation Management Area (SRMA)

- 1. San Juan River SRMA (15,100 acres)
- 2. Grand Gulch Plateau SRMA (385,000 acres)
- 3. Dark Canyon SRMA (62,040 acres)

Potential Special Recreation Management Area

- 4. Beef Basin SRMA (66,450 acres)
- 5. Indian Creek SRMA (80,000 acres)
- 6. Montezuma Creek SRMA (5,300 acres)

Existing Historic Trail

- 7. Hole-in-the-Rock Trail (6,110 acres)

Existing Developed Recreation Site

- 8. Sand Island Campground (20 acres)
- 9. Mexican Hat Launch Site (10 acres)
- 10. Kane Gulch Ranger Station (40 acres)
- 11. Mule Canyon Ruin (10 acres)
- 12. Butler Wash Ruin (60 acres)
- 13. Three Kiva Pueblo (10 acres)

Existing Undeveloped Recreation Site

- 14. Clay Hills Takeout (Glen Canyon National Recreation Area)
- 15. Collins Trailhead
- 16. Government Trailhead
- 17. Bullet Canyon Trailhead
- 18. Sundance Trailhead

Potential Developed Recreation Site

- 19. Sand Island Campground Expansion (20 acres)
- 20. Mexican Hat Launch Site Improvement (10 acres)
- 21. Comb Wash Campsite (10 acres)
- 22. Arch Canyon Campsite (10 acres)
- 23. Indian Creek Campsite (20 acres)
- 24. Indian Creek Falls Campsite (10 acres)
- 25. Pearson Canyon Hiking Trail and Campsite (20 acres)

SAN JUAN RESOURCE AREA

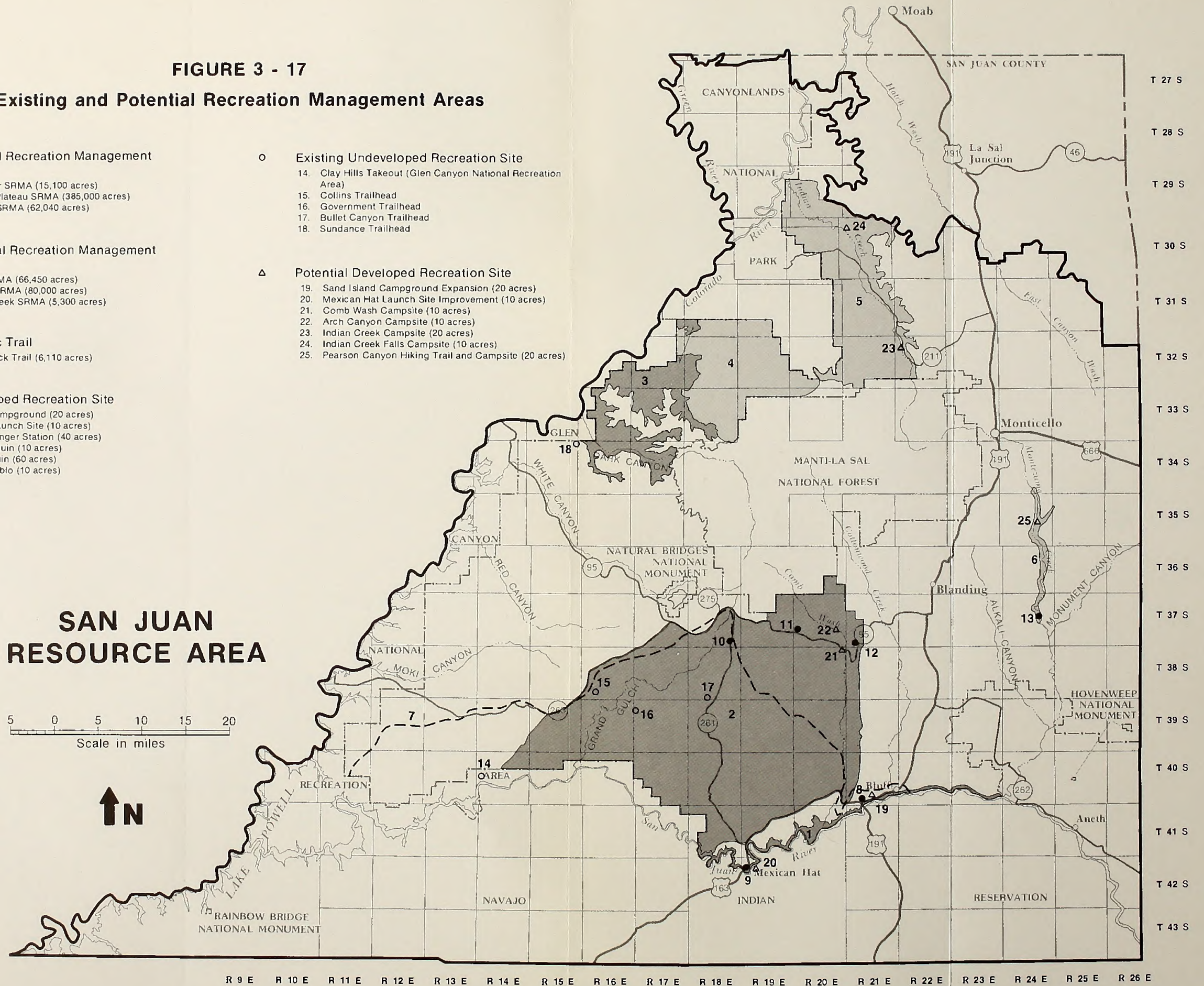
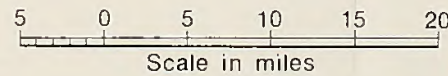


FIGURE 3 - 17

Existing and Potential Recreation Management Areas

A R I Z O N A

C O L O R A D O



TABLE 3-13

Existing and Potential Developed Recreation Sites

Name	Acres	Available Facilities					
		Camp Units	Picnic Units	Rest- rooms	Trash Pickup	Inter- pretive Display	Parking
<u>Existing Developed Sites</u>							
San Juan River SRMA							
Sand Island campground	20	5	2	Y	Y	Y	Y
Mexican Hat launch site	10	0	0	N	N	Y	Y
Subtotal	30						
Grand Gulch Plateau SRMA							
Kane Gulch ranger station	40	0	2	Y	Y	Y	Y
Mule Canyon Ruins	10	0	0	Y	Y	Y	Y
Butler Wash Ruins	60	0	0	N	Y	Y	Y
Subtotal	110						
San Juan Extensive RMA							
Three Kiva Pueblo	10	0	0	N	N	Y	Y
TOTAL	150						
<u>Potential Developed Sites</u>							
San Juan River SRMA							
Sand Island campground expansion	20						
Mexican Hat launch site improvement	10						
Subtotal	30						
Grand Gulch Plateau SRMA							
Comb Wash/U-95 interpretive site	10						
Arch Canyon interpretive site	10						
Subtotal	20						
San Juan Extensive RMA							
Indian Creek campsite	20						
Indian Creek Falls campsite	10						
Pearson Canyon hiking trail	20						
Subtotal	50						
TOTAL	100						

The Sand Island recreation site is the only developed launch point on the river. During April, May, and June the site is overcrowded. Facilities appear to be inadequate at the Sand Island recreation site. Vandalism, including driving off roads, littering, and destruction of vegetation (for fire building) is associated with the site. Just west of the Sand Island campground is a large petroglyph panel listed on the National Register of Historic Places.

The Mexican Hat launch and takeout site has limited development. The Mexican Hat site is subject to frequent use, resulting in a large amount of litter, vehicle vandalism, tire burning, and human waste.

The Montezuma Creek launch point is within the Navajo reservation and consists of an open area adjacent to the bridge. BLM has no legal access to the site.

The Clay Hills Crossing takeout point is within Glen Canyon NRA, and is also a put-in for boating on Lake Powell. There are no developments. Over 5,000 people used this site in 1984. This use, coupled with a lack of garbage and human waste facilities, has created unsanitary conditions.

Campsites (all undeveloped) along the river are not assigned, but several locations, each less than 10 acres, are used almost every night from April 15 to July 15. The sites, and results of heavy use, are as follows:

Butler Wash loss of vegetation, multiple trailing, and exposed cottonwood tree roots, probably due to recreation use and unauthorized grazing.

Comb Wash loss of vegetation and lower branches of cottonwood trees, most likely due to recreation and unauthorized grazing.

Eight Foot Rapid (on the Navajo reservation) some loss of vegetation on the upper bench.

Honaker Trail loss of vegetation at several locations used as sleeping sites. Impacts to the main beach are reduced by periodic flooding.

Johns Canyon (within Glen Canyon NRA) increasing use with camping and kitchen use areas being hollowed out of the tamarisk vegetation. Sanitation is becoming a problem.

Slickhorn Canyon (within Glen Canyon NRA and the most heavily used site below Mexican Hat) multiple trailing, expanding campsites, and increased human waste burial.

In 1979 the SJRA and Glen Canyon NRA began the scoping process for a management plan for the San Juan River. Comments were received, and an EA was begun. Due to a lack of BLM and NPS funding, the EA and management planning activities were halted in 1981 and have not been resumed.

Grand Gulch Plateau SRMA

The Grand Gulch Plateau SRMA (approximately 385,000 acres) lies in the central part of the SJRA (table 3-11 and figure 3-17). Approximately 33,000 acres of State of Utah land, and fewer than 1,200 acres of private land are inholdings. In 1970 BLM designated 32,847 acres of the Grand Gulch drainage as a primitive area; 4,960.16 acres of acquired lands were added in 1977 (37,807.16 acres total).

The archaeological resource of the Grand Gulch Plateau area is very rich. The Grand Gulch Archaeological District (4,240 acres; see table 3-8) is on the National Register. Cultural site densities of 20 to 200 sites per square mile have been recorded. Grand Gulch is known particularly for its well preserved cliff dwellings and variety of pictographs and petroglyphs.

The Grand Gulch Plateau SRMA provides a range of ROS settings for recreation activities (table 3-11). It is cut by numerous deep, narrow, winding canyons (Grand Gulch being the largest) which drain into Comb Wash to the east and the San Juan River on the south.

Visitor use within the SRMA is monitored (table 3-12). Annual peak visitor use occurs in April, May, and June, with a smaller peak in October and November. An estimated 25,000 visitor use days occur within the SRMA.

No visitation data are available for Johns Canyon, Lime Creek, upper and lower Mule Canyon, Road Canyon, McLoyds Canyon, Comb Wash, Butler Wash, nor other major and minor canyon systems with the SRMA. No attempt has been made to estimate visitor use in these areas.

Permits are not required for private use within the SRMA, but are required for commercial and organized (noncommercial and educational) groups. Limitations on recreational use have been imposed and enforced within the Grand Gulch Primitive Area and, to a lesser degree, within the remainder of the SRMA.

For 1985, group size for the Grand Gulch Primitive Area and Slickhorn, Road, Lime, Fish, and Owl Canyons was restricted to 15 individuals; pack stock parties were restricted to a maximum of three parties with 12 animals at any one time.

Four commercial permits were issued within the SRMA in 1983, and six in 1984, within the Grand Gulch Primitive Area.

There are currently no limitations on the number of private user groups within the SRMA, often resulting in complaints of overcrowding. The hiking route from Kane Gulch Trailhead to Bullet Canyon Trailhead and in the Fish and Owl loop trail and Slickhorn Canyon may not be providing a primitive social setting due to the number of visitors.

Most major campsites (all undeveloped) within the Grand Gulch Primitive Area show signs of substantial use. Annual photo trend studies at Junction Ruin, Turkey Pen, Split Level and

Bullet Canyon/Grand Gulch campsites reveal large fire rings, reduction of fuel wood supply and increasing loss of vegetation. Similar conditions exist in the cottonwood grove at the head of Arch Canyon, as well as at Comb Wash (south of U-95) and several sites in the lower portion of Grand Gulch, resulting in loss of vegetation and fuelwood.

Use in other canyons, where registers are not present, is relatively unknown.

Kane Gulch ranger station (figure 3-17) is a center for visitor registration and information for much of the plateau and is open sporadically during the year. Ranger facilities are considered adequate.

Mule Canyon Indian Ruins, a day use archaeological interpretive site, receives the highest visitor use within the Moab District. This site was partially excavated and stabilized in 1974 by the NPS. In 1984, 6,444 persons visited the site. In fiscal year 1984, the BLM constructed an interpretive ramada near the partially restored ruins. Maintenance is shared by the BLM and UDOT.

Butler Wash Indian Ruins, an Anasazi ruin partially stabilized in 1974 by the NPS, had 3,910 visits in 1984. Maintenance is shared by the BLM and UDOT.

The potential for additional recreation sites has been identified at Comb Wash along U-95, and at the mouth of Arch Canyon. Both sites are used heavily for informal camping.

A management plan for Grand Gulch Plateau was drafted in 1980, and a public comment period established. During the comment analysis and internal review, it became apparent that some of the management actions proposed in the plan could not be implemented prior to development of an areawide RMP/EIS. To guide management of recreation and cultural resources until the RMP/EIS could be developed, an interim management plan was completed in August 1981. It will be superseded by the RMP.

The plan recognizes three main objectives: to preserve the cultural resources; to maintain and

enhance the area's natural character, isolation, solitude, inspirational value, and scenic quality; and to optimize recreational values, and recognizes the educational and recreational opportunity present. The scenic quality, enhanced by unique geologic features, and the natural character of the canyon environment, which provides sanctuary for birds, animals, and plants, are important elements of the recreation demand in the area.

Due to terrain and limited access, visitor use conflicts have been extremely limited. Arch Canyon, lower Mule Canyon and lower Fish Creek Canyon can be accessed by ORVs, but no major conflicts between user groups has occurred. Some disagreement has existed in past years between backpackers and ranchers over cattle use in recreation use areas, primarily within the primitive area and lower Fish Creek Canyon.

The Hole-in-the-Rock trail traverses the SRMA. It has been designated to the National Register (table 3-8). It has been subject to increasing use from ORVs and development. The Hole-in-the-Rock Trail is in some places difficult to distinguish, and portions of the trail are occasionally upgraded for access for other resource uses.

Dark Canyon SRMA

The Dark Canyon SRMA (62,040 acres) has the same boundaries as the Dark Canyon Primitive Area (table 3-11 and figure 3-17). It includes Dark Canyon with its side canyons (Lost, Lean-To, Youngs, and Black Steer), Bowdie Canyon, Gypsum Canyon, and Fable Valley. This area was designated a primitive area in December 1970 to protect its scenic, recreational and other values. The Dark Canyon SRMA contains the largest block of ROS P class in the SJRA (table 3-11).

The lower portions of Dark Canyon (3 miles), Bowdie Canyon (2 miles), and Gypsum Canyon (3 miles) are within the Glen Canyon NRA and are proposed for wilderness designation. The upper portion of Dark Canyon is within the Manti-LaSal NF and was designated in 1984 as the Dark Canyon Wilderness Area, encompassing about 50,000 acres.

Permits are not required for private use; organized groups are requested to register, and commercial use requires a permit. Private visitor use is compiled from a trailhead register at the Sundance Trail and from registration forms completed by visitors at the SJRA office. Patrol observations indicate that actual private use is probably twice the 2,135 user days recorded in 1984 (table 3-12). Use of the area is increasing rapidly and appears to occur mainly in April, May and June, peaking again in the fall.

There are no visitor registers for the Bowdie Canyon, Gypsum Canyon or Fable Valley systems; the amount of visitation is therefore unknown.

Other than the Sundance Trail, the major entrance points for the Dark Canyon drainage are located on USFS lands where there are no trailhead registers. Recorded organized use amounted to 294 user days in 1984, and commercial use was 301 user days.

The major campsites are located at the mouths of Sundance, Lean-To, Lost and Youngs Canyons and all show signs of substantial use. Loss of vegetation and large fire pits are evident at these sites, and erosion has exposed tree roots at Lost Canyon and Youngs Canyon campsites.

On weekends during April, May, and June, all major campsites are used nightly. This presents some crowding as campsites at Sundance and Lean-To are within 100 yards of each other. At other times of the year, the frequency of group contacts does not detract from the primitive experience. The other canyons in the primitive area are not substantially used, and use could increase without adversely impacting the primitive experience.

A management plan for the primitive area has not been developed.

Use conflicts in the SRMA are limited. Motorcycle tracks were observed in 1984. A petroglyph panel in Dark Canyon has been vandalized, and surface collection at archaeological sites has been noted during patrol trips.

San Juan Extensive RMA

The remainder of the SJRA (about 1,317,050 acres) is managed as the San Juan extensive RMA. As a general rule, recreation use is not intensively monitored or managed in extensive RMAs see table 3-12). All ROS classes are represented (table 3-11).

Hunting in the SJRA occurs mainly in the RN and SPM settings on the mesas adjacent to Harts Draw, Alkali Canyon, and Montezuma Creek. Some hunting, mainly for bighorn sheep, occurs in the SPM setting of the Beef Basin vicinity (see Wildlife, this chapter).

Recreation use permits are required for commercial use in the San Juan Extensive RMA. Three commercial permittees operate in these portions. Use by these operators amounted to about 1,800 user days in 1984. This amount is representative of their use over the past several years. Permits are not required for private use in the San Juan Extensive RMA, and no visitor use statistics are available.

The area is used for dispersed recreation, but the amount and season of use are unknown. Conflicts with other recreationists or other resource uses are not evident. The major uses in this area appear to be hiking, ORV use, and associated camping. Almost all the potential campsites along Indian Creek are used on weekends during April and May. A lot of this use appears to be generated from visitors to Canyonlands NP. Rangers from the Needles District indicated that a substantial number of persons seeking non-backcountry camping are turned away each spring due to lack of campsites within the park. The campsites at Newspaper Rock State Park are also regularly filled during this period. The major uses adjacent to Highway U-211 (down to Dugout Ranch) appear to be camping and hiking with associated ORV use. Rock climbing is also an increasing use in this portion of the Indian Creek area.

Some portions of the San Juan Extensive RMA currently experience heavy recreational use and have the potential to become recreation-intensive SRMAs. These include Beef Basin,

Indian Creek, the Hole-in-the-Rock Trail, and Montezuma Creek (table 3-11 and figure 3-17).

Beef Basin is a remote area (about 66,450 acres adjacent to Canyonlands NP) of large, open sagebrush parks surrounded by sandstone ridges and buttes within a pinyon-juniper forest. There are numerous cliff dwellings, towers, and surface dwellings from the Anasazi culture. Most scenic and archaeological opportunities are available in an SPM setting. The area provides opportunities for hunting deer, and trapping mountain lion, bobcat and coyote. Beef Basin roads also provide access to the Dark Canyon Primitive Area and the Needles District of Canyonlands NP.

Use of the area occurs mostly in May and June, declining in summer and fall. Both motorized and nonmotorized use appear to be on the increase. Recreation management facilities are limited to a single visitor register box and several signs. BLM and San Juan County are responsible to maintain the roads in Beef Basin. The open nature of Beef Basin allows motorized travel into most of the area; multiple routes are developing.

The Indian Creek drainage (about 80,000 acres) varies from a narrow to open canyon with slick-rock walls up to 1,000 feet high. Numerous petroglyphs line the canyon walls. The stream flows year-round; upper Indian Creek is one of the few trout streams in San Juan County. State Highway 211 bisects this area and is the major access point for the Needles District of Canyonlands NP; it is traveled yearly by more than 40,000 visitors. Davis, Lavender, and Salt Creeks (all tributaries to Indian Creek) are used as hiking and ORV routes into the park. The area is visible from the overlooks of Canyon Rims Recreation Area (managed by Grand Resource Area, BLM). Newspaper Rock State Park within this area provides developed camp and picnic locations and an interpretive self-guided trail.

The major recreational ORV use area in the SJRA occurs in the Indian Creek vicinity. The Davis Canyon, Lavender Canyon, Harts Draw, Lockhart Basin, and lands north of U-211 to Indian Creek are used significantly by ORVs. The Indian Creek area has about reached its capacity for

undeveloped campsites accessible by motor vehicles during April and May. Use data are not available; however, ORV activity in this area appears to be approaching capacity at this time. Some conflicts occur among recreation user groups in the Indian Creek area.

The upper Montezuma Creek area (about 5,300 acres) also has potential for a SRMA. A loop drive, accessible to automobiles, is available utilizing the Montezuma Creek (County Road 146) and Perkins Ranch (County Road 206) roads. The loop provides opportunities for undeveloped camping, hiking, and archaeological viewing in a highly scenic RN setting. Existing points of interest include Three Kiva Pueblo, Bradford Canyon Ruins, and Pearson Canyon. Three Kiva Pueblo provides a stabilized archaeological site, visitor register, and interpretive information. The other two sites are undeveloped. Pearson Canyon has potential for a developed interpretive trail (an undeveloped trail system is already in place).

Potential for Special Designations

Two areas in SJRA have potential for ACEC designation to recognize recreation related natural or scenic values: a portion of the Grand Gulch Plateau SRMA and the Dark Canyon SRMA (table 2-6, figure 2-6, and appendix H).

Within the Grand Gulch Plateau SRMA, the Grand Gulch Archaeological District area has been identified as having special management potential based on cultural values (see Cultural Resources, this chapter). The entire primitive area (37,807 acres) and adjoining P ROS class areas (a total of about 49,130 acres) are believed to have potential for ACEC designation based on recreational values. Within this area are 2,240 acres of state lands. These areas have been identified as providing outstanding primitive recreational opportunities in a setting of significant natural and cultural values. The comparatively rare primitive recreational value is regionally and nationally important, based on the amount and origin of visitation received.

The Dark Canyon SRMA (62,040 acres) has been documented as having significant primitive

recreation values, and is thought to have potential for ACEC designation. The primitive area offers a diverse ecosystem and numerous natural and scenic values. The area is relevant because of the comparatively rare primitive recreational values present, and the outstanding quality of those values. It is regionally and nationally important, based on the amount of visitation received and the extremely high quality of values present. There are no state or private inholdings.

The primitive areas and other areas within the SRMA also have potential as ONAs (table 2-6, figure 2-4, and appendix H). An ONA is managed under 43 CFR 8352 to provide the maximum amount of recreation use possible on a fairly large, natural area. Potential ONAs in the Grand Gulch Plateau SRMA are: Grand Gulch, 69,500 acres; Slickhorn Canyon, 25,800 acres; Johns Canyon, 17,500 acres; Fish and Owl Canyons, 40,300 acres; Road Canyon, 24,500 acres; Lime Canyon, 25,300 acres; Mule Canyon, 6,000 acres; and Arch Canyon, 4,200 acres. The Dark Canyon Primitive Area, along with the adjacent Middle Point area, could also qualify as an ONA of approximately 68,030 acres.

Specific Indicators Affected

The specific environmental indicators related to recreation that could be affected by the alternatives described in chapter 2 are (1) ROS class acres; and (2) area available for ORV recreation.

VISUAL RESOURCES

The SJRA lies in the Colorado Plateau physiographic province, noted for spectacular scenic value. The scenic resources add to the recreational value of the area (see Recreation, this chapter).

In order to classify visual resources, three determinations (or resource allocations) are required for each area: scenic quality, visual sensitivity, and distance zones.

Scenic quality is the overall visual impression of an area. Scenery is classified as A, B, or C, with A being the most scenic.

Visual sensitivity, rated as high, medium, or low, is the degree of concern toward scenic quality and visual change.

Distance zones are actual quantitative distances from any observation point or travel route, with three possible designations: foreground/midground, background, and seldom seen.

VRM classes, which are the net result of the inventory work, form the basis for visual input into management decisions. These are formulated considering the combination of scenic quality, visual sensitivity, and distance zones. Objectives of the four classes are found in appendix G.

Inventory work in the SJRA under the VRM system was begun in 1978 and completed in 1984. All three resource allocations have been mapped on 1 inch to the mile maps at the MDO. VRM classes are shown in figure 3-18. Acreages are shown in table 3-14.

In the late 1970s, the visual corridor along highways U-95, U-261, U-263, U-276, and Notom Road was studied by an interagency group composed of federal, state, and county representatives. The group examined potential conflicts in use and development of lands along these highways. The study recognizes the visual elements of the corridor and provides a basis for analysis of any specific proposed use or development. The approach envisions a continuing process of analysis of each proposal and allows for prohibiting the proposal or minimizing its impacts. As a result of this study, BLM has coordinated with the State Land Board on chainings and other land treatments to minimize visual impacts as viewed from Highway U-261.

Cultural modifications are human-caused changes in the landform, water form, or vegetation, or the addition of a structure that creates a visual contrast in the landscape. In the SJRA, roads, oil and gas developments, and seismic activities probably have had the most significant adverse impact on the visual qualities of the area.

TABLE 3-14

Visual Resource Management Classes

<u>Class</u>	<u>Acres</u>
Class I.....	93,533
Class II.....	525,289
Class III.....	620,834
Class IV.....	539,534

Source: Shiozawa and Larson, 1980.

The capability of the SJRA to absorb these impacts is fairly high where developments are infrequent, and low in areas of concentrated development where scenic qualities are substantially reduced.

The BLM manages visual resources by considering the visual effects that a specific proposal would cause. Through the contrast rating process, a determination is made on a case-by-case basis as to whether or not a proposed project would meet the VRM class objectives for that area. If the objective would be met, little mitigation is needed to reduce visual contrast. If the objective would not be met, reasonable and practical mitigating measures (which BLM management does not consider to be unduly economically restrictive) are applied to reduce contrasts as much as possible. The project is then approved with stipulations to implement the mitigation.

The Lockhart Basin area (56,600 acres) has been identified as having potential for ACEC designation under the VRM program. The area includes lower Indian Creek, Rustler, Horsethief, and Lockhart Canyons and is located between Canyonlands NP and Hatch Point (table 2-6, figure 2-4, and appendix H). Within the potential area are 5,760 acres of state lands.

This area is scenic quality A, and unique or very rare within its physiographic province. The scenic qualities are outstanding in terms of diversity of landform and colors present. The color contrasts add to the scenic quality of this area, and some of the most spectacular rock formations in the United States are found here [Shiozawa and Larson, 1980]. The scenic values of this area are important to regional, national, and international travelers or tourists who view the area from the developed overlooks in the Canyon Rims Recreation Area in the Grand Resource area, adjacent to SJRA.

No present land use threatens the scenic values of the area; however, exploration for uranium or oil and gas could adversely affect these values by creating substantially noticeable disturbances. Recreational use in Canyonlands NP, adjacent on the west, does not adversely affect the scenic qualities of the area.

Specific Indicators Affected

The specific environmental indicators related to visual resources that could be affected by the alternatives described in chapter 2 are (1) VRM class acres; and (2) visual contrast rating scores.

LANDS

Land use allocations are made through a variety of means and generally fall into three broad categories: land use authorizations, disposals, and withdrawals. Lands are managed under rights-of-way, land use permits and leases, disposal actions, and classifications and withdrawals.

Public lands in the SJRA are in a pattern of ownership in large blocks, normally interspersed with four state sections (2, 16, 32, and 36) per township (figure I-5). Private lands encompass the population centers, with the majority of private lands falling east of Monticello to the Colorado State line. There are a few scattered private inholdings within the public lands and some scattered isolated parcels of public land within the private land (table I-3). Management of the public lands is eased where the ownership pattern blocks up public lands. Isolated

parcels are more difficult for the BLM to manage because they are not suited for many of the dispersed uses of the public lands found within the SJRA.

What is commonly known as the Ute Indian reservation falls on White Mesa south of Blanding, Utah (figure I-4). This is not a formal reservation, but is part of the 12,297.43 acres of Indian Allotments within the SJRA, which lie in scattered tracts extending from the National Forest to the Colorado state line. Indian Allotments are held in trust by the Federal Government and managed by the BIA.





Rights-of-way for access to oil and gas leases and private lands constitute the primary demand for land use permits and authorizations in the SJRA. Rights-of-way across the public lands are generally granted under Title V of FLPMA or Title I of the Mineral Leasing Act. These are issued for many purposes and change over time (are granted and expire).

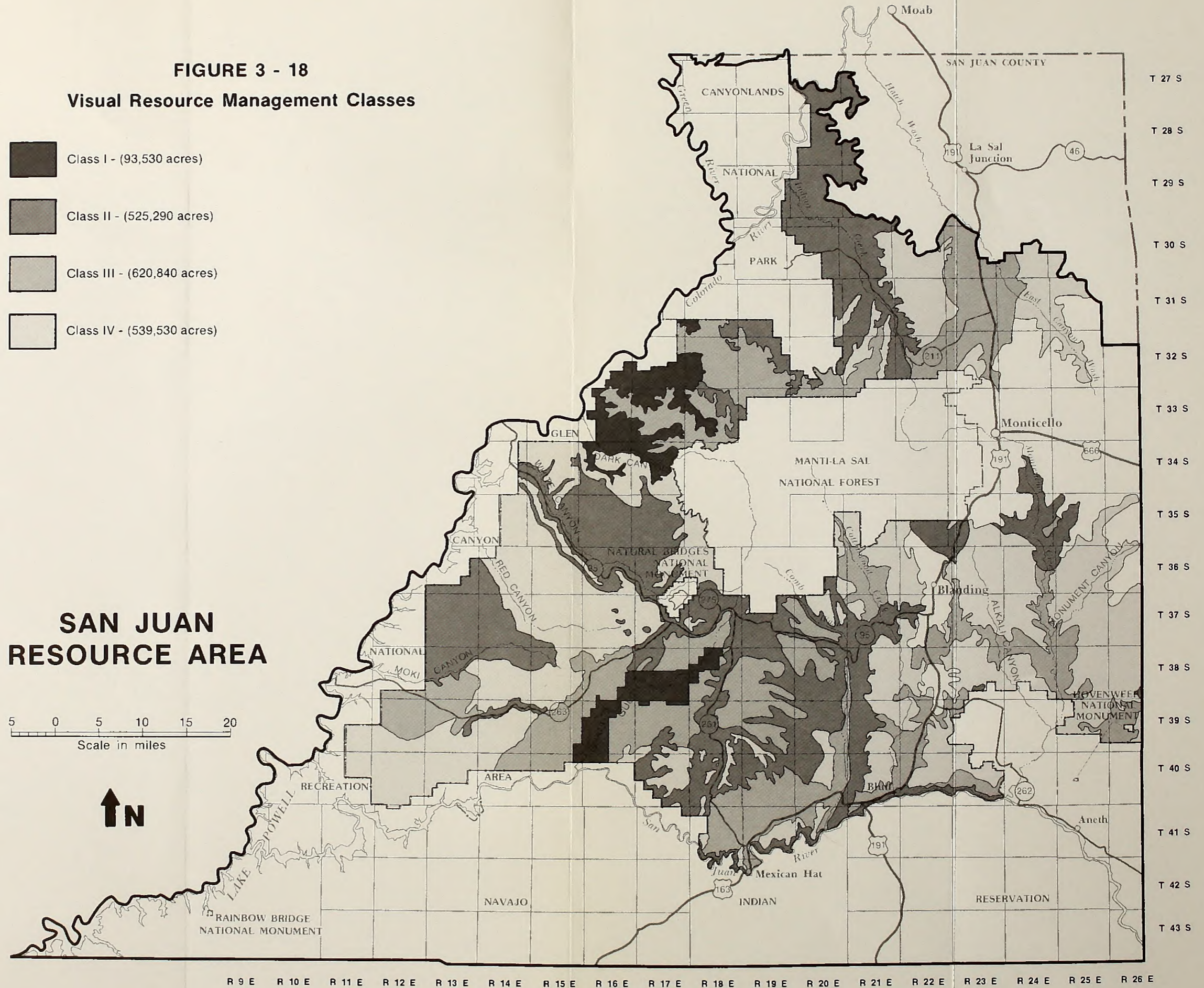
Legal access in the SJRA is well established. In August 1984 San Juan County and BLM signed a memorandum of understanding recognizing the County's road rights under R.S. 2477, routes identified by the County as class B roads. The County's rights on these roads are exclusive and perpetual, and only they have the right to regulate the use.

The memorandum also identified the County class D system. These are roads or trails that may or may not have been mechanically constructed, are not regularly maintained, or may be maintained only through vehicular travel. Any upgrading of these roads requires a right-of-way grant from the BLM under Title V of FLPMA.

Because of topographic and land administration constraints, over time, existing rights-of-way have tended to fall into groups, forming undesignated transportation and utility corridors through the SJRA from the state line in the Ucolo area northwest through Lisbon Valley into the Grand Resource Area; from Mexican Hat east and north to the Grand Resource Area; up Montezuma Creek from the boundary of the Indian reservation to Monticello, with interconnections from Montezuma Creek to the state line (figure 3-19). There is minimal demand for communication sites, major

FIGURE 3 - 18
Visual Resource Management Classes

-  Class I - (93,530 acres)
-  Class II - (525,290 acres)
-  Class III - (620,840 acres)
-  Class IV - (539,530 acres)



**SAN JUAN
 RESOURCE AREA**

5 0 5 10 15 20
 Scale in miles



FIGURE 3 - 18

Visual Resource Management Classes

A R I Z O N A

C O L O R A D O

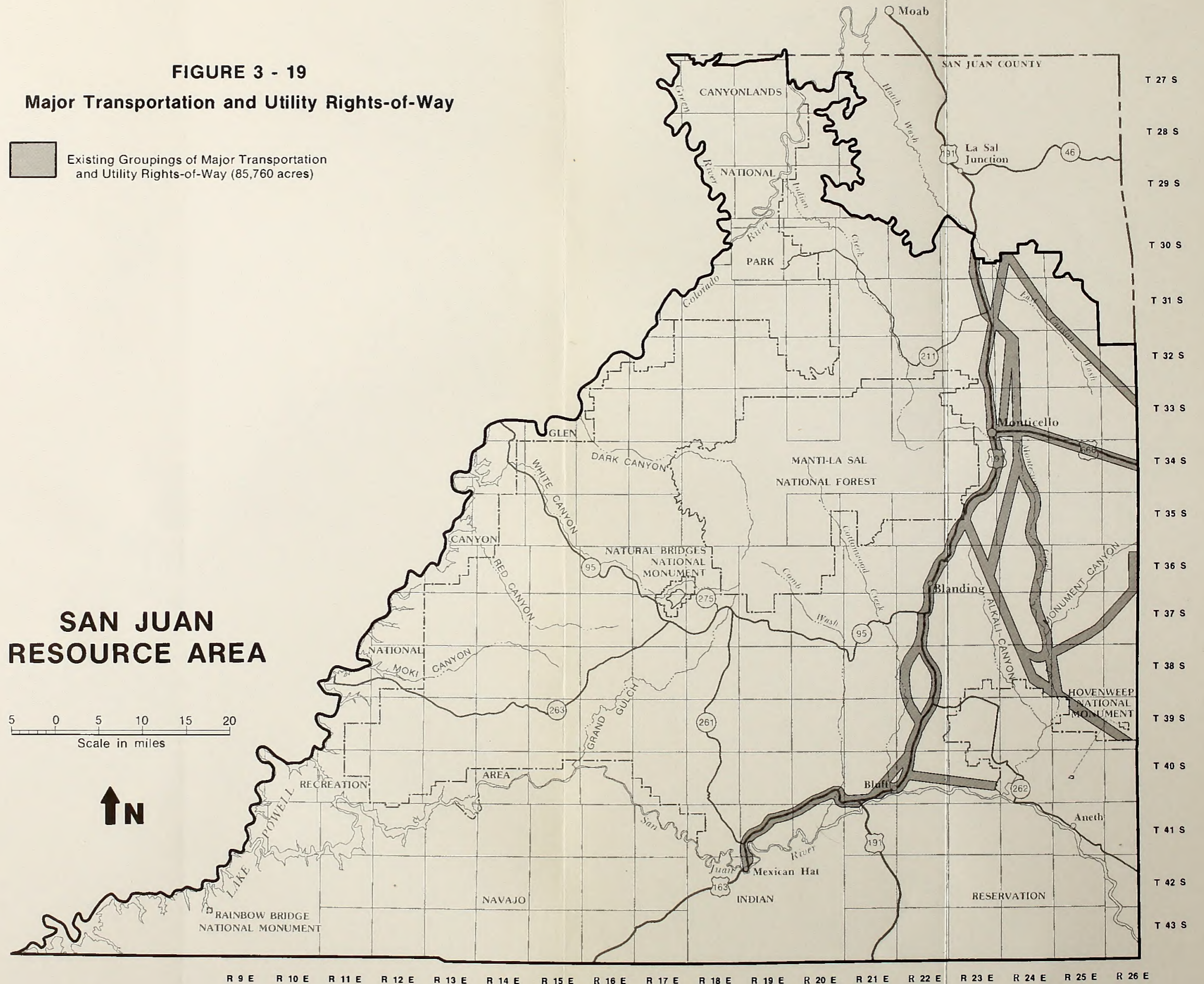


SAN JUAN RESOURCE AREA

The San Juan Resource Area is a significant region for natural resource management. This report details the distribution and potential of various resources within the area. The primary resources identified are oil and gas, coal, and copper. Each resource zone is delineated based on geological surveys and resource estimates. The map illustrates the spatial distribution of these resources, showing that oil and gas are concentrated in the northern and central parts of the area, while coal is found in the southern regions. Copper resources are scattered throughout the area, with notable concentrations in specific zones. Other resources, including timber and agricultural land, are also present but less extensively mapped. This information is crucial for planning resource extraction and conservation efforts. The report provides a comprehensive overview of the resource base, supporting informed decision-making for the region's future development.

FIGURE 3 - 19
Major Transportation and Utility Rights-of-Way

Existing Groupings of Major Transportation and Utility Rights-of-Way (85,760 acres)



C O L O R A D O

A R I Z O N A

FIGURE 3 - 19
Major Transportation and Utility Rights-of-Way



changes to the transportation plan, or major utility systems.

Short-term land permits are issued as needed for uses such as filming. They are of short duration and minimal effect and cannot be anticipated through the planning process.

Disposal criteria and specific tracts of land identified for disposal are given in appendix Q. Other resource uses such as KGSs, mining claims, and cultural resources can prevent the sale of a tract. These conflicting uses are subject to change continually and cannot always be anticipated.

In 1970 the majority of the public lands in San Juan County were classified under the authority of the Classification and Multiple Use (C&MU) Act. The classification segregated the lands from land and mineral entry which could result in disposal. Several recreation sites, the Grand Gulch and Dark Canyon Primitive Areas, and the Hole-in-the-Rock Trail were also segregated from the mining laws, but not from the mineral leasing laws. Under the withdrawal review program enacted with the passage of the FLPMA in 1976, the C&MU classification was removed and most of the lands were opened to the public land laws. The lands in table 3-15 are still classified under the C&MU Act and are closed to entry under the public land laws, including the general mining laws, but not the mineral leasing laws (figure 3-20).

In addition to the classified lands shown in table 3-15, 4,612.28 acres in Dark Canyon; 4,960.16 acres in Grand Gulch; and 160 acres in Butler Wash were acquired in 1977 through a state exchange (9,730 acres total) (figure 3-6). While these lands are not classified or segregated, they have never been opened to entry under any federal laws.

Areas that Congress has withdrawn for management by another agency, as well as Secretarial withdrawals for a specific land use, were shown in table I-3 (figure 3-20). Lands administered by NPS, USFS, and the Indian Reservation have left the public domain through withdrawals made by Congress.

A withdrawal of 50 acres was made to allow DOE to manage uranium for research purposes. This permits DOE to lease the locatable minerals to private concerns, with surface management by BLM. The lands were withdrawn from all forms of appropriation, including mineral entry, but not the mineral leasing laws (table 3-4).

The FERC powersite withdrawals, totaling 23,763.49 acres, are to protect areas with potential for water power developments located on the San Juan and Colorado Rivers. The surface is managed by BLM, and the lands are reserved from entry or disposal; special requirements on mining claims are imposed by the Mining Claims Rights Restoration Act.

BLM withdrawals for public water reserves, totaling 5,459.63 acres, are segregated from agricultural entry and nonmetalliferous mining claims to keep the land available for public use. These are scattered tracts, not shown in this EIS.

Some public lands have been leased for specific purposes and are segregated from mineral entry. These were shown in table 3-15. There are two R&PP leases totaling 140 acres; a 5-acre business lease which was converted from a small tract lease; and the Bluff Airport lease lands are also segregated from mineral location.

Additionally 900 acres of land are segregated from entry because they have been appropriated by the FHWA for material site rights-of-way (figure 3-6).

Specific Indicators Affected

The specific environmental indicators related to lands that could be affected by the alternatives in chapter 2 are (1) lands available for rights-of-way; (2) lands available for disposal; and (3) withdrawals/revocations.

ECONOMIC CONSIDERATIONS

The format for this section includes an overview of the affected area, followed by a detailed





TABLE 3-15

Classifications and Segregations

<u>C&MU Classifications</u>	<u>Acreage</u>
Dark Canyon Primitive Area	57,427.72
Grand Gulch Primitive Area	32,847.00
Sand Island Recreation Site	253.59
Arch Canyon Recreation Site	40.00
Kane Springs Recreation Site	80.00
Salt Creek Recreation Site	240.00
Alkali Ridge Historic Site	80.00
Hole-in-the-Rock Historic Trail	1,115.60
Butler Wash Archaeological Site	40.00
	<hr/>
Subtotal	92,123.91
 <u>Existing Land Leases</u>	
R&PP Leases	
San Juan Foundation for Higher Education, Blanding school facility	120.00
San Juan Water Conservancy District, Recapture Lake recreational facilities	<u>20.00</u>
 Small Business Lease	
Fry Canyon Store	5.00
 Airport Lease	
Bluff Airport lease	400.00
	<hr/>
Subtotal	545.00
	<hr/>
Total acres classified	92,668.91

Source: BLM Master Title Plats, December 1984. Surveyed land is measured to the hundredth of an acre; unsurveyed land is estimated to the nearest acre.

FIGURE 3 - 20
Classifications and Withdrawals

-  Congressional Withdrawal (2,156,680 acres federal land)
-  Secretarial Withdrawal (23,760 acres public land)
 - 1. Federal Energy Regulatory Commission Withdrawal (23,710 acres public land)
 - 2. Department of Energy Withdrawal (50 acres public land)
-  C + MU Classification (92,120 acres public land)
 - 3. Dark Canyon Primitive Area (57,430 acres)
 - 4. Grand Gulch Primitive Area (32,850 acres)
 - 5. Sand Island Recreation Site (250 acres public land)
 - 6. Arch Canyon Recreation Site (40 acres public land)
 - 7. Kane Springs Recreation Site (80 acres public land)
 - 8. Salt Creek Recreation Site (240 acres public land)
 - 9. Alkali Ridge Historic Site (80 acres public land)
 - 10. Hole-in-the-Rock Historic Trail (1,110 acres public land)
 - 11. Butler Wash Archaeologic Site (40 acres public land)
-  Existing Land Leases (545 acres)
 - 12. San Juan Foundation R & PP Lease (120 acres)
 - 13. San Juan Water Conservancy District R & PP Lease (20 acres)
 - 14. Fry Canyon Store Small Business Lease (5 acres)
 - 15. Bluff Airport Lease (400 acres)

SAN JUAN RESOURCE AREA

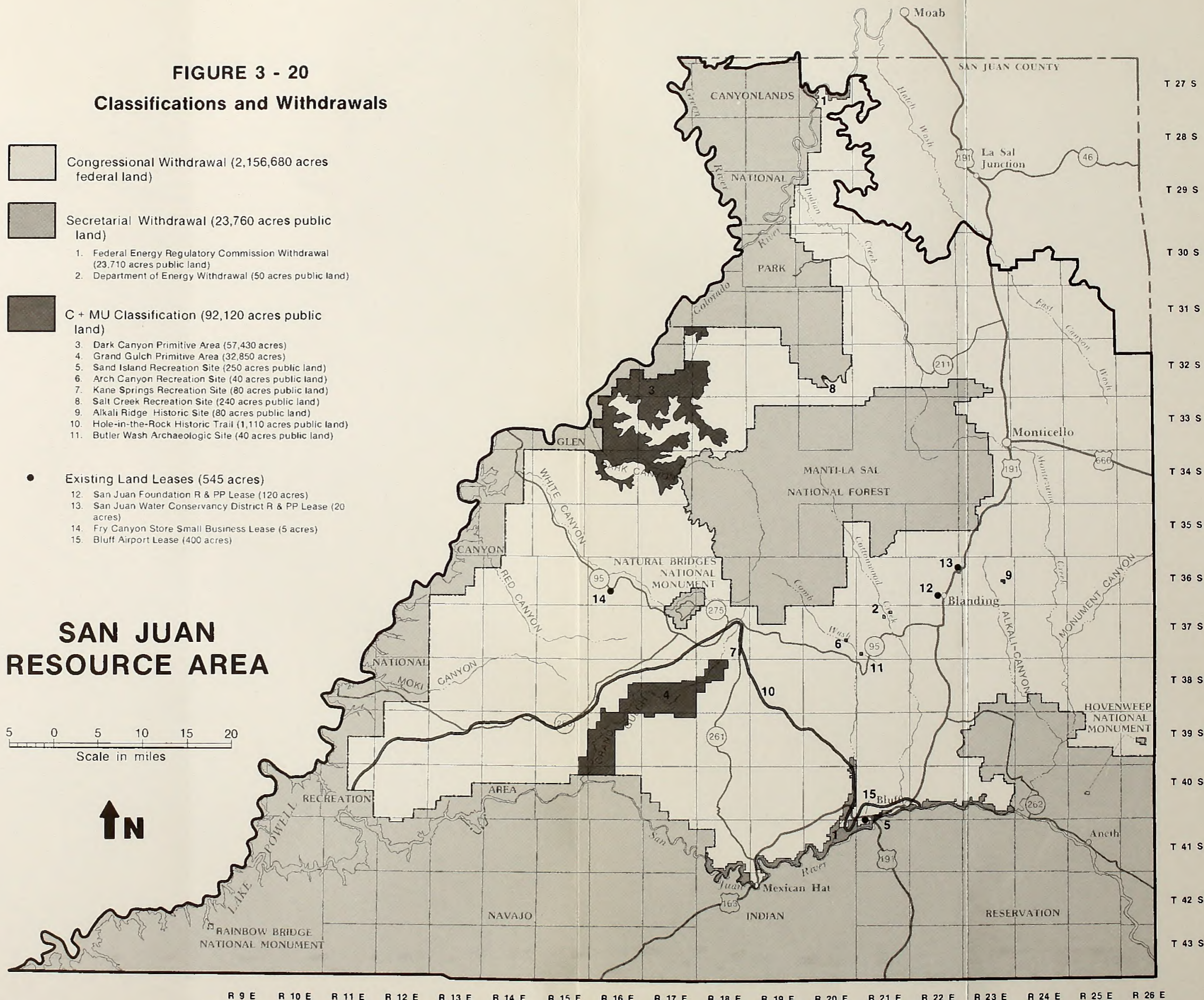
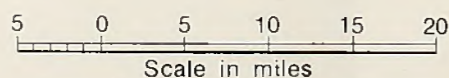


FIGURE 3 - 20
Classifications and Withdrawals

A R I Z O N A

C O L O R A D O

FIGURE 3 - 20
Conditions and Wetlands



SAN JUAN
RESOURCE AREA

discussion of the economic resource uses that would be most impacted by the alternative management actions. These include: minerals, soil and water, livestock, recreation, and other land uses. Economic measures emphasize personal, local, and regional revenues, costs, income, wealth, and employment.

The affected region depends upon the management action. Most management actions would affect primarily San Juan County. Some effects could also spread to other areas in western Colorado and southeastern Utah. Because runoff originating from the SJRA affects downstream water users, the affected area for changes in sedimentation and salinity area also includes the Lower Colorado River Basin.

For a description of the methodologies and assumptions used in this chapter, refer to appendix R.

DEMOGRAPHICS

The 1985 San Juan county population was 12,500, about 0.8 percent of the state's population [Utah, 1986]. Most of the settlement is in the western half of the county. The county's two largest communities, Blanding (1980 population 3,118), and Monticello (1980 population 1,929), comprise 40 percent of the county's population [USDC, 1981a]. Other communities include Bluff (estimated 1980 population 847), Mexican Hat (estimated 1980 population 495), and Montezuma Creek (estimated 1980 population 1,223). Major racial groups include Whites (52.4 percent) and American Indians (45.7 percent). Most American Indians have settled in the southeastern part of the county with 95 percent located on the Navajo reservation. About 4 percent of the Navajo reservation's population is located within San Juan county, with most of the remaining population located in Arizona, New Mexico, and Colorado. San Juan's population varies seasonally with recreation visitation. An estimated 1,500,000 days of recreation visitation take place in San Juan county which, for comparison, is equivalent to a permanent population of 4,000 residents (see MSA).

Between 1970 and 1980, San Juan county's population kept up with natural population

growth [Utah, 1985]. Since 1983 the county's population has declined by 500.

San Juan county contains 5,045,760 acres (about 9.6 percent of the state's acreage) [BEBR, 1980]. About 41 percent of the county is administered by the BLM, 24 percent by the BIA in conjunction with the Navajo tribe, 20.9 percent by other federal agencies, and 6 percent by the state; 8.1 percent is privately owned [BEBR, 1980; BLM records]. Most of the private land is located in the eastern part of the county.

EMPLOYMENT AND INCOME

San Juan county's economy showed moderate growth in the 1970s [BEA, 1985a, BEA, 1985b]. The uranium, oil and gas, and tourist industries provided the largest employment gains during this period. Growth in these industries spread to other economic sectors. Economic growth between 1970 and 1980 generally kept pace with natural population growth. During this period unemployment rates remained at less than 5 percent. Despite this period of economic growth official unemployment rates among American Indians remained above 15 percent [Jensen and Parks, 1985]. The local uranium industry began to decline in 1981. Between 1981 and 1985 the uranium industry lost 537 jobs [Dan Webb, Utah Department of Employment Security, personal communication, February 1986], with a resulting outmigration from the county. By 1984 official unemployment rates reached 10.7 percent. There remains a wide disparity in unemployment rates, with unemployment among the white population at 5 percent and among Indians at 21 percent. Unofficial unemployment rates are probably higher.

Mining remains one of the county's largest employers, directly accounting for 19 percent of local wage and salary employment (tables 3-16 and 3-17). Other major sectors include government and agriculture. Tourism also generates a significant number of jobs. Based on estimated expenditure patterns and sales/employment ratios, tourism directly generates an estimated 224 jobs. These industries further contribute to local employment and income through local

TABLE 3-16

1983 Employment for Utah and San Juan County

<u>Industry</u>	<u>Utah</u> <u>(percent)</u>	<u>San Juan County</u> <u>(percent)</u>
Proprietors' employment		
Farm	2.1	7.7
Nonfarm	7.8	6.7
Wage and Salary Employment		
Farm	0.9	3.6
Nonfarm		
Private		
Agricultural services, forestry, and other	0.3	0.2
Mining	2.1	16.5
Construction	4.4	5.9
Manufacturing	12.9	3.8
Transportation and public utilities	5.5	5.3
Wholesale	5.2	2.2
Retail	14.9	8.7
Finance, insurance, and real estate	4.4	1.1
Services	16.4	11.0
Government		
Federal	8.0	3.8
State and local	13.6	23.6
Total employment (jobs)	648,227	3,573
Labor force participation (percent)	45.0	32.2
Unemployment rate (percent)	6.5	10.7

Sources: Eyres, 1985; BEA, 1984b; BEA, 1985b; BEA, 1985c.

TABLE 3-17

1983 Industry Earnings for Utah and San Juan County

<u>Industry</u>	<u>Utah (percent)</u>	<u>San Juan County (percent)</u>
Farm	0.8	3.3
Nonfarm		
Private		
Agricultural services, forestry, and other	0.2	0.1
Mining	4.2	30.0
Construction	6.4	11.6
Manufacturing	17.8	3.3
Transportation and public utilities	9.8	6.3
Wholesale	6.7	2.2
Retail	9.8	5.3
Finance, insurance, and real estate	4.9	1.0
Services	17.4	9.4
Government		
Federal	9.4	5.3
State and local	12.7	22.2
Total earnings (\$1,000)	\$10,915,247	\$ 55,343
Total personal income (\$1,000)	\$14,574,876	\$ 70,768
Per capita personal income	\$9,005	\$ 5,652

Source: BEA, 1985b; BEA, 1985c.

purchases of supplies and the local circulation of employee salaries.

The county's per capita income was \$5,652 in 1983, 63 percent of the state's average [BEA, 1985a]. The low income figures are due to both lower than average wages and higher than average family sizes.

COMMUNITY INFRASTRUCTURE

Neither community infrastructures nor the levels of services provided by communities in the SJRA would be affected by any of the alternatives described in chapter 2.

FISCAL CONDITIONS

Property taxes are a major source of income for San Juan County and for cities within the county. These jurisdictions also receive a large portion of their revenue from intergovernmental transfers including federal payments in lieu of taxes (PILT) and state reallocation of fuel taxes and vehicle registration fees. See table 3-18 for a breakdown of revenues and expenditures for all taxing jurisdictions in the county.

MINERALS

In 1983 the oil and gas extraction industry in San Juan County employed approximately 286 people [Jensen and Parks, 1985]. Approximately 114 jobs are directly related to oil and gas activity in the SJRA. Including indirect and induced effects, the oil and gas activities in the county generate 535 jobs and \$13,226,000 of income, 75 percent of which are held and earned by county residents. Oil and gas activities in the SJRA generate 214 jobs and \$5,290,000 of income, 75 percent of which are held and earned by county residents (table 3-19).

Uranium/vanadium mining and milling has historically been one of the county's major employers. The last peak in uranium production was in 1980. By 1985 the industry provided 540 fewer jobs, a 62 percent drop [Jensen and Parks, 1985]. This drop can be attributed to declining prices for uranium products, which have made all but the least expensive, highest concentrate ore

uneconomical to mine. In 1985 300 jobs could be attributed to uranium/vanadium mining and milling in San Juan County (8 percent of county employment). Including indirect and induced effects, uranium/vanadium activities in the county generate 423 jobs and \$13,191,000 of income (table 3-19). Many of the jobs directly attributable to uranium/vanadium mining and milling are held by residents of Grand County.

Although uranium/vanadium mining has been significant in the county, there is currently no such activity in the SJRA, and there has been none since 1982. The only uranium/vanadium activities having local economic effects are expenditures associated with locating and developing mining claims.

Gold exploration and production has always been a minor industry in San Juan County. The industry accounts for fewer than 10 jobs, all of which can be attributed to mining within the SJRA.

Based solely on the notices of intent and plans of operation received, which ignores some expenditures that would involve no surface disturbance, approximately \$480,000 was spent on assessment work in the SJRA. These local expenditures, including their direct, indirect, and induced effects, generate 14.2 jobs and \$253,000 of income.

Most of the nonmetals mining and quarrying employment is from production of sand and gravel (salable minerals), most of which is associated with road construction and maintenance. Most of the jobs in this sector are held by county residents. Approximately 80 percent of the salable minerals production in the county is from public lands in the SJRA. Based on this percentage, approximately 27 jobs are directly related to salable mineral activity in the SJRA. Including indirect and induced effects, the salable mineral activities in the county generate 47 jobs and \$1,090,700 of income. Salable mineral activities in the SJRA generate 38 jobs and \$881,000 of personal income (table 3-19).

Although potash, tar sand, geothermal, and several other mineral resources exist in the

TABLE 3-18

Taxing District Revenues, by Source
(calendar year 1984; fiscal year 1985)

Source	San Juan Resource Area Land Use Activities							Payments in Lieu of Taxes
	All Tax Levying Districts ^a	Oil and Gas Activity	Locatable Minerals Activity	Salable Minerals Activity	Livestock Production	Recreation Use	Wildlife Use		Utilities
Taxes	\$11,657,000	\$2,886,000	\$125,000	\$1,000	\$62,000	\$8,500	\$3,000	\$266,000
Licenses and permits	14,000							
Intergovernmental	10,367,000							
Charges for services	458,000							
Fines and forfeitures	188,000							
Miscellaneous	1,704,000	4,000						
TOTALS	\$24,388,000	\$2,890,000	\$125,000	\$1,000	\$62,000	\$8,500	\$3,000	\$266,000

NOTE: Only taxes directly associated with the activity were assessed. Indirect and induced fiscal effects were not assessed. Effects to other revenue sources, which are expected to be minor, were not quantified. Activity related costs could be neither delineated nor quantified.

^aIncludes San Juan County, Cities of Monticello and Blanding, San Juan Water Conservancy District, Monticello Cemetery District, Blanding Cemetery District, and the San Juan County School District. Proprietary fund types are not included.

Sources: Yoakum, 1985; Smuin, Rich, and Marsing, 1984; Monticello, 1984; Utah Tax Commission, 1985; and Utah Foundation, 1985.

TABLE 3-19

Local Employment and Income, by Economic Activity
(by place of employment)

Direct, Indirect, and Induced Effects

<u>Economic Activity</u>	<u>San Juan County</u>		<u>San Juan Resource Area</u>	
	<u>Income (dollars)</u>	<u>Employment (jobs)</u>	<u>Income (dollars)</u>	<u>Employment (jobs)</u>
Oil and gas	13,226,000	535	5,290,000	214
Locatable minerals ^a	13,366,000	432	1,045,000	36
Salable minerals	1,091,000	47	881,000	38
Livestock grazing	1,392,000	250	1,013,000	176
Recreation use	4,424,000	323	246,000	18
Wildlife use	133,000	10	59,000	4

^aIncludes uranium/vanadium, gold, and mining claim assessment activities.

Sources: BLM records; USFS, 1982; BEA, 1984a; BEA, 1984b; Jensen and Parks, 1985.

area, there is currently no exploration or development of these resources and no related employment.

Mineral activity within San Juan county affects both the revenues and costs of local taxing jurisdictions. Related taxes bring an estimated \$8,559,000 to local taxing jurisdictions, 34 percent of which is due to activities within the SJRA. These revenue figures are conservative, as they do not account for all revenue sources (table 3-18).

SOIL AND WATER

Salinity and sedimentation are the major watershed related concerns.

Salinity levels in the Colorado River are affected by salt loading and salt concentration. Salt loading is the addition of salt to the river; salt concentration results from consumptive uses that reduce the volume of water without reducing the total salt carried.

While salinity generally is not a problem in San Juan County, salt loading and salt concentration from the SJRA increases costs to municipal, industrial, and agricultural water users in the Lower Colorado River Basin.

Salt loading and salt concentration from the SJRA can affect water users downstream by increasing water treatment costs, pipe corrosion, appliance wear, and soap and detergent needs, while decreasing water palatability. The higher salt concentrations reduce crop yields, cause the loss of productive land, require more leaching and draining, and increase management costs, sometimes making it necessary to change to a more salt-tolerant crop.

Several studies [Kleinman, et al., 1974; Kleinman and Brown, 1980; BOR, 1980] have quantified some of the downstream user cost of increasing salinity levels in the Colorado River. The BOR establishes procedures for quantifying the change in salt concentrations given a change in salt loading or water yield and updates the salinity cost estimates annually [USDI, 1985]. These estimates do not account for all salinity costs, and they include indirect costs which,

under conditions of capital and labor mobility, are not costs from a national perspective.

The use of many capital investments including streets, buildings, sewers, reservoirs, irrigation ditches, and culinary water systems can be severely hampered with sediment. Either the sediment has to be removed to regain use of the capital investment, or the use of the capital investment will deteriorate over time (table 3-20).

TABLE 3-20

Sediment Removal Cost (1984 dollars)

<u>Capital Investment</u>	<u>Cost (dollars per ton)</u>
Streets	\$ 13 to \$ 16
Buildings	\$140 to \$150
Sewers	\$250 to \$300
Reservoirs and ditches	
Offsite removal	\$1.80 to \$4.80
Onsite removal	\$1.10 to \$1.50
Lake Powell ^a	\$0.03 to \$0.06

^aThe figures for Lake Powell do not represent sediment removal costs, but rather the gradual deterioration of electrical, recreational, water storage, and flood control benefits generated by Lake Powell.

Sources: USFS, 1979; EPA, 1973; BLM records.

Because existing salt, sediment, and water yields cannot be quantified, their economic significance cannot be quantified. Salt loading into the San Juan river appears to be a significant problem, particularly between Shiprock, New Mexico and Bluff, Utah [BOR, 1986]. Sedimentation of capital investments has generally been a problem only at Lake Powell and livestock reservoirs in high erosion areas.

Salinity and sedimentation from the SJRA do not affect local taxing jurisdictions.

LIVESTOCK

Livestock production is the county's most valuable agricultural activity. Livestock operators who use public rangeland forage in the SJRA and reside in the county account for 70 percent of the county's livestock production. On the average, these livestock operators depend on public rangelands for 40 percent of their forage needs.

The SJRA supplies forage for livestock operators not only in southeastern Utah, but also some in southwestern Colorado (Montezuma, Dolores, San Miguel, and Montrose counties). Ninety percent of the operators live in San Juan County, the remaining 10 percent in southwestern Colorado. Although there are 58 licensed operators, several appear to have combined operations. Fifty-three active and independent livestock operators have been identified for ranch budget analysis. Of the 52 cattle operators, 28 have a herd size of under 100 head, and 24 have a herd size greater than 100 head. There is one sheep operator.

Of the 53 independent operators who graze livestock in the SJRA, 35 (66 percent) have been identified as full-time operators, a proportion which is significantly higher than the state's 44 percent average proportion of full-time farmers in the farm sector [USDC, 1984a].

The majority of livestock operators have cow-calf operations. Generally, cows are calved in early spring, and the calves are then sold in late fall. The SJRA plays an important role in maintaining the cow herd during the winter and in providing nutritious forage during the spring when cows are calving (table 3-21).

Few alternative sources of forage are available to cattle operators during the winter and early spring, when base properties are not producing forage. The only alternative source of forage is that which is left on private lands in the fall or stored in the form of alfalfa and grain hay. Depending on the weather and elevation, privately owned pastures may be covered with snow and often do not produce forage until late May or early June. Use of this forage during

green out delays the first hay harvest and can cause bloating of cows.

Ranch budgets have been developed for three livestock groups. Each ranch has a unique set of characteristics affecting its operation that cannot be fully represented by models of typical ranches. However, data from these typical ranch budgets can be used to estimate aggregate costs, returns, hired labor, and ranch values. These aggregate statistics are summarized in table 3-22 for all livestock operators.

TABLE 3-22

Aggregate Revenues, Costs, Returns, Herd Size, and Hired Labor

Gross revenue	\$3,437,800
Total variable costs	\$1,853,100
Returns above variable costs	\$1,584,700
Returns to labor and investment	\$403,300
Herd size	12,440
Hired labor (jobs)	18

NOTE These budgets assume that ranchers have no long-term outstanding debt and that all operating capital is borrowed. Returns are equal to the net of variable and fixed costs to management, non-hired labor, machinery, equipment, and land.

The budgets suggest that over 100 head of cattle are generally needed to support a full-time operator. With existing economic conditions, most operators, particularly those with a low debt load, can earn a return above their variable cost. However, returns to family labor and investment are lower than existing market rates of return, and returns to risk and management are generally negative. Although these conditions vary, depending particularly on management ability and debt loads, there does not appear to be much economic incentive to stay in the livestock business. Escalating farm real estate values between 1970 and 1981 have been contributing to fair market returns; however, this economic incentive has diminished as farm real estate values have remained static since 1981 [Drabenstott and Duncan, 1984].

TABLE 3-21

Dependency on San Juan Resource Area Forage

Season	Cattle		Sheep	
	Average Use (AUMs)	Dependency ^a (percent)	Average Use (AUMs)	Dependency ^a (percent)
January	7,580	70	63	NA
February	7,471	70	63	NA
March	7,525	70	63	NA
April	7,362	70	63	NA
May	5,726	55	0	0
June	1,418	15	0	0
July	872	10	0	0
August	872	10	0	0
September	818	10	0	0
October	2,563	25	0	0
November	5,180	50	0	0
December	<u>7,143</u>	<u>70</u>	<u>64</u>	<u>NA</u>
TOTAL	54,530	40	^b 314	NA

^aDependency represents the percentage of total feed requirements supplied by a given source; in this table, SJRA public lands.

^bNumbers are not additive because of rounding.

Based on direct effects from the ranch budgets and on indirect and induced effects derived from a county economic model, it is estimated that local operators who use SJRA forage generate 176 jobs (4.8 percent of total county employment) and \$1,013,000 of income (1.5 percent of total county income) (table 3-19).

Although BLM does not recognize a capitalized value for grazing preferences, the market does recognize such a capitalized value whenever grazing fees are lower than their true economic value [USDA and USDI, 1977]. Recent permit sales in the area have ranged from \$50 to \$75. Local private lease rates for forage also suggest that grazing fees are lower than their true economic worth [Tittman and Brownell, 1984].

There is some uncertainty as to how much of a permit's value, if any, is capitalized in an operator's base property when it does not represent actual ranch capacity. Although most operators have purchased their grazing privileges from other operators, the uncertain nature of both future grazing privileges and grazing fees after 1985 may have reduced or eliminated much of the previously capitalized value. If a permit's value is \$60, and the entire permit value is capitalized in the ranch's value, then grazing privileges in the SJRA account for \$4,745,900 or 15 percent of the aggregate ranch value of operators using SJRA forage.

Most credit institutions base loans on the rancher's ability to repay, which is usually measured by the rancher's likely future income. Credit institutions also require a security on their loans, which is often based on the base property's appraised value. Although other factors are far more important, the appraised value occasionally includes grazing privileges on public lands. If the ability to repay a loan is adequate, the appraised value could limit the size of the loan. Since grazing privileges on public land can also affect a rancher's likely future income, changes in grazing privileges could also affect rancher's ability to obtain loans.

Livestock production within San Juan County also affects the revenues and costs of local taxing

jurisdictions. Livestock related sales and property taxes bring an estimated \$89,000 in revenues to local taxing jurisdictions. Livestock production associated with SJRA forage generates approximately \$62,000 in revenues to local taxing jurisdictions (table 3-18). These figures are thought to be conservative. Livestock related jurisdictional costs could not be delineated or quantified.

RECREATION

The recreation related purchases of goods and services have spinoff income, employment, population, and fiscal effects.

San Juan County receives significant recreational use from both residents and nonresidents. Approximately 50 percent of the tourists traveling through the county actually visit attractions within the county, and 7 to 20 percent of these tourists visit attractions in the SJRA. However, nearly all tourists traveling through the county pass through the SJRA.

Including direct, indirect, and induced affects, 323 jobs (9 percent of county employment), and \$4,424,000 of personal income earned in San Juan County (7 percent of county income) can be attributed to recreation in San Juan County. Visits to attractions within the SJRA account for 12.6 to 23.1 of the jobs (0.3 to 0.5 percent of county employment), and \$173,000 to \$318,000 of the personal income earned in the county (0.3 to 0.5 percent of county income) (table 3-19).

The SJRA receives an estimated 6,900 user days of commercial recreation use annually, directly generating 16 jobs and an estimated \$500,000 in sales. Only 4 of the 23 commercial outfitters who use the SJRA have a local base of operations. The commercial use of the SJRA by these local outfitters generates an estimated 10 local jobs and \$140,000 of local income.

Some recreational visitation in the county can be attributed to consumptive and nonconsumptive wildlife use (table 3-23).

Average annual wildlife related local expenditures have been estimated, based on a 1980 national survey of hunting and on various IORT

TABLE 3-23

Estimated Total Wildlife Use
(Hunter Days)

	<u>Out of</u> <u>Community</u>	<u>In</u> <u>Community</u>	<u>Total</u>
Consumptive	5,117	10,049	15,166
Nonconsumptive			
Primary			
Nonresidential			8,000
Residential			12,000
Secondary			
Nonresidential			33,000
Residential			31,000

Sources: USDI and USDC, 1980; UDWR, 1982a; UDWR, 1982b; UDWR, 1983.

studies. Including direct, indirect, and induced effects, wildlife dependent recreation generates 9.7 jobs (0.2 percent of county employment) and \$133,000 of personal income earned in San Juan County (0.2 percent of county income) (table 3-19). These figures represent 3 percent of the local income and jobs that are generated by all recreation related expenditures in the county. The local importance of wildlife related recreation was 50 to 100 percent greater in the 1970s when the San Juan-Elk Ridge deer herd unit was open to hunting.

Public lands within the SJRA account for only a portion of the habitat for most wildlife species. Based on the proportion of habitat for each species that is public lands, 4.3 of the jobs and \$59,000 of the income (table 3-19) earned in the county (0.1 percent of county employment and income) can be attributed to wildlife use of public lands.

Tourism forms a fairly stable economic base, which has been growing with regional population growth and may increase in importance as other industries, such as mining, decline. The industry does experience annual fluctuations and is highly susceptible to economic recessions. However, these fluctuations are not of the size

or duration of mining booms and busts. A larger proportion of temporary jobs with relatively low salary levels are associated with the recreation industry, particularly with the businesses most dependent upon tourism.

Recreation within San Juan County also affects the revenues and costs of local taxing jurisdictions. Recreation related sales, property, and transient room taxes brought an estimated \$160,000 to local taxing jurisdictions (table 3-18). Recreation in the SJRA brings an estimated \$6,000 to \$11,000 to local taxing jurisdictions. These figures are thought to be conservative, since they do not include other related revenue sources.

OTHER LAND USES

Other economic uses of public lands in the SJRA include filming, stockpiling of materials, and the construction and use of transportation, utility and other facilities. Occasionally lands are sold to the private sector for residential, commercial, and agricultural uses.

Construction of a major utility line typically employs 100 to 200 people, 30 to 40 percent of whom are hired locally, and generates an estimated \$380,000 of local income [BLM, 1979; BLM, 1980]. These jobs usually last 1 to 2 months. Some permanent local employment results when a maintenance crew or a pipeline pumping station is located in the area. A small amount of temporary employment and income are also generated by filming, stockpiling, and the construction and use of other miscellaneous facilities.

Other land uses in San Juan county affect both the revenues and costs of local taxing jurisdictions. Related taxes from utility lines bring an estimated \$665,000 to local taxing jurisdictions, 40 percent of which is from SJRA lands. Revenues from other land uses cannot be estimated. San Juan county receives PILT for entitlement land within its boundaries; the amount received in 1984 was \$363,738. San Juan county's population currently limits PILT. Payments to the county average \$0.13 per acre, which is significantly less than the county

receives from any alternative ownership except the state.

Specific Indicators Affected

The specific environmental indicators related to economic considerations that could be affected by the alternatives in chapter 2 are (1) minerals (income, employment, and tax revenues); (2) soil and water (sediment cost and salinity cost); (3) livestock (returns to labor and investment, wealth, income, employment, and tax revenues); (4) recreation (income, employment, and tax revenues); (5) wildlife (income, employment, and tax revenues); (6) other land uses (income, employment, and tax revenues); (7) plan budget (income and employment); and (8) land disturbing activities (costs).

SOCIAL CONDITIONS

The region's social characteristics stem from its history and environment. Early growth was due primarily to the livestock industry and Mormon colonization. The uranium boom in the early 1950s stimulated additional growth and brought wealth to many property owners, who continue to have a strong influence on the region's political and social climate. Their livelihood and success from the use and development of the region's resources continues to influence the county's attitude toward resource use. Residents continue to emphasize personal independence, local government and local control, and the development of natural resources.

The culture of the local American Indians differs from that of the local non-Indians. Strong cultural identity remains, with little assimilation of Indians into the mainstream of society. Although there are signs of improving

conditions such as better housing and higher average educational levels, there remains a significant disparity between Indians and non-Indians in employment, income, and living conditions.

The county has not experienced the booms and busts typical of most small rural areas with a high dependency on resource related industries, and has not had to deal with large immigrations or outmigrations and other problems related to rapid growth. Communities in the county remain small, rural, and isolated. The local economy depends largely upon the region's natural resources and upon market forces outside local control. Much of the influence and political power remains with those long-time residents whose families also lived in the area. Political and economic diversity is low compared to areas that have experienced typical booms and busts; except for the large Native American population, there is little social diversity.

Federal agencies, which have exerted increasing management and control over land upon which the local economy depends, are viewed with some distrust. The current economic slump and high rates of unemployment have heightened the local sensitivity over federal actions that appear to negatively affect the local economy. However, public lands, and the undeveloped nature of much of these lands, are important components of a lifestyle desired by many local residents.

Specific Indicators Affected

The specific environmental indicators related to social conditions that could be affected by the alternatives in chapter are (1) community; and (2) individuals.

CHAPTER 4





CHAPTER

CHAPTER 4 — ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

SUMMARY

This chapter presents the environmental effects, or impacts, of the five alternatives described in chapter 2. The impacts depict the projected change that would occur in the human environment by the year 2000 if the alternatives were implemented. Impacts were summarized in table 2-10.

All of the alternatives would meet the requirements of the National Environmental Policy Act (NEPA) and other environmental quality related laws, regulations, and policies, including the requirement to prevent unnecessary and undue degradation of the public lands and resources, as prescribed by the Federal Land Policy and Management Act of 1976 (FLPMA). However, because the alternatives are quite different, each would have an environmentally preferable result for different components of the human environment.

Alternative A presents a continuation of current management. It would leave most of the resource area available for minerals development and livestock uses. It also favors use of forest products. Economic conditions would not change. This alternative would be the least expensive to implement.

Alternative B would be the least restrictive to development of minerals resources and livestock uses. It favors extraction of minerals and intensive use of the grazing resource, and would bring the greatest increase in employment, income, and tax revenues if coal is produced (coal production is considered to be possible but unlikely under this alternative). It provides the greatest economic benefit to livestock operators but would be economically

detrimental to commercial outfitters. It would place the fewest restrictions on recreational off-road vehicle (ORV) use, although the quality of recreational resources would decrease. Soil loss would be greatest under alternative B, and water quality would decline.

Alternative C favors recreational uses, particularly backcountry uses in a primitive or semi-primitive setting, and provides the greatest acreage in those recreation opportunity spectrum (ROS) classes. Alternative C would limit impacts to natural resources by restricting minerals and livestock uses. Hunting uses would be favored because wildlife (big game) populations would reach higher numbers than under any other alternative. Alternative C would provide the greatest economic benefit to recreation outfitters. It would be relatively expensive to implement.

Alternative D would be the most restrictive to minerals development and livestock uses, with about 60 percent of the San Juan Resource Area (SJRA) withdrawn from development. Available livestock forage would decrease by 30 percent compared to present management. Long- and short-term vegetation disturbance would be the least, and water quality would be the highest. Fewer archaeological sites would be damaged, and more protected, than under any other alternative. The area of restricted ORV use would be the greatest, and the area available for primitive and semiprimitive recreation would be almost as great as under alternative C. Alternative D would provide the lowest rate of employment, income, and tax revenues, and would be the most expensive alternative to implement.

Alternative E presents a balance among uses of different aspects of the human environment. Minerals production would not decline, with the

possible exception of locatable minerals. The greatest acreage would be removed from grazing use among the alternatives, but slightly more forage would be available than under present management. Most primitive recreation settings would be protected, and wildlife populations would increase, but not as much as under alternative C or D. Recreational river running on the San Juan River would be favored. Economic impacts for alternative E would be similar to alternative A. There would be a minor economic loss to livestock operators compared to alternative A, and a minor gain to recreation outfitters. This alternative would be slightly more expensive to implement than alternative A.

ANALYSIS METHODS

Not all environmental components would be affected by the alternatives analyzed. The present (1986) condition of those that would be changed by implementing any of the five alternatives was described in chapter 3. Specific indicators were listed in table 3-1. Change (impact) is measured in increase or decrease of a specific environmental indicator, such as acres open for oil and gas leasing.

Changes to some facets of the human environment (for example, visitor use days) could not be projected because they would depend on many factors besides the alternatives presented, and so were not used as environmental indicators.

The environmental baseline is alternative A, which represents no action, or no change in management. The change to each component that would occur by 2000 under current management is described under alternative A. The environmental consequences of management under the other alternatives are compared to the change that would occur under alternative A.

Impacts are seldom known with certainty and must be based on certain assumptions. Broad planning assumptions, which have guided development of all phases of this resource management plan (RMP), were given in chapter 1.

Assumptions for surface disturbance caused by minerals, grazing, or other development are stated at the beginning of each alternative.

These were used to project secondary impacts, such as soil loss. The assumptions for projecting impacts to specific indicators are given under the components under each alternative or in the appendixes.

The impact of surface restrictions on production of minerals depends on the quality and quantity of the mineral in place, which cannot be determined prior to exploration and development. The potential for minerals occurrence, however, can be projected. For each mineral commodity assessed, appendix S shows the correlation of mineral potential with surface restrictions under each alternative, based on potential as discussed in chapter 2.

To analyze impacts to livestock forage and grazing use, changes were projected by alternative for each grazing allotment. The change in ecological condition, by allotment, is shown in appendix T. Appendix U shows the management actions under the various alternatives as they would apply to specific allotments.

Mitigation (appendix A) is considered in the impact assessment for each alternative. Short-term impacts would occur during implementation of a management action, or within 2 years after completion. Revegetation normally begins within 2 years and becomes well established in 5. Long-term impacts are those remaining after 2 years. Residual impacts are those that would remain after the year 2000. Cumulative impacts are individually minor, but cross a threshold of significance when aggregated. These thresholds, determined in the MSA, are listed in table 4-1.

ALTERNATIVE A

OVERVIEW

Alternative A is the no action alternative, and represents a continuation of current management. The two primitive areas would generally be closed to development and ORV use. Categories of stipulations or special conditions would be applied to combined hydrocarbon lease (CHL) and oil and gas lease activities (figure 3-1). All other projects would be subject to site-specific stipulations or special conditions developed to mitigate environmental impacts, and

TABLE 4-1

Thresholds of Significance for Environmental Impacts

Environmental Component	Critical Threshold
MINERAL COMPONENTS	
<u>Oil and Gas</u>	
Area available for lease	Lands closed to leasing or surface use severely restricted over 25% of the SJRA. Denial or severe restriction of surface use within KGSs.
Production	Increase in production levels to the extent that oil and gas remains in reservoir, unable to be recovered (unquantified). Decrease in production levels to the extent that operators cannot meet demand for oil and gas from SJRA (unquantified).
Geophysical operations	None identified.
<u>Coal</u>	None identified because of low potential for coal development from SJRA.
<u>Tar Sand</u>	
Area available for lease	Denial or severe restriction of surface use of leased lands over 25% of the STSA.
<u>Mineral Materials</u>	
Area available for disposal	Denial or severe restriction of surface use for mineral material disposal over 25% of the SJRA.
Production	Increase in production levels so that supplies overstep demand by more than 25% (unquantified). Decrease in production levels to the extent that operators cannot meet demand for mineral materials from SJRA (unquantified).
<u>Locatable Minerals</u>	
Area available for location	Closure to entry or severe restriction of surface use over 25% of the SJRA.

TABLE 4-1 (Continued)

Environmental Component	Critical Threshold
<u>Locatable Minerals (Concluded)</u>	
Production	<p>Increase in production levels so that supplies overstep demand by more than 25% (unquantified).</p> <p>Decrease in production levels to the extent that operators cannot meet demand for locatable minerals from SJRA (unquantified).</p>
<u>Other Nonenergy Leasable Minerals</u>	
Area available for lease	Lands closed to leasing or surface use severely restricted over 25% of the SJRA.
Potash area available for development	Denial or severe restriction of surface use within KPLA
BIOTIC COMPONENTS	
<u>Air</u>	
Air quality	Violation of the the secondary National Ambient Air Quality Standards (NAAQS) and prevention of significant deterioration (PSD) class II increments (see appendix V).
<u>Soils</u>	
Soils loss	Tolerable soil loss limits.
<u>Water</u>	
Surface water quality	<p>Sediment rates of 1 acre-foot per square mile.</p> <p>Salinity exceeding 723 milligrams per litre of salt below Hoover Dam in southern Nevada and 879 milligrams per litre below Imperial Dam in southern Arizona.</p>
Ground water quality	None identified.
<u>Vegetation</u>	
Vegetation disturbance	See surface water quality.
T/E species habitat	<p>Loss of any habitat.</p> <p>Increase of habitat over 25% of present.</p>

TABLE 4-1 (Continued)

Environmental Component	Critical Threshold
<u>Vegetation (Concluded)</u>	
Area available for forest product use	Harvest of all dead fuelwood in readily accessible areas. Unauthorized harvest of green wood to the extent that BLM can no longer manage for sustained yield.
<u>Wildlife</u>	Not quantified due to lack of data.
HUMAN USES	
<u>Grazing</u>	
Area available for grazing use	Elimination of grazing use over more than 25% of SJRA.
Livestock forage	Maximum level of forage that could be consumed and still maintain sustained yield of vegetation is between the past 5 years average use and active preference. Restriction of forage use to less than 75% of the past 5 years average licensed use.
<u>Cultural Resources</u>	
Archaeologic/historic sites	Untreated disturbance to, or loss of, a cultural property.
<u>Recreation</u>	
ROS classes	The change to a different ROS class of any specific site. Change of 20% or more of the acreage in a given ROS class to a different class.
Area available for ORV recreation	Elimination of recreational ORV use over more than 25% of the SJRA.
<u>Visual Resources</u>	
VRM classes	Change in the scenic quality of an area sufficient to raise or lower the VRM class.
Visual contrast rating scores	Any change in scenic quality exceeding that allowable under the present VRM class.

TABLE 4-1 (Concluded)

Environmental Component	Critical Threshold
<u>Lands</u>	Designation or exclusion of over 25% of the public lands in SJRA for utility and transportation corridors.
	Disposal of more than 10% of the public lands in SJRA.
	Withdrawal of more than 25% of the public lands in SJRA.
ECONOMIC CONSIDERATIONS	A greater than 5% change to personal, local, or regional employment, income, wealth, costs, and/or revenues.
SOCIAL CONSIDERATIONS	A change in local lifestyles.

to conform with legal or regulatory requirements. Standard operating procedures are given in appendix A.

ASSUMPTIONS

The following assumptions regarding surface disturbance from minerals, grazing, and other development were used to determine impacts on other environmental indicators.

It was assumed that 50 oil and gas wells per year would be drilled between 1985 and 2000, and that each well pad and associated access road would total about 6.5 acres. The well pads were assumed to overlie areas that had previously been disturbed by geophysical exploration; 25 percent of the actual acres disturbed were assumed to overlap acres previously disturbed by geophysical activities. It was further assumed that 20 of the 50 wells would be productive; that the remaining 30 would be abandoned and reclaimed; and that reclamation would be successful, with a cover of grasses and shrubs (mix of native and exotic species) within 5 years.

It was assumed that 750 miles of geophysical lines would be run per year (1,500 acres disturbance per year), of which 500 miles (1,000 acres) would be reclaimed with a cover of grasses and shrubs within 5 years; 200 miles (400 acres) would be reclaimed with grasses and shrubs within 10 years; and the remaining 50 miles (100 acres) would not be reclaimed, due either to continued use, to rock outcrop, or to unsuccessful reclamation. It was assumed that a standard vegetation seed mix of native and exotic plants would be used.

It was assumed that 100 acres per year would be opened to (disturbed by) mineral materials disposal between 1985 and 2000; and that of the 100 acres, 75 would be successfully reclaimed with grasses and shrubs (native and exotic species seed mix) within 5 years.

It was assumed that 100 acres per year would be disturbed for annual assessment work for mining claims between 1985 and 2000. Of this 100 acres, it was assumed that 90 would be successfully reclaimed within 5 years with grasses and shrubs (native and exotic species), and the

remaining 10 acres would be left unreclaimed for access purposes (about 7 miles total of physical access, 12 feet wide).

It was assumed that one plan of operations per year would be accomplished. (A plan of operations is required for assessment work in a designated area of critical environmental concern (ACEC), designated wilderness, or an area closed to ORV use; otherwise, a plan of operations is required when more than 5 acres are disturbed.) It was assumed that the plan of operations would result in 10 acres per year of surface disturbance; that 5 of the 10 acres would be successfully reclaimed within 5 years with grasses and shrubs (native and exotic species), and that the remaining 5 acres would be left unreclaimed with permanent facilities in place.

For grazing uses, it was assumed that 10 percent of the new land treatments proposed in existing allotment management plans (AMPs) would actually be implemented by 2000. This amounts to 10,800 acres that would actually be treatable.

It was assumed that no surface disturbance would be caused by exploration or production of coal, tar sand, potash, or any other mineral not specifically mentioned.

Transportation and utility corridors were assumed to be 1 mile wide and able to accommodate one or more compatible facilities of like kind.

MINERAL COMPONENTS

Oil and Gas

Impacts

It was assumed that the acreage assigned to each of the oil and gas categories would not change. The total acreage subject to oil and gas category application is 1,777,830 (the acreage of federal minerals under public lands).

In the SJRA, 1,508,480 acres are in category 1. No special requirements are imposed on development on 891,310 acres. Areas with the highest potential for new field oil and gas discoveries (the Blanding Basin and the Paradox Fold and

Fault Belt) are left open to leasing and development under category 1 (appendix S).

Special lease conditions are applied to 617,170 acres, including seasonal use restrictions on 68,740 acres of bighorn sheep lambing areas, 216,190 acres of deer winter range, and 329,900 acres of special recreation use areas (appendix A). These have some effect on exploration and development.

The seasonal restrictions make it difficult to plan exploration programs and to maintain production operations, thereby adding to industry's oil and gas exploration and production costs. Seasonal restrictions to protect deer winter range and no surface occupancy stipulations adjacent to Hovenweep National Monument (NM) in the Blanding Basin coincide with an area that contains the highest potential for new discoveries and the majority of production operations. Other restrictions to protect bighorn sheep lambing areas and special recreation use areas occur in geologic locations of low to moderate potential for new discoveries and no past or current production, and would therefore have little effect on production.

The SJRA contains 114,120 acres of category 2 lands (leasing with no surface occupancy), and 155,230 acres of category 3 lands (no leasing), for a total of 269,350 acres. Category 2 lands could be developed only through directional drilling from offlease, which increases costs to industry. Category 3 lands would be unavailable for lease; therefore, no drilling would be allowed. However, most of these areas have low potential for oil and gas. Areas of high oil and gas potential most adversely impacted are located along the San Juan River within the Blanding Basin, where several hundred acres are in category 2. Directional drilling makes exploration and development more costly and reduces the likelihood of making a successful completion. Most of the acreage in categories 2 and 3 occurs in the Monument Upwarp, which has a low to moderate potential for new discoveries and no past or current production.

New field discoveries and acres that would be in production by 2000 cannot be quantified, but past experience suggests a decreasing long-term

trend in new field discoveries and production, as currently available lands are explored and developed, and the resource depleted. However, by 2000 the decrease would be negligible.

Geophysical work would decline slightly, to 750 miles per year between 1985 and 2000. It was assumed that 700 miles would be in the Blanding Basin, 25 miles in the Paradox Fold and Fault Belt, and 25 miles in the Monument Upwarp. Geophysical work would not be restricted; access and methods of acquiring geophysical data would remain constant.

Conclusion

The area available for lease would not change, nor would the area in each leasing category. Production cannot be quantified for either oil or gas. New field discoveries, as well as production from both existing and new fields would continue to decrease, but the decrease would be insignificant.

Geophysical work would decline to 750 miles per year.

Coal

Impacts

About 212,000 acres of very poor quality coal deposits underlie public lands in the San Juan Coal Field. This is the only area that would be considered for coal development. Lease conditions have not been developed for this area. However, no demand for coal leases is anticipated before 2000; therefore, no leasing, development, or production is projected.

Conclusion

The area available for lease would not change; no area is currently available. Production of coal would not change; no coal would be produced.

Tar Sand

Impacts

The White Canyon Special Tar Sand Area (STSA) includes 7,979 acres of federal minerals which

would be available for competitive lease. CHL categories, which preclude surface use of 4 percent of the STSA, have been imposed. No expressions of interest in leasing the area have ever been received, and the Utah statewide environmental impact statement (EIS) for tar sand leasing [BLM, 1984c] concluded that there would likely be no production from the White Canyon STSA or anywhere else in the SJRA in the foreseeable future (before 2000). The San Juan RMP assumes that the conclusions drawn in the EIS are correct.

Conclusion

The area available for lease within the White Canyon STSA would not change, nor would the area in each leasing category. No tar sand would be produced.

Mineral Materials

Impacts

In general, the entire SJRA would remain available for mineral materials disposal, except for the two primitive areas, unless disposal is precluded by site-specific conditions such as mining claims or an archaeological site.

During recent years (1983 and 1984), material disposal from public lands has been slightly more than 240,000 cubic yards per year. The major market for materials is the maintenance and improvement of existing roads. All major roads that would be necessary until 2000 appear to be in place, and no major new road construction is planned as of 1985. Projected use appears to be constant, barring any new construction projects on the magnitude of the Recapture Dam project.

The production rate would decrease a total of 20 percent per year over the next 5 years because large projects (Recapture Dam and major road construction), which used significant quantities of mineral materials since 1983, have been completed. Over the next 5 years, production should return to pre-1983 levels, then remain constant until 2000. Production in 2000 would be about 192,000 cubic yards per year.

Conclusion

The area available for disposal of mineral materials would not change. Disposal would not be allowed in the two primitive areas. Production would drop by 20 percent between 1985 and 1990, then remain constant at about 192,000 cubic yards per year.

Locatable Minerals

Impacts

Most of the SJRA (1,674,840 acres) is currently available for mineral location; 103,350 acres have been segregated from location. This has apparently not affected mineral production, since mineral potential in the segregated areas is low on all but about 2,300 acres (appendix S). A loss of area open to entry could occur if lands or mineral materials actions took place, but these cannot be predicted with certainty.

Gold is assumed to be the only locatable mineral that would show a change in production by the year 2000 as a result of the alternatives analyzed for the RMP. Gold interest, mainly along the San Juan River, was higher in 1985 than in 1980; however, fewer than 50 ounces of gold were produced in either 1984 or 1985. The production rate would probably not increase significantly by the year 2000 unless technology is developed that would lead to the economic extraction of microscopic (flour) gold.

Several thousand mining claims have been located in SJRA for uranium and associated minerals; however the uranium market is depressed at this time (1985) and little change is projected by the year 2000. Fewer than 2,000 tons of ore were produced in 1984, and no production occurred in 1985. Because no production is projected by 2000, no impacts have been forecast. Most activity is confined to keeping up assessment work in areas of best mineral potential. Some potential for limestone mining exists along the San Juan River, but because no production has occurred, no impacts have been projected.

Present management has had little effect on location of mining claims, but actions under

alternative A could affect the area open to entry.

If 2,880 acres identified for land disposals were sold, there would be a loss of area available for mineral entry. Although minerals are normally reserved to the federal government during land disposals, regulations do not provide for location, exploration or production of locatable minerals in this situation.

In areas designated for disposal of mineral materials, the extraction of mineral materials would have priority over extraction of locatable minerals. The impact would be mainly to gold, which is often found in gravel deposits.

Currently, 900 acres are under material site rights-of-way and are segregated from location. There could be an impact if acres are depleted and new acres added, resulting in loss of area available for mineral entry. The potential loss of acreage cannot be quantified because applications cannot be predicted at this time. It would not be significant.

Areas open to location are subject to production. Site-specific stipulations to mitigate adverse environmental impacts would be generated from an environmental assessment (EA) prepared for a specific action.

Conclusion

The area available for location of mining claims would not change. Gold production would remain at fewer than 50 ounces per year.

Other Nonenergy Leasable Minerals

Impacts

All of the SJRA has the potential to be leased for other nonenergy leasable minerals. This amounts to 1,777,830 acres (the area of federal minerals under public lands). It is assumed that, under current management, no broad-scale leasing restrictions would be applied.

The only nonenergy leasable mineral present in significant quantities in the SJRA is potash. The favorable potash area would remain available

for development (appendix S). As of 1985 no interest had been expressed in potash exploration or leasing within the resource area. It was assumed that no exploration or production would occur before 2000. It was also assumed that there would be no exploration, leasing, development, or production of any other nonenergy leasable minerals in the SJRA before 2000.

Conclusion

The area available for exploration and lease of other nonenergy leasable minerals would be 1,777,830 acres. No leases would be issued by 2000, with the possible exception of potash leases. The area available for development of potash would be the entire 300,000 acres within the known disposition area. No development or production of potash or any other nonenergy leasable mineral would occur by 2000.

BIOTIC COMPONENTS

Air

Impacts

Air quality in SJRA is currently high when compared to the National Ambient Air Quality Standards (NAAQS) (appendix V). Air quality related values would be protected in the Grand Gulch and Dark Canyon primitive areas by BLM Moab District policy, which has segregated those areas from mineral entry and other surface disturbing activities. These primitive areas were recommended to Congress in 1978 as having air quality related values that are important attributes worthy of class I protection. This recommendation was in direct compliance with The Clean Air Act Amendments, paragraph 164d.

No major development is anticipated on public lands that would change air quality between 1985 and 2000. Temporary (less than 6 months) degradation of air quality could occur from individual projects.

Visibility and air quality in Canyonlands NP are vulnerable to impacts. Visibility is becoming a national concern, and the State of Utah is

currently (November 1985) formulating policy to monitor and control visibility degradation.

Surface disturbing activities and secondary impacts such as an increase in the number of people present could cause significant impacts to the Canyonlands National Park (NP) class I area if they occur close to the park boundary. Whether or not a project would cause a significant adverse impact would have to be determined on a case-by-case basis (appendix V). Cumulative impacts, although insignificant when compared to the NAAQS, could contribute to visibility degradation, which would be of particular concern to the Bureau of Land Management (BLM) with respect to management of the two existing primitive areas.

Conclusion

The quality of air in the SJRA would remain high until 2000.

Soils

Impacts

Impacts to soils are often secondary to surface disturbing activities or grazing. Soil loss reflects actual loss through erosion. The resulting sediment and salt yields cause tertiary impacts to water quality, discussed separately below.

The rate of accelerated soil loss would remain constant at about 643,720 tons per year. Over a 15 year period (1985 to 2000) this would result in a soil loss of 9,655,800 tons. Wind erosion could be locally significant to susceptible soils, but in these estimates would be less than 10 percent of the total. Natural erosion (not resulting from surface disturbance from human activities) has not been quantified and is not assessed.

The major cause of soil loss and sediment yield would be grazing through licensing livestock at the past 5 years average use. Over 600,000 tons per year of soil is estimated to be lost as a result of livestock grazing. The impacts of grazing use on soil loss were estimated because this is the major activity that affects most of

the resource area. It is known that heavy grazing use significantly increases soil loss and sediment yield, and that elimination of grazing use significantly reduces runoff and sediment yield.

The next major impacts would be from mineral exploration and production activities. Geophysical activities are estimated to contribute 42,000 tons of soil loss per year. Mineral materials are estimated to contribute 2,500 tons per year, and mining claims assessment and development 1,320 tons per year.

Land treatments serve to stabilize surface vegetative cover and result in a decrease to the rate of soil loss. Maintenance of existing land treatments on 25,000 acres is estimated to reduce soil loss by 2,000 tons per year over the long term. New land treatments on 1,100 acres would reduce soil loss by 100 tons per year over the long term. The value of range treatments in reducing erosion and sediment yield is not clear. Long-term effects appear to be not only beneficial for forage production (which stabilizes soils), but also for improving rilling and gullying on the soil types that would be treated in the resource area. Short-term losses occur from nearly any treatment technique, but this would be balanced out by the improvement in cover over the long term.

Prescribed fire is known to volatilize and mineralize some nutrients and some litter, but this would not impair revegetation attempts with forage species in this climate regime. The use of chemical treatments on slopes in excess of 10 percent should reduce any losses from mechanical treatments on these slopes. Short-term changes in water yield and in sediment production have been shown to be negligible from prescribed fire, mechanical treatment, or chemical treatment in this climate regime.

While estimates were made on soil losses from grazing levels, they were not made for different grazing practices. Reductions in soil loss and sediment yield could result from improved management techniques, such as range improvements to alter livestock distribution and changes in seasons of use. These would alter

species composition and plant vigor, but the effect on ground cover could not be estimated.

Removal of agricultural trespass and converting the land to permanent range cover would substantially reduce soil losses experienced on nonirrigated cropland. This would be localized and not significant for the resource area.

Other activities would have a negligible impact to soils, although specific projects could have a substantial local impact. These cannot be predicted.

Conclusion

The rate of accelerated soil loss would remain constant at 643,720 tons per year.

Water

Impacts

Impacts to water can be measured by change to surface water quality, and to ground water quality. Surface water quality is generally a tertiary impact governed by soil loss resulting from surface disturbance. Surface water quality is affected by geologic conditions, such as natural erosion or salts leaching directly out of rock formations, but this baseline rate has not been measured and is not reflected in this analysis.

Increased soil loss results in increased sediment yields, which degrades water quality. A fixed percentage of salt is associated with sediment. Therefore, increases in sediment yields have a corresponding increase in salt loading.

Sediment yields and salt loading are given in reference to the Colorado River. The intent is not to give annual concentrations of suspended sediment and salt in the Colorado River, but rather to indicate what amount of sediment and salt would be delivered to the Colorado River through various management programs and change agents.

The rate of soil loss would remain constant (see Soils). The corresponding sediment yield would

remain constant at 160 acre-feet per year, for a total of 2,400 acre-feet by 2000. Salt yield would remain constant at 630 tons per year, for a total of 9,450 tons by 2000. This corresponds to a 1985 total dissolved solids (TDS) level of 600 milligrams per litre, as evaluated at Imperial Dam in southern Arizona (1985 was an unusually wet year; drier years would result in a higher TDS level).

Grazing uses are the primary cause of increases to sediment yields and salt yields; minerals exploration and development are second. Land treatments serve to stabilize surface vegetative cover and result in a decrease to the rate of sediment and salt yields (and a corresponding increase in water quality).

Ground water can be affected directly or indirectly by development. Minerals development could potentially contaminate ground water in the SJRA.

Geophysical activities and oil and gas development can alter ground water behavior. Unplugged or improperly plugged holes can cause aquifers to interact, which could result in lower water levels. Blasting can alter aquifer characteristics, affecting existing wells. Although impacts normally occur only from shots closer than 500 feet, a safe working distance must be determined on a case-by-case basis. With proper care, ground water would not be degraded.

Salinity contamination in the Navajo Formation aquifer from the Aneth oil field injection system is suspected. The U.S. Geological Survey (USGS) is researching this topic, but as yet there is no substantial documentation. For the purposes of this analysis, it is assumed that any potential contamination could be prevented through mitigation on a case-by-case basis.

Hazardous waste management is a potentially critical contaminant of water. Since mitigation is meant to prevent any problems, water quality degradation would be limited to accidents and inadequate application of mitigation. These cannot be predicted, and this type of impact has not been assessed.

Conclusion

Surface water quality would continue to decrease. Sediment yield would continue at the rate of 160 acre-feet per year. Salt yield would continue at the rate of 630 tons per year. Ground water quality would remain constant; the existing level of TDS, in milligrams per litre, is unquantified.

Vegetation

Impacts

Vegetation resources affected by BLM management include the general vegetative cover which would be removed by surface disturbing activities or development; specialized threatened or endangered (T/E) species habitat; forest species used for woodland products; and livestock forage. Changes to livestock forage are discussed under Grazing, this section.

Change in vegetative cover is usually a short-term impact. The vegetation is regained after reclamation of a site, although species composition may be different. Under current management, about 39,400 acres would have a temporary disturbance (loss) of vegetation; after reclamation, the residual loss would be about 5,130 acres. The majority of the short-term loss would come from maintenance of existing land treatments (25,000 acres) and geophysical work (7,150 acres). The majority of the residual loss is from land disposals (2,880 acres) and oil and gas production facilities (1,950 acres). Assumptions are explained in appendix W.

Anticipated changes in ecological condition are shown in table 4-2.

Changes to higher seral stages would result from implementation of existing AMPs. AMPs would allow periodic rest of vegetation to recover from grazing thus producing a higher density of livestock forage species which would result in a higher seral stage. Land treatments would improve livestock forage condition in the treated areas.

TABLE 4-2

Anticipated Changes in Ecological Condition, Alternative A

Ecological Condition Class	Ecological Condition by Percent of Resource Area	
	Present (1985)	Future (2000)
Climax	9	11
Late seral	23	21
Mid seral	34	33
Early seral	13	14
Rock outcrop/ badlands	21	21

Changes to lower seral stages would result from continual spring grazing which would decrease the density of livestock forage species.

It is assumed that habitats for T/E and sensitive plant species would be protected on a case-by-case basis as provided by law. Therefore, there would be no impact to T/E species. Impacts to riparian vegetation are discussed under Wildlife.

Impacts to forest resources are measured in terms of forested acreage removed from harvest, either by actually removing vegetation through surface disturbance or by restrictive conditions that would prevent harvest. About 35 percent of the resource area acreage is forested (about 638,720 acres). Of this, about 527,060 acres are available for use. Both dead and live wood exist on the same acreage. Under current management, 50,900 acres (15 percent of the total forested area) would be removed from harvest by 2000. However, an adequate supply of forest products would remain available for private and commercial use through 2000.

Fire management would affect vegetation. The greater the level of suppression, the more trees that would remain available for harvest after a fire, if a fire should occur. In alternative A, fires would be suppressed over 1,724,790 (97 percent) of the resource area. Fire management is quantified in appendix W. It was assumed that 60 acres per year would be burned by wildfire, or 900 acres by 2000.

Conclusion

Short-term loss of vegetative cover under current management would be about 39,400 acres by the year 2000; long-term loss would be about 5,130 acres.

About 476,160 acres would remain available for private and commercial fuelwood harvest, and 536,810 acres for other forest product use.

Wildlife

Impacts

Changes to wildlife can be estimated for desert bighorn sheep, antelope, deer, riparian/aquatic species, and T/E species, for which BLM manages habitat. Bald eagles are the only terrestrial T/E wildlife species known to inhabit SJRA. It is assumed that T/E species habitat would be protected on a case-by-case basis as provided by law, and that there would be no adverse impacts to T/E species under current management.

Assuming a natural growth rate of 10 percent per year, the bighorn sheep population has the potential to grow from about 1,100 to about 1,210 animals by 2000. Under alternative A, bighorn sheep would increase to about 1,200, an increase of about 100 animals (9 percent) by the year 2000. Because surface disturbance would be reclaimed, the amount of crucial bighorn sheep habitat would remain constant at about 329,750 acres.

The bighorn sheep population would not reach its full potential, primarily because

- seasonal conditions, currently attached to oil and gas leases and CHLs on 68,740 acres to protect lambing areas, cover only about

20 percent of the crucial habitat area and provide no protection during the rutting season;

- the lack of special conditions on other activities, particularly on those occurring in crucial habitat areas, causes stress and interferes with reproduction; and
- livestock grazing at current levels, while not causing a population loss by 2000, would result in continued competition for forage and space on wintering areas.

Assuming a natural growth rate of 10 percent per year, the antelope population has the potential to increase from about 50 to about 65 animals by the year 2000. Under alternative A, antelope would remain constant at about 50 animals. About 30 acres of crucial antelope habitat could be lost.

The antelope population would not reach its full potential, primarily because

- antelope would continue to compete for water, although existing wildlife waters would be maintained and four more water facilities would be constructed in antelope fawning areas;
- maintaining livestock grazing at current levels and current seasons of use (fall/winter/spring) would result in continued competition for spring grasses and forbs; and
- development activities and ORV use without special or seasonal conditions, while causing no direct population loss, could displace antelope from about 30 acres of crucial habitat.

Assuming a natural growth rate of 10 percent per year, the deer population has the potential to grow from about 7,200 to about 7,920 animals. Under alternative A, deer would increase to about 7,357, an increase of about 157 animals (2 percent) by the year 2000. The crucial deer habitat would decrease by 5,630 acres (3 percent) to 191,920 acres.

The deer population would not reach its full potential, primarily because

- seasonal conditions, currently attached to oil and gas leases on 216,190 acres to protect deer winter range, do not entirely correlate with crucial habitat areas and do not always extend late enough into the year;
- without special or seasonal conditions, other development activities, ORV use, and private and commercial use of woodland products, especially if occurring in crucial habitat areas, cause stress or a direct loss of forage;
- continuation of livestock grazing at current levels and seasons of use would allow the deer population to expand until deer are forced to compete with each other and with livestock for winter/spring forage (this threshold point cannot be known until range monitoring studies are compiled);
- assuming that 25 percent of the geophysical activities would occur on crucial deer winter range, geophysical activities without special conditions would remove about 4,780 acres of crucial deer winter range by the year 2000; assuming that each animal needs 10 acres of crucial habitat, this loss would prevent a population increase of 478 deer;
- new land treatments would remove about 850 acres of sagebrush on crucial winter range, preventing a population increase of about 85 deer.

The riparian/aquatic habitat area affects many wildlife species, including T/E species (bald eagle and fish). While new riparian areas would not be created, existing areas can increase in size, and the vigor and density of riparian vegetation can also increase. The extent of riparian/aquatic habitat would increase from 1,440 acres to 1,460 acres, a gain of 20 acres (1 percent) under current management. This increase would result from protection of these areas under the law, from implementation of AMPs, and from livestock exclusions.

Livestock exclusions would allow for an increase of 10 acres of riparian area in the Lake Canyon and Harts Draw allotments. In addition, implementing stream improvements and fencing projects shown in existing AMPs would increase riparian/aquatic habitat by 40 acres (3 percent).

The increase in riparian/aquatic habitat would be offset by approximately 30 acres, primarily due to the lack of special conditions on oil and gas leasing, geophysical activities, mining plans of operations, exploration permits, and minerals leases.

Conclusion

Desert bighorn sheep populations would increase from about 1,100 to about 1,200 animals; crucial bighorn sheep habitat would remain constant at 329,750 acres. Antelope populations would remain constant at about 50 animals, and crucial antelope habitat would decrease by 30 acres to 12,930 acres. Deer populations would increase from about 7,200 to about 7,357 animals, although crucial deer habitat would decrease by 5,630 acres to 191,920 acres. Riparian/aquatic habitat, and related T/E wildlife species habitat, would increase from 1,440 to 1,460 acres.

HUMAN USES

Grazing

Impacts

Under this alternative 1,720,970 acres of public land would continue to be available for grazing in 67 allotments. An additional 312,660 acres would continue to be available for grazing in Glen Canyon NRA.

Livestock grazing would continue at a level somewhat above the 5 year average licensed use level of 54,844 animal unit months (AUMs). This increase would result from implementation of new land treatments (130 AUMs, for a total of 54,974 AUMs) and increased permittee demand for forage (2,000 AUMs). Oil and gas production (130 AUMs), land disposals (88 AUMs), rights-of-way (20 AUMs), and exclusion of grazing from riparian areas (1 AUM) would decrease AUMs

available for livestock use. The overall net change through the year 2000 would be a 1,891 increase in licensed AUMs to a total of 56,735 AUMs. Analysis assumptions for determining changes in AUMs are given in appendix X.

Existing grazing management practices would continue with the same stocking levels, seasons of use and grazing systems. Grazing on winter shrub ranges and grazing during the critical spring growth period without periodic rest would continue on 23 allotments (appendix U). Uneven livestock distribution would continue on 30 allotments because of a lack of improvements to equalize this use. These practices would continue the reduced state of vigor and density of some forage plants, primarily cool season grasses and shrubs desirable for livestock.

New land treatments totaling 1,100 acres would be completed under some existing AMPs. This assumes that because of BLM and permittee budget constraints, only 10 percent of the actual treatable acres proposed in existing AMPs would be completed by the year 2000. These treatments would convert existing woody vegetation undesirable for livestock to herbaceous vegetation desirable for livestock forage.

Conclusion

The area available for grazing would continue to be 1,720,970 acres of public land.

Livestock forage use would increase from 54,974 to 56,735 AUMs.

Cultural Resources

Impacts

Adverse impacts (damage or loss) to cultural resources would continue at the present rate to the year 2000. These impacts are residual and occur despite management efforts to mitigate them through consultation under Section 106 of the National Historic Preservation Act, compliance with project conditions, or law enforcement. The exact number of sites impacted is unknown. The assumptions and methodology used in computing the number of sites impacted and protected are described in appendix Y.

It is anticipated that approximately 15,764 sites would be damaged by 2000. Vandalism (illegal surface collection or excavation) is the single most significant factor impacting cultural resources. Cultural resources would be adversely affected by illegal excavation (40 percent), illegal surface collection (30 percent); inadvertent damage during project development or rehabilitation (15 percent); recreation related site trampling (10 percent); grazing related site trampling and inadvertent damage (4 percent); and miscellaneous cases from other human activities (1 percent) (appendix Y).

Given the current rate of disturbance, certain aspects of the surface or subsurface cultural resource could be lost by 2000. Cumulative impacts would result in the loss of opportunity to manage cultural resources under all of the seven cultural resource use categories.

The number of sites protected under current management was determined by adding the estimated number of sites in existing special properties and those in the Grand Gulch Plateau Special Recreation Management Area (SRMA). All overlap in acreage was considered. It was assumed that all sites (about 25,380) in these areas would be protected.

Impacts to natural history and paleontological sites have not been quantified because of a lack of data. However, these resources (especially paleontological) are currently being damaged or lost, and this would continue at the present rate to the year 2000, primarily as a result of development projects. These impacts are not considered to be significant and were not assessed.

Conclusion

About 15,764 cultural resource sites would be damaged under continuation of current management. About 25,380 sites would be protected.

Recreation

Impacts

The SJRA is expected to experience substantial increases in demand for primitive and semiprimitive nonmotorized recreational activities such as hiking, hunting, camping, and river running. Demand for ORV activities in semiprimitive settings and developed and undeveloped camping locations is also expected to increase.

Under current management the ROS classes would change significantly. Development activities (mainly geophysical testing, oil and gas exploration, and range improvement projects) are projected to decrease the primitive (P) classes from 198,520 to 61,190 acres, a decrease of 69 percent (137,330 acres). The change from P class and actions in other settings would result in increases of 10 percent (49,290 acres) in the semiprimitive nonmotorized (SPNM) class (from 512,460 to 561,750 acres); 20 percent (65,668 acres) in the semiprimitive motorized (SPM) class (from 327,660 to 393,330 acres); and 3 percent (22,370 acres) in the roaded natural (RN) class (from 725,510 to 747,880 acres). There would be no change in the rural (R) or urban (U) classes.

The changes would most likely occur in the Squaw Canyon, Butler Wash, Mancos Mesa, Castle Wash, Mike's Canyon, Slickhorn, Road Canyon, Lime Creek, and Fish and Owl Creek areas. The Dark Canyon and Grand Gulch Primitive Areas would retain the majority of their primitive settings, due to their mineral segregations and being closed to oil and gas leasing; however, peripheral actions would impact some settings. With the loss of P class and increased demand for this setting, management action would be required to limit the amount of visitor use to maintain the primitive social setting. A portion of the projected use increases would also be displaced to locations outside the SJRA due to the use restrictions and loss of primitive recreation opportunities.

The developed recreation sites in the Grand Gulch Plateau SRMA would experience increased visitation, but would not be substantially impacted by the increased use or development

activity. Undirected camping use would increase, with existing and additional undeveloped sites experiencing trash and human waste problems.

The San Juan River SRMA would continue to experience increased demand for river running with current use limits being reached for the Sand Island to Mexican Hat and Mexican Hat to Clay Hills Crossing sections. Mineral exploration and drilling and mining for placer gold or limestone could change some of the SPM class to RN, reducing the quality of the experience on the Sand Island to Mexican Hat section. Increased user demand would also occur for the Montezuma Creek to Sand Island section where oil and gas development and gravel production could reduce the scenic quality, but probably not change the RN class. The Sand Island recreation site would experience continued increased camping and day use from river runners and passing tourists. This increase would cause user conflicts and resource damage.

There would be 1,679,340 acres designated as open to ORV use and 99,850 acres (the two primitive areas) designated as closed under the no action alternative.

Recreational ORV use is projected to increase in the SJRA occurring mainly in the lands adjacent to Canyonlands NP (Beef Basin, Davis Canyon, Lavender Canyon, and along Indian Creek) Comb Wash, and along the Hole-in-the-Rock Trail. The 393,330 acres of SPM and 747,880 acres of RN should be able to accommodate the increased use without substantial user conflicts, except where motorized and nonmotorized uses interact, such as the Comb Wash area, where use occurs up incoming canyons, and the bottom of Arch, Road, Fish, and Owl canyons. There is also a problem with recreational vandalism to cultural sites from ORV travel across the sites in the Comb Wash area.

Many portions of SJRA are not now used for recreational ORV use because of topography or lack of peripheral access. The two primitive areas present severe topographic barriers and are not now used for recreational ORV use. The existing P class areas are not now used for recreational use because of either their rugged

topography or their remoteness; this is one reason why these areas qualify as P class. Similarly, recreational ORV use in SPNM class areas is confined to the perimeter of SPM or RN class areas.

In areas of projected increased ORV use, camping at undeveloped locations would continue, particularly in the Indian Creek area, with user conflicts, trash, and human waste problems becoming more evident. With use increases in the Beef Basin area these same problems could become evident; however, not to the same extent. Of more concern in this area is the potential for vehicle travel off existing routes and subsequent lowering of the scenic values in the semiprimitive setting.

Other recreation resources would not be substantially impacted by the no action alternative.

Conclusion

The P ROS class would decrease from 198,520 acres to 61,190 acres. There would be a corresponding increase in the SPNM, SPM, and RN classes, and no change in the R and U classes.

The area available for recreational ORV use would continue to be 1,679,340 acres, with no areas designated for limited use and 99,850 acres designated as closed to ORV use.

Visual Resources

Impacts

Under current management, about 99,850 acres (approximately 6 percent of the SJRA) would be placed in visual resource management (VRM) class I. Management of this class objective affords the greatest protection to scenic quality. This would consist of the Grand Gulch and Dark Canyon Primitive Areas. All other class acreages are based on inventory data as described in the MSA.

Under continuation of current management, increased development would cause a change in the VRM class acreage, as areas shift to a lower management class (higher class number) as they become increasingly developed. It cannot be

predicted when this shift would occur, what classes would change, and to what extent. It is estimated that, based on a case-by-case analysis through application of VRM objectives, that in 271 cases the contrast rating score would be found to exceed the VRM class objectives. The number of scores that would exceed the class standards for the areas in which they are located could, over time, result in a change to the VRM class for a specific area.

Conclusion

VRM class acreages would remain the same. In about 271 cases, the VRM contrast rating scores would exceed class objectives.

Lands

Impacts

Under alternative A, 0 acres would be designated as transportation and utility corridors, and 1,679,340 acres would be available for rights-of-way; no areas would be avoided; and 99,850 acres (the two primitive areas) would be excluded from utility corridor use.

The lands proposed for disposal in alternative A are those carried forward from the management framework plans (MFPs) or identified as suitable for disposal by recreation and public purposes (R&PP) classification; they represent a continuation of the existing situation (appendix Q). The 2,880 acres proposed for disposal may be used by the public at large or for community expansion. Currently, most of the parcels are encumbered by mining claims which would preclude disposal as long as the claim is in place. After onsite cultural resource inventory, some tracts may be precluded from disposal under the laws protecting these resources. Other lands may be sold or patented after application and assessment, but cannot be predicted and have not been included in this analysis.

The Bluff Airport lease and the Recapture Lake R&PP lease do not expire until the year 2002 and would not be affected. Leases are issued in response to specific requests. The location, acreage, or use cannot be predicted.

A total of 103,350 acres would be segregated from entry. Under alternative A, 92,130 acres classified by BLM would be formally withdrawn and segregated from entry. In addition, 9,730 acres acquired from the State of Utah has never been opened to entry and would be officially withdrawn. Additional acreages could be closed to entry due to segregations applied on a case-by-case basis for specific lands actions; 1,440 acres are currently segregated for special uses and would remain so until 2000. Other segregations of this type cannot be predicted. The Department of Energy (DOE) mineral withdrawal of 50 acres would also remain segregated from entry.

Conclusion

No acres would be designated for transportation and utility corridors, no acres would be avoided, and 99,850 acres would be excluded from rights-of-way.

A total of 2,880 acres would remain available for disposal for community expansion or private use.

A total of 103,350 acres would be closed to entry.

ECONOMIC CONSIDERATIONS

Impacts

The following discussion concentrates on San Juan County, which is the primary impact area. Economic impacts are grouped by resource use. Only those anticipated changes of greater than 1 percent to personal, local, or regional revenues, costs, income, wealth, or employment are discussed. Those resource uses that could have an effect of this degree include minerals, soil and water, livestock, recreation, and other land uses. The BLM's budget impact on the local economy is also discussed.

Minerals

Mineral related impacts can affect the local economy by changing either the cost of conducting mineral activities or the amount of mineral activity. Management actions responsible for

these impacts include stipulations, special conditions, and total activity exclusions.

Stipulations and special conditions can increase the cost of mineral exploration and development by (1) changing the location, method, or equipment used in mineral exploration and development; (2) increasing the amount of coordination required with the BLM; (3) temporarily idling labor and equipment; and (4) lengthening the duration of mineral exploration and development.

In addition to increasing activity costs, these effects can also lower the output value of mineral exploration and development. For example, changing the method of geophysical exploration can reduce the accuracy of the geophysical data obtained.

Much of the costs from stipulations and special conditions are spent in the local economy, thereby increasing local employment and income. However, these costs also decrease the amount of mineral activity, thereby decreasing local employment and income. The relationship between cost and the amount of mineral exploration and development has not been quantified, nor have the added costs imposed by most stipulations and special conditions. The net effect on the local employment and income is unknown.

Activity exclusions result in a net decrease in economic activity.

Management of mineral resources, including the stipulations and special conditions, would not change; therefore, mineral activity and its importance to local economic would remain unchanged. In fact, mineral exploration and production will probably change, but these changes would be unrelated to changes in management.

Soil and Water

Surface disturbing activities, grazing, and land treatments are projected to affect sediment and salinity yields from public lands.

Most of the sediment that originates in the SJRA enters Lake Powell, where it decreases the lake's electrical production, flood control,

recreation, and water storage values. Some sediment also enters downstream structures, such as small livestock reservoirs and diversion points, where it must be removed or the structure abandoned.

Salt picked up by water originating in or passing through the SJRA increases the municipal, industrial, and agricultural costs associated with the use of saline water in the Lower Colorado River Basin.

Table 4-3 presents the existing value loss for Lake Powell and current costs to water users in the Lower Colorado River Basin from salt and sediment yields caused by surface disturbance in the SJRA. The analysis assumes that all sediment eventually enters Lake Powell and that water yield is not affected.

Livestock Grazing

Livestock management would not change; therefore, livestock production and its importance to local economic would remain unchanged.

Recreation

Recreation related impacts can affect the local economy by changing either (1) the number of people who visit the area (2) their length of stay, or (3) their expenditure patterns. Greater visitation, longer lengths of stay, or greater expenditures per day would increase visitor expenditures and resulting local employment and income. Because it has not been possible to quantify the relationship between management actions and visitation, length of stay, or expenditures patterns, most recreation related economic impacts could not be quantified.

Recreation use of the SJRA is projected to increase 25 percent by the year 2000 as a result of increasing incomes and populations in the western United States. This increase in use is projected to increase the local jobs and income by 5 jobs and \$61,300 respectively (total related employment and income would be 23 jobs, and \$306,400).

Although total use may increase, the relative mix of uses may change as a result of a changing

TABLE 4-3

Annual Sediment and Salinity Related Cost, Alternative A

		<u>Baseline</u>
Sediment	\$	17,500
Salinity		<u>36,500</u>
Total	\$	54,000

Note: Assumes that all sediment yield enters Lake Powell. Sediment which in fact enters other capital investments would greatly increase sediment related costs.

mix of recreational opportunities (see impacts to recreation). The effect on total numbers of people, length of stay, or visitor expenditure patterns is unknown. Judging from the existing economic importance of recreation in the SJRA (0.2 percent of local employment and income), the projected changes to the opportunity spectrum would have little effect on the local economy.

Existing land based commercial outfitters rely heavily on the P and SPNM opportunity settings available in the SJRA, and existing water based commercial outfitters rely heavily on SPNM opportunity settings where the only motorized use is from boats. The 12 percent projected loss of acreage in the P and SPNM ROS classes could reduce the demand for the services of land based commercial outfitters. Developments that would be allowed on the San Juan River could reduce the demand for water based outfitter services; however, commercial use of the river is still projected to reach use limits.

Desert bighorn sheep and deer populations are projected to increase slightly. The distance hunters must travel and hunter success rates have been found to be the primary determinants of hunter pressure on many wildlife species. Since larger wildlife populations should increase success rates, more hunters should be drawn to area. Assuming that population/ harvest and harvest/hunter ratios would remain constant,

projected hunter pressure and expenditures would increase local employment by 0.1 job, income by \$900, and taxing revenues by \$100. To draw more hunters, success rates would have to remain higher. The assumed constant harvest/hunter ratios therefore overstate the increases to some degree.

Other Land Uses

The proposed land disposals would be widely scattered and would represent an increase of 0.7 percent in the existing private land base, having little or no effect on nearby land values. Under private ownership, these lands would increase local taxing revenues by at least \$3,000.

The cost of environmental review of major utility lines is typically \$8,000 to \$15,000 per mile. This review would cost only an estimated \$1,500 to \$2,000 per mile in the utility corridors proposed for designation under this alternative [Pacific Gas, 1981].

Plan Budget

Government personnel would be directly employed to implement the proposed plan. This plan would also require the purchases of goods and services from the local economy, and government employees would also spend a portion of their income in the local economy. These direct indirect and induced effects resulting from the plan's budget would generate an estimated 25 jobs and \$494,000 of earnings in the local economy.

Conclusion

Recreation related employment would increase by 5 jobs, income by \$61,300, and tax revenues by \$2,100. Demand for commercial outfitter services would decline. Wildlife related employment would increase by 0.1 job, income by \$900, and tax revenues by \$100. Land disposals would increase local tax revenues by at least \$3,000. Utility corridors would decrease the environmental review cost of major utility lines by \$6,000 to \$14,000 per mile.

SOCIAL CONDITIONS

None of the management actions would impact local

communities so far as to noticeably affect existing social conditions.

ALTERNATIVE B

OVERVIEW

Actions occurring under alternative B would conform to the generalized zoning plan shown in figure S-1. Surface disturbance would be minimized on 2,040 acres to protect the two research natural areas (RNAs) and developed recreation sites. Special conditions would be applied to 2,040 acres to protect floodplains and riparian areas and existing land use leases.

ASSUMPTIONS

The following assumptions regarding surface disturbance from minerals, grazing, and other development were used to determine impacts on other environmental indicators.

The assumptions under alternative B for disturbance that would be caused by oil and gas drilling, geophysical work, mineral materials disposal, and annual assessment work and work done under plans of operation for locatable minerals are all the same as those given for alternative A.

It was assumed that up to 100 acres per year between 1985 and 2000 could be disturbed by coal development. It was assumed that a maximum of 50 acres per year could be strip-mined to produce coal resources, and that each year the previous year's disturbance would be reclaimed (also a maximum of 50 acres per year). It was further assumed that reclamation would be successful with a cover of grasses and shrubs (native and exotic mix) within 5 years. Additionally it was assumed that a total of 20 acres would be developed by the year 2000 with permanent surface facilities for coal production.

It was assumed that there would be no surface disturbance caused by exploration for or production of tar sand, potash, or other mineral materials.

For grazing uses, it was assumed that all actually treatable areas would undergo land treatments. This amounts to 136,950 acres.

The assumptions under alternative B for transportation and utility corridors are the same as those given for alternative A.

MINERAL COMPONENTS

Oil and Gas

Impacts

Compared to alternative A, an additional 155,230 acres (10 percent increase) would be available for lease. No area would be closed. The long-term trend in new field discoveries and production would increase as more lands would be available for leasing and development. This increase would not be large, as the majority of lands made available are of low oil and gas potential (appendix S).

Alternative B offers the least restrictive management concerning development of oil and gas resources in the SJRA. Under this alternative, 1,775,280 acres would be placed in category 1, and 2,550 acres in category 2 (no surface occupancy). Of the category 1 acreage 2,040 acres would contain special conditions (a decrease of 615,130 acres, or over 99 percent). This acreage is small enough that it would not adversely affect oil and gas exploration and development.

Category 2 would be applied to 2,550 acres, a decrease of 111,570 acres (98 percent). The areas are small enough that exploration and development would not be significantly impacted. In addition, although these areas occur in an area of excellent potential for new discoveries, the Paradox Fold and Fault Belt, there has been no current or past production within 10 miles of the restricted areas.

The impacts to geophysical work would be the same as projected under alternative A.

Conclusion

Compared to alternative A, an additional 155,230

acres would be available for lease. Under alternative B, 1,775,280 acres would be in category 1; 2,550 acres would be in category 2; and no area would be in category 3.

Production cannot be quantified for either oil or gas. New field discoveries would increase, and a corresponding increase in annual production would occur from both existing and new fields. This could be significant.

Geophysical work would not change from alternative A.

Coal

Impacts

Under this alternative approximately 212,000 acres of federal coal land would be opened for coal leasing. No area is presently open. Special lease conditions would be placed on 400 acres to protect floodplains and riparian areas; the remaining area would be available with standard conditions (unless imposed by the coal unsuitability study).

Production would increase correspondingly, from none at present to an unknown tonnage (appendix S).

Conclusion

About 212,000 acres would be available for coal leasing. Production would increase but cannot be quantified.

Tar Sand

Impacts

The developable area open to lease under this alternative is the entire STSA (7,980 acres), 280 acres (4 percent) more than would be developable under present management. Since there is no projected production for the White Canyon STSA, acreage changes would have no effect on production (appendix S).

Conclusion

Leasable acreage open to development would increase slightly to 7,980 acres under alternative B, but production would not change.

Mineral Materials

Impacts

An additional 97,300 acres (an increase of about 6 percent) would be made available for the disposal of mineral materials compared to alternative A. These newly opened areas are not repositories of great quantities of usable mineral material, and they probably would not be used as material sources when opened (appendix S).

Conclusion

A larger area, 1,776,640 acres, would be available for material disposal under alternative B. This would not change the present rate of mineral material production.

Locatable Minerals

Impacts

Although in alternative B 1,776,190 acres would be open to entry, an increase of 101,710 acres (about 6 percent), the impact would be slight, since only about 2,000 of these acres have mineral potential (appendix S). There would be no change in minerals production.

Conclusion

The area available for claim location would be 1,776,190 acres, an increase of 101,710 acres.

Production would not change from the present rate.

Other Nonenergy Leasable Minerals

Impacts

Zones of restricted development would be placed on leasing, exploration, and development of other nonenergy leasable minerals. The area available under standard development conditions would

decrease by 4,590 acres (less than 1 percent) to 1,773,240 acres. Of this, 2,040 acres would be subject to special conditions, and 2,550 acres to no surface occupancy stipulations. No restrictive zones are now in effect.

Potash is the only nonenergy leasable mineral present in SJRA in significant quantities. The entire 300,000 acres of known potash deposits 200 would remain open to development under this alternative (appendix S). No potash production is projected.

Impacts to other minerals would be the same as under alternative A.

Conclusion

The area available for exploration and lease of other nonenergy minerals under standard conditions would be 1,773,240 acres. Special conditions would be applied to 2,040 acres, and no surface occupancy stipulations to 2,550 acres that would have remained unrestricted under alternative A.

The acreage open for potash development under alternative B is the same as under alternative A. No production is projected.

BIOTIC COMPONENTS

Air

Impacts

Coal mining, if occurring, would have the potential to decrease air quality. Site-specific air quality modeling would have to be done before the magnitude of change to air quality could be assessed. At a rate of 50 acres per year maximum development, no residual impacts to air quality would occur, although air quality could be degraded temporarily in localized areas.

The protection now afforded to the Grand Gulch and Dark Canyon Primitive Areas for air quality related values would be lost. However, few if any development activities would occur in these areas. Little or no change in air quality in these areas would be expected.

Degradation to air quality could occur as a short-term impact in localized areas. The decrease cannot be quantified and would not be significant. Air quality, as compared to NAAQS, would remain high.

Conclusion

Air quality could be degraded slightly in the short term by coal development on a localized basis. The decrease cannot be quantified, but would be small. Air quality would remain high throughout the SJRA.

Soils

Impacts

Under alternative B there would be an estimated 30 percent increase in soil loss and sediment yield over alternative A. This would represent an increase of 191,100 tons, to 834,820 tons per year. Over the 15-year period from 1985 to 2000, this would amount to an increase of about 2,899,500 tons, or a total loss of about 12,522,300 tons.

The major increase in soil loss under this alternative would be caused by licensing livestock at full preference. Soil loss due to livestock use under this alternative would increase to an estimated 800,000 tons or more per year. Soil loss due to mineral activities other than coal would be the same as under alternative A. Coal mining would involve stripping 100 acres per year, but soils removed would be stockpiled and used for later reclamation.

Long-term reductions in soil loss would occur from the maintenance of existing land treatments and the completion of new ones on about 161,900 acres. This reduction is estimated at about 11,000 tons per year.

Conclusion

The rate of soil loss would increase to about 834,820 tons per year.

Water

Impacts

Surface water quality would decrease under alternative B compared to alternative A. The decrease would correspond to the greater rate of soil loss that would occur under alternative B than under alternative A (see Soils).

The rate of sediment yield to the Colorado River would increase by 25 percent under this alternative. This reflects an increase of 40 acre-feet per year, from 160 to 200. This represents a total of 3,000 acre-feet (an increase of 600) by the year 2000.

The rate of salt yield to the Colorado River would increase by about 170 tons per year (27 percent) to 800 tons per year. A total of 12,000 tons (an increase of 2,550 tons) of salts would enter the Colorado River by 2000, because of human activities.

Ground water quality could be affected by coal mine development. Leaching from strip mine spoils piles could cause an increase of from 500 to 2,000 milligrams per litre of TDS. The rate would vary due to local conditions and cannot be predicted with certainty. The current rate of ground water contamination from human activities is unknown.

Other impacts to surface and ground waters would be as described under alternative A.

Conclusion

Surface water quality would decrease at a faster rate under alternative B than under alternative A. Sediment yield would occur at the rate of 200 acre-feet per year, and salinity at the rate of 800 tons per year.

Ground water quality would decline, but the level of TDS in milligrams per litre cannot be quantified. The decline would be between 500 and 2,000 milligrams per litre of TDS.

Vegetation

Impacts

In this alternative a total of 136,650 more acres of vegetation would be temporarily disturbed through the year 2000 than in alternative A (appendix W). Disturbances would be caused primarily by land treatments (both new ones and maintenance of existing ones) and oil, gas, and other mineral activity. Land treatments would convert native shrubs and trees on 161,900 acres to predominantly exotic grasses and native forbs and shrubs. Oil, gas, and mineral activities would damage or destroy vegetation on approximately 12,400 acres. Disturbance from other activities would occur on 1,750 acres. Most of the damaged vegetation would recover within 5 years by natural succession or artificial seeding to native and exotic species.

Permanent vegetation loss would occur on 1,340 more acres than in alternative A. Losses would result from land disposals (4,220 acres), rights-of-way (300 acres) and oil and gas production (1,950 acres).

Anticipated changes in ecological condition are shown in table 4-4.

TABLE 4-4

Anticipated Changes in Ecological Condition, Alternative B

Ecological Condition Class	Ecological Condition by Percent of Resource Area	
	Present (1985)	Future (2000)
Climax	9	18
Late seral	23	21
Mid seral	34	28
Early seral	13	12
Rock outcrop/ badland	21	21

Changes to higher seral stages would result from implementation of existing AMPs. AMPs would allow periodic rest of vegetation to recover from grazing thus producing a higher density of livestock forage species which would result in a higher seral stage. Land treatments would improve livestock forage condition in the treated areas.

Impacts to T/E and sensitive plants would be the same as under alternative A. Impacts to riparian vegetation are discussed under Wildlife.

Slightly less acreage would be available for forest product use under alternative B than under alternative A. Although fewer acres would be excluded from harvest due to use restrictions, more acreage (171,920 acres total) would be lost due to surface disturbing activities.

Compared to alternative A, a decrease of 26,260 acres (6 percent) would occur to the area available for private and commercial fuelwood harvest. A decrease of 86,910 acres (16 percent) would occur to the area available for other forest product harvest. However, supplies of forest products would remain adequate through the year 2000.

Greater losses to forested areas from fires could occur under alternative B than under alternative A. Fires would be suppressed on 264,750 acres, a decrease of 1,460,040 acres (85 percent). This could result in a significant decline of forested areas if widespread fires occurred throughout SJRA, but this is considered unlikely.

Conclusion

Short-term loss of vegetation would increase from 39,400 acres to 176,050 acres. Residual loss would increase from 5,130 acres to 6,740 acres.

The area available for forest product use would decrease compared to alternative A. The area available for private and commercial fuelwood harvest and for other forest product harvest would decrease to 449,900 acres.

Wildlife

Impacts

The population of desert bighorn sheep would decline to about 930, a decrease of about 270 animals (23 percent) by 2000 compared to alternative A. Crucial bighorn sheep habitat would decline from about 329,750 acres to about 306,240 acres, a decrease of about 23,510 acres (7 percent).

The net loss of 270 animals would result from the following losses and gains:

- assuming a loss of one bighorn sheep for each 100 acres of crucial habitat lost, land treatments on 28,000 acres of crucial habitat would result in a loss of 280 bighorn sheep;
- the lack of seasonal conditions on oil and gas leases and CHLs to protect rutting and lambing on 68,740 acres would result in a loss of about 20 sheep, primarily due to stress;
- grazing exclusions from 4,590 acres of crucial habitat would reduce stress, resulting in a gain of about 30 animals.

The population of antelope would decline to about 27, a decrease of about 23 animals (46 percent) when compared to alternative A. Crucial antelope habitat would be the same as under alternative A, or 12,930 acres.

The decline in antelope population would result from actions to maximize livestock use of forage, which would increase competition for spring grasses and forbs and for available water sources in the crucial antelope habitat area.

The population of deer would decline to about 3,760, a decrease of about 3,597 animals (49 percent) compared to alternative A. Crucial deer habitat would decrease to 181,170 acres, a decline of 10,750 acres (56 percent).

The decline in the deer population would result from the following factors:

- approximately 1,730 deer would be lost (24 percent population reduction) because of livestock grazing at full preference, which would cause a direct loss of forage available to deer on the winter/spring range (deer reproductive success and fawn survival depend largely on this forage);
- assuming that each deer needs 10 acres of crucial habitat, 690 deer would be lost when new land treatments remove sagebrush forage on 6,900 acres of crucial winter range (6,050 acres more than under alternative A);
- the removal of seasonal conditions from oil and gas leases on 216,190 acres of deer winter range, part of which is crucial range, would allow leasing and related road construction activities to occur on deer winter range, resulting in an assumed loss of 144 deer (2 percent);
- impacts due to geophysical activities would be the same as under alternative A (a loss of 563 deer);
- coal leasing and the resulting strip-mining operation would result in a loss of crucial deer winter range of about 22,400 acres; although the range would eventually be reclaimed, it can be assumed that a minimum of about 470 deer would be lost, due to a long-term loss of 4,700 acres of crucial habitat.

The area of riparian/aquatic habitat would remain at 1,440 acres, a decrease of 20 acres (about 1 percent) compared to alternative A. Habitat for known T/E wildlife species occurs in the riparian areas, and would similarly remain constant.

Protective conditions would be applied to all development activity to exclude use in the actual riparian/aquatic zones. This would eliminate losses now occurring (a total of 30 acres, as reflected in alternative A).

An increase in livestock grazing could result in a loss of riparian/aquatic habitat (30 acres). AMPs developed would not provide for exclusion of livestock from riparian/aquatic areas.

Conclusion

The desert bighorn sheep population would decrease by about 270 animals, and crucial bighorn sheep habitat would decrease by 23,510 acres from alternative A. Antelope would decrease by about 23 animals, and crucial antelope habitat would remain constant. Deer would decrease by about 3,597 animals, and crucial deer habitat would decrease by 10,750 acres. Riparian/aquatic habitat and related T/E species habitat would remain at 1,440 acres.

HUMAN USES

Grazing

Impacts

Under alternative B all public land in SJRA would be allotted for grazing. Grazing would be allowed on 55,670 more acres in this alternative than in alternative A (an increase of 3 percent), in a total of 89 allotments. An estimated 22 additional allotments would be created by licensing public lands previously unallotted. These are primarily small, isolated parcels.

Livestock AUMs would increase by 40,769 (70 percent) compared to alternative A. This assumes permittee demand would increase 25,043 AUMs to full active use and AUM increases would result from new land treatments (17,100 AUMs) and from grazing previously unallotted or excluded acres of public land (701 AUMs). Decreases in livestock AUMs would occur from oil and gas production (130 AUMs), land disposals (33 AUMs), and rights-of-way (20 AUMs). The net change would be an increase to 97,504 AUMs total by the year 2000.

In addition to the 9 existing AMPs, 22 new ones would be implemented. These 31 AMPs would provide for periodic winter and spring seasonal rest to allow an increase in vigor and density of livestock forage species. Range improvements in the allotments covered by these AMPs would

also help correct problems of uneven livestock distribution.

Season of use would be changed on 4 allotments (appendix U) to eliminate grazing during the critical spring growth period. This would allow an increase in vigor and density of cool season grasses.

This alternative assumes that land treatments would be completed on 136,900 actual treatable acres with no budgetary constraints. These treatments would convert existing woody vegetation undesirable for livestock to herbaceous vegetation desirable for livestock forage.

Conclusion

The area available for grazing would increase to 1,776,640 acres, an increase of 55,670 acres when compared to alternative A.

Livestock forage would increase to 96,716 AUMs, an increase of 39,981 AUMs over alternative A.

Cultural Resources

Impacts

The magnitude of direct and indirect impacts to cultural resources under this alternative would increase from current management. Under this alternative, about 17,154 sites would be damaged, an increase of about 1,390 (9 percent) over alternative A, primarily as a result of increases in grazing. Increasing livestock use to total preference and an increase in acres of new land treatments would result in a proportionate increase in site trampling and inadvertent damage to cultural resources. Cattle often prefer to take shelter or concentrate in areas likely to have cultural significance.

The number of sites protected under this alternative would be about 25,360, a decrease of 20 (less than 1 percent) from alternative A. This would result from a decrease in the number of acres excluded from livestock use.

Conclusion

About 17,154 cultural sites would be damaged under alternative B. This would be an increase of 1,390 sites over alternative A.

About 25,360 sites would be protected. This would be a decrease of about 20 sites from alternative A.

Recreation

Impacts

Recreation impacts would be as described under alternative A, with the following exceptions.

This alternative would reduce the acres available for primitive recreation opportunities. This would lead to a lower quality experience for the use that would occur and also displace visitors to other locations.

The current ROS classes would change toward the RN class. These changes would occur mainly as a result of land treatments, livestock use in previously excluded areas, loss of mineral segregations for the Grand Gulch and Dark Canyon Primitive Areas, and sale of 160 acres in Butler Wash. The activities would result in the loss of 22,350 acres of P class (11 percent); 39,639 acres of SPNM (8 percent); and 39,930 acres of SPM (12 percent). The RN class would gain 101,920 acres (14 percent). The R and U classes would not change. The P class loss would occur in Grand Gulch (due to allowing grazing and oil and gas exploration) and Butler Wash (land sale with the potential for motorized access). Changes in the SPNM and SPM classes would occur mainly from land treatments within the Grand Gulch Plateau SRMA and Woodenshoe Butte areas.

ORV use would be less restricted than under alternative A; however, damage to recreation resources could occur from increased use of undeveloped camping locations. It is anticipated that recreational ORV use would continue to be low to nonexistent in rugged or remote sections of the SJRA.

Under this alternative 1,776,640 acres would be designated as open to ORV use (an increase of

97,300 acres or 6 percent), 150 acres as limited to designated roads and trails (an increase of 150 acres), and 2,400 acres as closed (a decrease of 97,450 acres or 96 percent).

Conclusion

Compared to alternative A, the acreage in ROS classes would shift away from the P and SP classes. The P class would decrease 22,350 acres to 38,840 acres; the SPNM class 39,640 acres to 22,110 acres; and the SPM class 39,930 acres to 353,400 acres. The RN class would increase 101,920 acres to 849,800 acres. The R class would remain at 14,720 acres and the U class at 320 acres.

Areas open to ORV use would increase by 97,300 acres to 1,776,640 acres. ORV use would be limited on about 150 acres where it is not now limited. The area closed to ORV use would decrease by 97,450 acres to 2,400 acres.

Visual Resources

Impacts

Alternative B would place 104,290 acres (approximately 6 percent of the resource area) in VRM class I. This represents an increase of 4,440 acres (about 4 percent) over alternative A. The increase would result from the addition of Bridger Jack and Lavender Mesa RNAs to the existing class I acreage. A corresponding decrease of 4,440 acres would occur in VRM class IV.

Other impacts to visual resources would be as described under alternative A. Even though more development is projected under alternative B, most would occur in VRM classes III and IV.

Conclusion

The area in VRM class I would increase by 4,440 acres to 104,290 acres. The area in VRM class IV would decrease a corresponding amount to 533,060 acres. There would be no other change to visual resources compared to alternative A.

Lands

Impacts

Under alternative B, 85,760 acres (all increase) would be designated as transportation and utility corridors; 11,540 additional acres (a 1 percent increase) would be available for rights-of-way outside of transportation and utility corridors; a total of 2,550 acres (all increase) would be avoided; and 99,850 fewer acres (all decrease) would be excluded.

Lands available for disposal under this alternative would increase by 1,390 acres (48 percent) over alternative A. This would result from adding parcels for community expansion and isolated parcels not previously identified as suitable for disposal, and eliminating parcels that may be valuable for grazing. This would represent less than 1 percent of SJRA.

Under this alternative, most lands now classified as segregated, and acquired lands not currently open to mineral entry, would be opened to entry. This would be a decrease of 101,710 acres (over 99 percent) to 200 acres. Developed recreation sites (150 acres) would be formally withdrawn and segregated, and the 50-acre DOE withdrawal would remain in place.

Conclusion

Transportation and utility systems would be designated on 85,760 acres and excluded on no acres.

The amount of land available for disposal would increase 1,390 acres to 4,270 acres.

The amount of land segregated from entry would decrease by 101,710 acres. A total of 50 acres would remain withdrawn, and 150 acres would be formally withdrawn.

ECONOMIC CONSIDERATIONS

Impacts

Minerals

The costs of mineral exploration and development

should decrease under less restrictive management. The reduced cost would encourage increased activity; however, the lower cost would also reduce mineral related expenditures within the local economy. The net effect on the local economy is unknown. The greater acreage open to mineral exploration and development under this alternative should further increase mineral activity.

Based on the assumed levels of mineral activity under alternative B, mineral related local employment and income should increase by 61 jobs and \$1,510,000 respectively. All of the projected increases in employment and income would be due to assumed coal development. Coal in the SJRA is of poor quality and would be expensive to develop. Actual production by the year 2000 is therefore highly unlikely.

Greater mineral activity would also increase revenues to local taxing jurisdictions. Based on the assumptions for mineral activities, taxing revenues should increase by \$515,000.

Soil and Water

Surface disturbing activities, including grazing and land treatments, are projected to affect sediment and salinity yields from public lands.

Lake Powell's value loss due to sediment originating in the SJRA would increase \$4,500 (table 4-5). The Lower Colorado River Basin user costs from salt originating in the SJRA would increase \$9,900. The analysis assumes that all sediment eventually enters Lake Powell and that water yield would not be affected.

Livestock Grazing

Livestock forage AUMs would increase because of the greater acreage allotted to grazing, new land treatments, and more forage allotted from wildlife to livestock; some AUMs would be lost because of oil and gas activity, land disposals, and rights-of-way. These increases and losses would aggregate to an average 78 percent increase in public rangeland forage available to 54 livestock operators. Because forage from the new allotments created under this alternative could not be allocated to existing operators,

TABLE 4-5

**Annual Sediment and Salinity Related Cost,
Alternative B**

	<u>Baseline</u>	<u>Alternative B</u>
Sediment	\$ 17,500	\$ 22,000
Salinity	<u>36,500</u>	<u>46,400</u>
Total	\$ 54,000	\$ 68,400

Note: Assumes that all sediment yield enters Lake Powell. Sediment which in fact enters other capital investments would greatly increase sediment related costs.

the allotments were grouped and analyzed as a single operator. The additional forage would tend to increase rancher income through either a greater herd size, greater weight gain, or increased calf survival rates. None of the livestock operators would have less available forage.

The spring (April and May) livestock exclusions on 4 of the 67 existing allotments would be of particular concern to the four livestock operators who use these allotments. Most operators would have few options with which to respond to these exclusions. They would have to either purchase feed to replace the lost forage, shift to this period the forage that is normally used during other months, or reduce herd sizes so that the forage produced from base properties would last longer.

Replacing forage lost through spring exclusions with hay would represent a worst-case analysis. Feeding hay during the spring may adversely affect livestock weight gains and reduce gross revenues. If the feeding were to be done on alfalfa producing property during the spring, alfalfa yields could be affected, and bloating problems could arise. The spring exclusions are more impacting in this area than in the rest of southeastern Utah, as base properties in the SJRA are located at higher elevations and have a shorter growing season.

The ranch budgets used in the impact analysis projected that ranchers would respond to the spring exclusions through increasing hay feed and reducing herd size. Despite the additional allotted forage, the analysis shows a decrease in returns to labor and investment for those permittees affected by spring exclusions. The aggregate effect of the spring exclusions and changes in allotted forage would increase operator returns to labor and investment by \$279,300, a 69 percent increase (tables 4-6 and 4-7).

Based on the direct effects from the budget analysis and on the indirect and induced effects derived from a county economic model, it is estimated that local employment, income, and tax revenues would increase by 23 jobs, \$120,000, and \$12,000 respectively.

Any grazing permit change could affect ranch value and therefore operator wealth, particularly if the changes affect the ranch's total carrying capacity. The increase from active preference under this alternative could increase the total wealth of the 52 existing operators by as much as \$1,068,000, a 3 percent increase. The increase in actual wealth would be less, as spring exclusions will moderate the effect on ranch carrying capacity.

Lending institutions base loans on a number of factors, including the rancher's ability to repay the loan. The repayment ability is usually measured by the rancher's likely future income with the loan. Because aggregate rancher income is expected to increase under this alternative, ranchers' ability to repay loans should likewise increase.

Base properties are used as collateral for some types of loans. Since base property values are either not affected or projected to increase under this alternative, the level of total indebtedness allowed should increase.

Recreation

Recreation use of the SJRA is projected to increase as a result of increasing incomes and populations in the western United States. This increased use is projected to increase the local employment and income generated by recreation use

TABLE 4-6

Number and Degree of Livestock Operator Impacts, Alternative B

	Operators With An Increase From Existing Use and Net Revenues			Operators Not Affected	Operators With A Decrease From Existing Use and Net Revenues		
	+ 51%	11-50%	1-10%		1-10%	11-50%	+ 51%
Public rangeland forage	20	20	2	10	0	0	0
Total feed requirements	6	21	15	10	0	0	0
Operator returns to labor and investment	10	18	10	10	0	4	0

TABLE 4-7

Aggregate Economic Impacts to Livestock Operators, Alternative B

<u>Livestock Operators</u>	<u>Current Situation</u>	<u>Alternative B</u>
Gross Revenue	\$ 3,437,800	\$ 4,091,700
Total Variable Cost	1,853,100	2,260,000
Returns Above Variable Cost	1,584,700	1,831,700
Returns to Labor and Investment ^a	403,300	682,600
Herd Size (animals)	12,440	14,900
Hired Labor (jobs)	18	33
Total local Income	\$ 1,013,000	\$ 1,133,000
Total local Employment (jobs)	176	199

NOTE: These budgets assume that ranchers have no long-term outstanding debt, that all operating capital is borrowed, and that existing ranchers would not go out of business.

^aReturns net of variable and fixed costs to management, non-hired labor, machinery, equipment, and land.

of the SJRA. Although total use may increase, the relative mix of uses may change because of a changing mix of recreational opportunities (see impacts to recreation). The local economic effect of this changing opportunity spectrum is unknown. Judging from the existing economic importance of recreation in the SJRA (0.2 percent of local employment and income) the projected changes to the opportunity spectrum would have little effect on the local economy.

Existing land based commercial outfitters rely heavily on the P and SPNM opportunity settings available in the SJRA, and existing water based commercial outfitters rely heavily on SPNM opportunities where the only motorized use is from boats. The 10 percent projected loss of acreage in the P and SPNM ROS classes from alternative A could reduce the demand for the services of land based commercial outfitters.

Desert bighorn sheep, antelope, and deer populations are projected to decrease. Assuming that population/harvest and harvest/hunter ratios would remain constant, projected hunter pressure and expenditures would decrease local employment by 1.6 jobs, earnings by \$18,600, and taxing revenues by \$1,000. However, the assumed constant harvest/hunter ratios overstate the decreases to some degree.

Other Land Uses

The proposed land disposals would be widely scattered and would represent a 1 percent increase in the existing private land base, having little or no effect on nearby land values. Under private ownership, these lands would increase local taxing revenues by at least \$4,000.

The cost of environmental review of major utility lines is typically \$8,000 to \$15,000 per mile. This review would cost only an estimated \$1,500 to \$2,000 per mile in the utility corridors proposed for designation under this alternative [Pacific Gas, 1981].

Plan Budget

The local direct indirect and induced effects resulting from the plan's budget would generate

an estimated 28 jobs and \$550,000 of earnings in the local economy.

Conclusion

Assumed coal production would generate 61 jobs, \$1,510,000 income, and \$515,000 in taxing revenues. Sediment and salinity related costs would increase by \$4,500 and \$9,900 respectively. Livestock related local employment would increase by 23 jobs, income by \$120,000, taxing revenues by \$12,300, and total rancher wealth by \$1,068,000. Demand for commercial outfitter services would decrease. Wildlife use and related local employment would decrease by 1.6 jobs, income by \$18,000, and taxing revenues by \$1,000. Land disposals would increase local taxing revenues by \$1,000. Fewer management restrictions would reduce the cost of land disturbing activities, but the net effect on the local economy is unknown. The added cost of implementing this plan would generate 3 jobs and \$56,000 in income.

SOCIAL CONDITIONS

None of the management actions would impact local communities so far as to noticeably affect existing social conditions.

ALTERNATIVE C

OVERVIEW

Actions occurring under alternative C would conform to the generalized zoning plan shown in figure S-2. Surface disturbance would be minimized on 711,230 acres to maintain the ROS class in P or SPNM class areas; to protect the Bridger Jack Mesa, Lavender Mesa, and Grand Gulch ACECs; and to protect developed recreation sites.

Special conditions would be applied to 680,850 acres. Seasonal restrictions on 540,260 acres of this area would protect bighorn sheep lambing and rutting areas, antelope fawning areas, and crucial deer winter range. Surface use restrictions would protect big game habitat (offsite mitigation required for projects disturbing 10 acres or more), five mesa tops in bighorn sheep habitat, floodplains and riparian areas, sensitive soils, ROS SPM class, the Lockhart Basin,

Alkali Ridge, and North Abajo ACECs, and existing land use leases. In addition, grazing uses would be limited to protect bighorn sheep lambing and rutting areas, and sagebrush areas on crucial deer winter range.

ASSUMPTIONS

The following assumptions regarding surface disturbance from minerals, grazing, and other development were used to determine impacts on other environmental indicators.

It was assumed that 49 wells per year would be drilled for oil and gas between 1985 and 2000, and that each well pad and associated access road would total about 6.5 acres. Of the 49 wells, it was assumed that 48 would be in the Blanding Basin and 1 in the Paradox Fold and Fault Belt. The well pads were assumed to overlie areas that had previously been disturbed by geophysical exploration; 25 percent of the actual acres disturbed were assumed to overlap acres previously disturbed by geophysical activities. It was further assumed that 20 of the 49 wells would be productive, the remaining 29 would be abandoned and reclaimed, and that reclamation would be successful in providing a cover of grasses and shrubs. It was assumed that the vegetation species mix and time frames used would meet ROS class and other specified requirements (appendix A).

It was assumed that 725 miles of geophysical lines would be run per year (690 acres disturbance per year). Of this, 400 miles (40 acres) would be reclaimed with a cover of grasses and shrubs within 1 year; 200 miles (400 acres) within 5 years; 100 miles (200 acres) within 10 years; and the remaining 25 miles (50 acres) would not be reclaimed, due either to continued use, to rock outcrop, or to unsuccessful reclamation. It was assumed that a vegetation mix would be used to meet ROS class and other specified requirements.

It was assumed that 90 acres per year from 1985 to 2000 would be opened to (disturbed by) mineral materials disposal; and that of the 90 acres, 70 acres would be successfully reclaimed with grasses and shrubs to meet ROS class and other specified requirements.

It was assumed that disturbance for annual assessment work and plans of operations between 1985 and 2000 would be the same as under alternative A, except that reclamation would meet ROS class and other specified requirements.

It was assumed that there would be no surface disturbance caused by exploration or production of coal, tar sand, potash, or any other mineral.

For grazing uses, it was assumed that 10 percent of the new land treatments proposed would actually be implemented by 2000. This amounts to 6,168 acres that would actually be treatable.

The assumptions under alternative C for transportation and utility corridors are the same as those given for alternative A.

MINERAL COMPONENTS

Oil and Gas

Impacts

The area available for lease would increase by 155,230 acres (10 percent) compared to alternative A. However, when compared to alternative A, the long-term trend in new field discoveries and production would decrease. This would result from the increase in acreage where no surface occupancy stipulations or special conditions would be attached to leases. These in turn would result in a decrease in drilling, exploration, and an increase in leases where wells would be uneconomical to produce.

Under alternative C, 1,066,600 acres would be placed in category 1, a decrease of 441,880 acres (29 percent). Of the category 1 acreage, there would be 680,850 acres with special conditions, an increase of 63,680 acres (10 percent).

The special conditions areas that would result in the most adverse impacts to oil and gas production are those that fall within the Blanding Basin. This is an area of high potential for new field discoveries, high production potential, and high industry interest (appendix S). These areas include the seasonal deer winter range and the Alkali Ridge ACEC. Exploration and operating

costs would increase, and production would decline over the long term.

The Paradox Fold and Fault Belt would also be adversely impacted. Although this area has a high potential for new field discoveries there is no current or past production within the area. There has been minor production from small fields located north and northeast of the Lockhart Basin area. Within this area, special conditions are proposed to protect the antelope fawning areas, the Lockhart Basin ACEC, and the North Abajo ACEC. These special conditions would protect the scenic quality and cultural values of the two areas respectively.

Under this alternative 711,230 acres would be leased under category 2, with no surface occupancy. This would be an increase of 597,110 acres (523 percent). These areas would occur principally within the Monument Upwarp, which has low to moderate potential for new field discoveries. However, several areas are proposed for special recreation use within the Blanding Basin and the Paradox Fold and Fault Belt (both high potential areas). The Squaw Canyon area in the Blanding Basin would be managed to protect a P ROS class area. Production occurs in the adjacent Squaw Canyon KGS. Several thousands of acres within the Paradox Fold and Fault Belt would also be managed to protect P and SPNM ROS class areas.

Compared to alternative A, this alternative would increase the lands available for oil and gas leasing. However, special conditions applied to 680,850 acres and the no surface occupancy stipulation applied to 711,230 acres would decrease the area available for exploration and development of oil and gas resources. Over the long term, production and recovery would decline because of increased exploration and operating costs (see Economic Considerations).

Geophysical projects searching for new field discoveries would have project conditions imposed. This would regulate the access and seismic methods that would be acceptable in certain areas, including seasonal restrictions. Geophysical projects are now restricted only on a case-by-case basis under certain specialized conditions, to meet legal requirements.

Under alternative C, geophysical operations would be allowed with no special limitations on 387,110 acres, a 78 percent decline from alternative A. Operations on 1,392,080 acres would have special conditions attached. On 711,230 acres, these conditions would limit geophysical operations to those that would leave no lasting evidence of surface disturbance (appendix A).

The restrictions imposed on geophysical operations under alternative C could result in a long-term decrease in new field discoveries and subsequent production. This decrease would be due to poor quality data resulting from limited data acquisition means, denial of access, or seasonal use restrictions. Costs to mineral operators to run their own projects or to purchase data from independent seismic contractors would increase.

Due to the conditions, a decline in the rate of miles of line per year would occur. It is projected that 725 miles per year would be run (a decline of 25 miles, or 3 percent). Of that 725 miles, 700 would be in the Blanding Basin and 25 in the Paradox Fold and Fault Belt. About 400 miles (55 percent) of the 725 miles would be subject to requirements to limit surface disturbance.

Conclusion

The area available for lease would increase by 155,230 acres compared to alternative A. The area available under category 1 would decrease by 441,880 acres to 1,063,960 acres. The area available under category 2, with no surface occupancy stipulations, would increase by 597,110 acres to 711,230 acres. No area would be closed to lease.

The annual production rates of oil and gas would show a significant but unquantified decrease.

The number of miles of seismic line run per year would decrease to 725.

Coal

Impacts

The impacts to coal resources would be the same as described under alternative A.

Conclusion

There would be no change from alternative A. No area would be available for lease, and no coal would be produced.

Tar Sand

Impacts

Under this alternative the entire STSA would be open to lease. This is an increase of 160 acres (2 percent). Only 74 percent of the STSA (5,910 acres) would be in a category that would allow development, 1,790 acres less than under present management (appendix S). Of this area, special conditions would be applied to 3,900 acres (a decrease of 720 acres, or 16 percent, compared to alternative A). No surface occupancy stipulations would be applied to 2,070 acres, an increase of 1,950 acres (a 1,625 percent increase). Production of tar sand would not change from alternative A.

Conclusion

Alternative C would allow leasing under category 1 on 5,910 acres, with special conditions applied to 3,900 acres. Category 2 would be applied to 2,070 acres. No area would be closed to leasing (category 3). Production of tar sand would not change; none would be produced.

Mineral Materials

Impacts

About one-third of the SJRA (711,230 acres) would be closed to mineral material disposal under alternative C, which would be 611,380 fewer acres of public land open for material disposal than under alternative A (a decrease of 36 percent). A total of 1,067,960 acres would remain available.

Most of the closed acreage is not of great importance to the mineral material supply in the SJRA (appendix S). This closure would not reduce the volume of material produced but might force relocation of a planned project to a less desirable site.

Conclusion

The area available for mineral materials disposal would decrease by 611,380 acres to 1,067,960 acres.

Production would remain the same as under alternative A, 192,000 cubic yards per year.

Locatable Minerals

Impacts

In alternative C, 1,538,430 acres (a decrease of 136,050 acres or 8 percent) would be segregated from mineral location. Of this acreage, about 33 percent (88,110 acres) would fall in areas with moderate or high mineral potential (appendix S). The remaining acreage segregated under this alternative would fall into areas of low mineral potential.

In alternative C, 345,660 acres would have standard conditions applied for any plan of operations, and 1,192,770 acres would require special conditions. Many of the special conditions generated under alternative C are currently being applied on a case-by-case basis to individual projects. The seasonal conditions for wildlife and the sensitive soils conditions are currently being applied to meet legal requirements to the degree that the operator's rights are not curtailed. Filing plans of operation and complying with special conditions would increase the operators' cost. This could result in an unquantified decrease in production, which could be significant for individual operators.

Conclusion

The area available for mining claim location would decrease by 136,050 acres to 1,535,790 acres. There would be an unquantified decrease

in production that could be significant to individual operators.

Other Nonenergy Leasable Minerals

Impacts

Zones of restricted development would be placed on leasing, exploration, and development of other nonenergy leasable minerals. The area available for unrestricted development would decrease 1,392,080 acres to 385,750 acres. This represents a decrease of 78 percent. Special conditions would increase from 0 to 680,850 acres; however, many of the special conditions (such as concern for sensitive soils or riparian areas) would be covered on a case-by-case basis for specific projects under alternative A. The area of no surface occupancy would increase from 0 to 711,230 acres. No area would be closed to leasing, which is the same as under alternative A.

The acreage open for potash development under alternative C would be reduced slightly from alternative A. Compared to 0 acres under present management, 21,380 acres (7 percent of the total) would be closed to development under alternative C (appendix S). This would not affect production rates; potash production would not occur by 2000.

Impacts to other minerals would be the same as under alternative A.

Conclusion

The area available for exploration and lease of other nonenergy minerals under standard conditions would be 385,750 acres. Special conditions would be applied to 680,850 acres, and no surface occupancy stipulations to 711,230 acres that would remain unrestricted under alternative A.

The area available for potash development would decrease by 21,580 acres to 278,420 acres.

Production would be the same as under alternative A; there would be no production by the year 2000.

BIOTIC COMPONENTS

Air

Impacts

Impacts to air quality would be the same as under alternative A.

Conclusion

There would be no change to air quality under alternative C.

Soils

Impacts

Soil loss and sediment yield would decrease by about 12 percent from alternative A. This would represent a decrease of 76,420 tons per year, compared to alternative A, to a total of 564,000 tons per year. Over a 15-year period, from 1985 to 2000, this would amount to a total decrease of almost 1,146,300 tons, to a total loss of 8,460,000 tons.

Soil loss from livestock grazing is estimated to be slightly under 600,000 tons per year due to limiting licensed cattle use to 50 percent of the past 5 years average use on 840,120 acres and to 25 percent on 198,520 acres. Reductions in mineral activities under this alternative would reduce soil loss from geophysical activities to about 19,000 tons per year; from mineral materials disposals to about 1,200 tons per year; and from mining claim assessment work and production to less than 1,000 tons per year.

Long-term reductions in soil loss from maintenance of existing land treatments and proposed new land treatments on about 162,000 acres would reduce soil loss by about 11,000 tons per year.

Conclusion

The rate of soil loss would decrease to about 564,000 tons per year.

Water

Impacts

Surface water quality would increase under alternative C when compared to alternative A. The increase would correspond to the decreased rate of soil loss (see Soils).

The rate of sediment yield to the Colorado River would decrease by 20 acre-feet per year (13 percent) to 140 acre-feet per year. This represents a total of 2,100 acre-feet (a decrease of 300) by 2000.

The rate of salt yield to the Colorado River would decrease by 70 tons per year (11 percent) to 560 tons per year. This represents a total of 8,400 tons (a decrease of 1,050) by 2000.

Other impacts to surface water would be the same as under alternative A.

The impacts to ground water quality would be the same as under alternative A, and cannot be quantified.

Conclusion

Surface water quality would improve under alternative C compared to alternative A. Sediment yield would decline to 140 acre-feet per year, and salinity to 560 tons per year.

No change to ground water quality is projected.

Vegetation

Impacts

Vegetation on 970 more acres (less than 2 percent change) would be temporarily disturbed in this alternative than in alternative A (appendix W). A total of 40,370 acres would have a short-term loss. Land treatments (new projects and maintenance of old ones) and oil, gas, and mineral activities would cause most of the disturbance. Land treatments would change the vegetation on 31,170 acres from native shrubs and trees to adventive grasses and native forbs and shrubs. Oil, gas, and mineral activities would disturb vegetation on 7,350 acres. Various other

activities would cause disturbance on 1,850 acres. Most of this disturbance would recover within 5 years by natural succession or by artificial seeding to native and adventive species; native plant mixes and lesser time frames would be required in some areas (appendix A).

A permanent loss of vegetation would occur on 3,020 more acres than in alternative A (an increase of 59 percent). Losses would result from land disposals (5,900 acres), rights-of-way (300 acres) and oil and gas production (1,950 acres), for a total residual loss on 8,150 acres.

Anticipated changes in ecological condition are shown in table 4-8.

TABLE 4-8

Anticipated Changes in Ecological Condition, Alternative C

Ecological Condition Class	Ecological Condition by Percent of Resource Area	
	Present (1985)	Future (2000)
Climax	9	13
Late seral	23	22
Mid seral	34	32
Early seral	13	12
Rock outcrop/ badlands	21	21

Changes to higher seral stages would result from implementation of existing AMPs and elimination of continual spring grazing. AMPs and elimination of continual spring grazing would allow periodic rest of vegetation to recover from grazing thus producing a higher density of livestock forage species which would result in a higher seral stage. Land treatments would improve livestock forage condition in the treated areas.

Impacts to sensitive or T/E plants would be the same as under alternative A. Impacts to riparian vegetation are discussed under Wildlife.

Much less land would be available for forest product harvest than under alternative A, mainly as a result of ROS class management. An increase of 64,460 acres (127 percent) would occur in the areas removed from forest product harvest, because of development disturbance and land treatments. A loss of 232,640 acres (49 percent) would occur to the area available for private dead fuelwood harvest, and 333,890 acres (70 percent) to the area available for commercial fuelwood harvest. A decrease of 307,630 acres (57 percent) would occur to the area available for harvest of other forest products.

Reduced available acreage would make forest products harder to obtain. Greater expense and difficulty in finding readily available products would reduce the amount of forest products harvested, or increase the level of noncompliance with BLM requirements.

Greater losses to forested areas from fire could occur under alternative C than under alternative A. Suppression of fires would occur on 683,410 acres, a decrease of 1,041,380 acres (60 percent). This could result in a significant decline of forested acres if widespread fires occurred throughout the SJRA, but this is considered unlikely.

Conclusion

Short-term loss of vegetation would increase by 970 acres to 40,370 acres. Residual loss would increase by 3,020 acres to 8,150 acres.

The area available for forest product use would decrease when compared to alternative A. The area available for private fuelwood harvest would decrease to 243,520 acres; and for harvest of commercial fuelwood and other forest products to 142,270 acres.

Wildlife

Impacts

The population of desert bighorn sheep would increase to about 2,000 animals by the year 2000, an increase of about 800 animals (67 percent) compared to alternative A. Crucial bighorn sheep habitat would increase about 100 acres (less than 1 percent) to 329,850 acres.

The net gain of 800 bighorn sheep would result primarily from the following factors:

- seasonal conditions would be applied to oil and gas leases and CHLs on 216,647 acres more than under alternative A, and the seasonal exclusions extended to protect the rutting season;
- management of five mesa tops (56,740 acres), the Lockhart Basin ACEC, ROS classes, and the Dark Canyon and Grand Gulch Plateau SRMAs would keep large tracts of land in relatively undisturbed condition and preserve vegetation used by the sheep for food and cover;
- throughout the crucial habitat area, offsite mitigation would be required if more than 10 acres of vegetation were disturbed, so as to replace food and cover lost, increasing crucial habitat by 100 acres and resulting in a gain of about 600 animals;
- seasonal use conditions and offsite mitigation requirements would be applied to all development activities, private and commercial forest product use, and ORV use;
- livestock grazing in the crucial habitat areas would be managed so as to eliminate competition for forage on winter range and rutting or lambing areas;
- no land treatments or range project developments would be allowed in crucial bighorn sheep habitat; and
- livestock exclusions from the five mesa tops would protect an additional 32,140 acres of crucial habitat (the 24,600-acre Wingate

Mesa would remain protected), but the habitat area would not increase; a population increase of about 200 animals would result.

The population of antelope would increase to about 100 animals by the year 2000, an increase of about 50 animals (100 percent) when compared to alternative A. Crucial antelope habitat would increase to 12,960 acres, an increase of 30 acres (less than 1 percent).

The net gain of about 50 antelope would result primarily from the following factors:

- seasonal use conditions would be applied to all development activities and to ORV use to protect crucial fawning areas; throughout this crucial habitat area, offsite mitigation would be required if more than 10 acres of vegetation were disturbed, so as to replace food and cover lost, resulting in a gain of 30 acres, with a corresponding gain of about 5 animals;
- reductions in livestock use and changes in seasons of livestock use would decrease competition between cattle and antelope for spring grasses and forbs in the fawning areas, resulting in a gain of 15 animals;
- development of additional water facilities on spring fawning range would give does better access to water, which would increase fawn survival, resulting in a gain of 30 animals.

The population of deer would increase to about 10,000, an increase of about 2,643 animals (36 percent) by the year 2000 compared to alternative A. Crucial deer habitat would increase to 195,000 acres, an increase of 3,080 acres (2 percent).

The net gain of 2,643 deer would result primarily from the following factors:

- assuming a 2 percent per acre population increase because of protective seasonal conditions, applying these conditions to all development activities and to ORV use would reduce stress and improve habitat conditions

on about 44,750 acres (until 2000), resulting in a gain of about 895 animals;

- assuming that there would be an increase of one deer for every 10 acres treated under the offsite mitigation requirement, application of the requirement to 2,230 acres of crucial habitat would result in a gain of about 223 animals;
- reductions in livestock grazing and changes in seasons of livestock use would decrease competition for winter and spring forage, resulting in a gain of 1,440 animals; and
- exclusion of about 850 acres of sagebrush in crucial winter range from new land treatments would result in a gain of 850 acres of crucial habitat; assuming that each deer needs 10 acres of crucial habitat, this action would result in a gain of about 85 deer.

The area of riparian/aquatic habitat would increase by 440 acres (30 percent) compared to alternative A. Habitat for known T/E wildlife species occurs in the riparian/aquatic areas and would increase a corresponding amount.

The increase in riparian/aquatic habitat would result primarily from the following factors:

- elimination of losses now occurring on 30 acres (reflected in alternative A), through protective conditions applied to all development activity, and through limiting ORV use within riparian/aquatic zones to existing roads and trails;
- livestock exclusions within riparian areas (24 allotments); reduced stocking rates for livestock; rest-rotation grazing systems that would allow for complete rest through the growing season would increase riparian/aquatic habitat by 115 acres;
- ACEC designations and management to maintain ROS classes would allow riparian/aquatic habitat to improve in vigor and increase by 295 acres;

Conclusion

Desert bighorn sheep populations would increase by about 800 animals from alternative A, and crucial bighorn sheep habitat would increase by 100 acres. Antelope populations would increase by about 50 animals, and crucial antelope habitat would increase by 30 acres. Deer populations would increase by about 2,643 animals, and crucial deer habitat would increase by 3,080 acres. Riparian/aquatic habitat and related T/E species habitat would increase by 440 acres.

HUMAN USES

Grazing

Impacts

Grazing would be allowed on 37,840 fewer acres than in alternative A, but on the same number of allotments. Areas excluded from grazing would include floodplains and riparian areas, mesa tops in crucial desert bighorn sheep habitat areas, relict vegetation study areas, Grand Gulch ACEC, and developed recreation sites.

Livestock AUMs would decrease by 12,930 in this alternative (23 percent less than in alternative A), primarily because of licensing use at lower levels to maintain existing ROS classes. In this alternative only the RN, R, and U classes would be licensed at the 5-year average. The SPNM and SPM classes would be licensed at 50 percent of the 5-year average and the P class at 25 percent of the 5-year average. Other causes for this decrease in AUMs would be land disposals (109 AUMs), rights-of-way (20 AUMs), oil and gas production (130 AUMs), and exclusion of grazing in riparian areas (148 AUMs) and on mesa tops important for desert bighorn sheep habitat (160 AUMs). The only increases would be from permittee demand (660 AUMs), and new land treatments (770 AUMs). The total change would be a decrease to 43,805 AUMs.

This alternative would allow implementation of 21 new AMPs and continuation of 9 existing ones. These AMPs would be managed to maintain ROS classes and to protect wildlife habitat, particularly mule deer, antelope, desert bighorn sheep, and riparian areas. Grazing would be

rotated in 7 of these AMPs on spring deer and antelope range after March 31 to provide for increased vigor of forbs. This would also provide for increased vigor and density of cool season grasses.

Season of use would be changed on 10 allotments, some of them AMPs, (appendix U) to end March 31, and on 5 allotments (all AMPs) to delay the entry date to June 1 for improved forb production as stated above. Season of use would remain the same on the other 8 AMPs.

New land treatments would be completed on 6,200 acres. This assumes that only 10 percent of the actual treatable acres would be treated through the year 2000 because of permittee and BLM budget constraints. These treatments would convert existing woody vegetation undesirable for livestock to herbaceous vegetation desirable for livestock forage.

Conclusion

The area available for grazing would decrease 37,840 acres to 1,683,130 acres.

Livestock forage would decrease by 12,930 AUMs to 43,805 AUMs.

Cultural Resources

Impacts

Under this alternative about 15,030 sites would be damaged, a decrease of about 734 (5 percent). The maintenance of P and SPNM ROS classes through restrictive conditions would reduce damage to cultural resources caused by recreationists, especially in the existing SRMAs and extensive RMA. Another effect of these conditions would be to decrease damage from ORV use. Application of the ROS class conditions would also reduce damage to cultural resources from other programs, including oil and gas (less exploration) and grazing (less grazing and site trampling, and maintenance of fewer acres of land treatments).

The number of sites protected under this alternative would increase by about 17,560 (69 percent) to about 42,940 sites. This would be a

result of restrictive conditions protecting sites within the new National Register cultural properties (Davis Canyon archaeoastronomy site, Kachina Panel, Monarch Cave, Ruin Spring, and Three-Story Ruin), archaeological districts (Beef Basin, Cedar Mesa, Fable Valley, Indian Creek, Montezuma Creek, and Tin Cup Mesa), and in the cultural ACECs (Alkali Ridge, North Abajo, and Grand Gulch). The development and implementation of CRMPs (Alkali Ridge, Beef Basin, Cedar Mesa, Fable Valley, and Indian Creek Canyon) would serve to strengthen and reinforce the protection of many of these sites. The protection of cultural sites through restrictive conditions is also reflected in the reduction in the number of sites damaged, discussed above.

The magnitude of direct and indirect damage to cultural resources under this alternative would decrease when compared to current management under alternative A. Increases in the number of sites damaged by recreational use in the new SRMAs would be offset by decreased damage resulting from the maintenance of P and SPNM ROS classes in the remainder of the SJRA. A secondary impact of the maintenance of ROS classes would be a lower level of oil and gas and grazing activities.

Conclusion

The number of cultural sites damaged would decrease by about 734 to about 15,030. The number of sites protected would increase by about 17,560 to about 42,940.

Recreation

Impacts

This alternative would maintain existing opportunities for primitive and semiprimitive recreation uses. Development and expansion of recreation facilities would help to meet the increased demand for these opportunities. Designation of SRMAs and outstanding natural areas (ONAs) would help focus management of these areas on recreational uses and maintenance of natural settings.

With management actions for alternative C, the ROS classes would be maintained at current levels; this would represent a shift toward the P end of the spectrum when compared to alternative A. P class areas would increase by 137,330 acres (224 percent) compared to alternative A. SPNM areas would decrease by 49,390 acres (9 percent); SPM areas by 66,700 acres (17 percent); and RN areas by 21,240 acres (3 percent). The R class would remain at 14,720 acres and U at 320 acres.

The increased demand for nonmotorized activities could probably be accommodated in existing settings, but management actions would be required to disperse visitors. Due to the attractiveness of the Grand Gulch Primitive Area to recreationists, a system for limiting use would be necessary to preserve the primitive setting. The same may be true for Dark Canyon Primitive Area and for the area around Fish and Owl Creek Canyon.

The developed recreation sites in the Grand Gulch Plateau SRMA would experience increased visitation, but would not be substantially impacted by the increased use on developed recreation sites. Camping at undeveloped locations would increase in the SRMA. Under this alternative, two additional semideveloped campsites would be provided (Comb Wash/U-95 and Arch Canyon), which would help reduce the human waste and trash problems in these areas.

This alternative would designate eight ONAs totaling 277,000 acres. Seven of these (Grand Gulch, 69,500 acres; Slickhorn, 25,800 acres; Johns Canyon, 17,500 acres; Fish and Owl Canyons, 40,300 acres; Road Canyon, 24,500 acres; Lime Canyon, 25,300 acres; and Mule Canyon, 6,000 acres) would be within the Grand Gulch Plateau SRMA. The other ONA (68,100 acres) would contain all of the Dark Canyon SRMA and about 6,000 acres of adjacent lands on Middle Point. These designations would focus management of these lands on their natural, cultural, and recreational values.

The San Juan River SRMA would continue to experience increased demand for river running with use limits being reached for the Sand Island to Mexican Hat and Mexican Hat to Clay

Hills Crossing sections. Mineral exploration and mining for placer gold or limestone could change some of the SPM class to RN, reducing the quality of the experience on the Sand Island to Mexican Hat section. Increased user demand would also be present for the Montezuma Creek to Sand Island section where oil and gas development and gravel production could reduce the scenic quality, but probably not change the RN class. The Sand Island Recreation Site would experience continued increased camping and day use from river runners and passing tourists.

In this alternative Sand Island campground would be expanded with additional camping and picnic sites. The Mexican Hat launch point would be developed, with trash and human waste facilities. These improvements would reduce user conflicts, trash, and human waste problems.

This alternative would designate three additional SRMAs, which would provide motorized recreation opportunities. An additional 151,750 acres would be managed as SRMAs, an increase of 33 percent over alternative A. About 80,000 acres of the Indian Creek drainage would receive additional recreation management through SRMA designation, with 50,000 acres being managed for ORV use. Semideveloped campsites would be developed at the falls and along Indian Creek (between Newspaper Rock and Dugout Ranch). This would help reduce the trash and human waste problems.

The Beef Basin area (about 66,450 acres) would also be managed to emphasize recreation. This SRMA would provide mostly motorized recreation opportunities. No developments are currently planned. The potential would exist for motorized travel off existing routes, which could damage the scenic quality of the area.

The Montezuma Creek SRMA (5,300 acres) would also be designated in this alternative, providing motorized semideveloped camping and sight-seeing opportunities. Hiking opportunities would also be available in Pearson Canyon. This SRMA would provide these opportunities close to Blanding and Monticello.

Other recreation resources would generally be enhanced under this alternative due to the maintenance of ROS classes.

Recreational ORV use is also projected to increase in SJRA, occurring mainly in the lands adjacent to Canyonlands NP (Beef Basin, Davis Canyon, Lavender Canyon, and along Indian Creek), Comb Wash, and along the Hole-in-the-Rock Trail. The 327,660 acres of SPM and 725,510 acres of RN class (1,053,170 acres total) should be able to accommodate the increased use without substantial user conflicts.

There would be 484,320 acres designated as open to ORV (a decrease of 71 percent), 542,390 acres in the limited category (all increase), and 752,480 acres in the closed category (an increase of 654 percent).

ROS P and SPNM class areas (710,980 acres total), identified mesa tops in bighorn sheep crucial habitat areas, and the Bridger Jack and Lavender Mesa, and Grand Gulch ACECs (all in P or SPNM class areas) would be closed to ORV use. For the most part, these areas are not currently used for recreational ORV use. Road, Fish Creek, and Owl Creek canyons (in P class area) would be closed to ORV use, eliminating the conflict with nonmotorized uses. Arch Canyon would remain available for ORV use and the potential for conflicts between recreational users would continue. Comb Wash would also remain open to ORVs, and damage to cultural sites would continue.

ORV use would be subject to seasonal limitations to protect crucial bighorn sheep, antelope, and deer habitat areas (540,260 acres total, which overlaps 346,870 acres with other ORV limitations). ORV use would be limited to existing roads and trails over 348,750 acres to protect 1,500 acres of floodplains and riparian areas, 195,000 acres with sensitive soils, and the Lockhart Basin, Alkali Ridge, and North Abajo ACECs (where not closed due to P or SPNM ROS classes). ORV use would be limited to designated roads and trails to protect the developed recreation areas (250 acres).

It is anticipated that recreational ORV use would continue to be limited or nonexistent in

rugged or remote areas, even where these are designated as open for ORV use.

Conclusion

Compared to alternative A, the acreage in ROS classes would shift toward the P classes. The P class would increase 137,330 acres to 198,520 acres; the SPNM class would decrease 49,392 acres to 512,360 acres; SPM 66,700 to 326,630 acres; and RN 21,240 acres to 726,640 acres. The R and U class areas would not change.

Areas open to ORV use would decrease by 1,195,020 acres to 484,320 acres. Areas designated as limited would increase to 542,390 acres, where no areas are now managed as such. The area closed to ORV use would increase 652,630 acres to 752,480 acres.

Visual Resources

Impacts

Alternative C would place 686,860 acres (39 percent of the resource area) in VRM class I. This represents an increase of 587,010 acres (588 percent) over alternative A. The increase includes all P and SPNM ROS class areas (710,980 acres total), all ONAs (277,000 acres, with some overlap with P and SPNM ROS classes), and Lockhart Basin, Lavender Mesa, Bridger Jack, and Grand Gulch ACECs (almost total overlap with P and SPNM ROS classes).

Other VRM class areas would remain the same as under alternative A, except where acreage was shifted into class I. Class II would decrease 205,290 acres (39 percent); class III 178,780 acres (29 percent); and class IV 292,940 acres (38 percent). There would continue to be no area designated as class V.

It is projected that by the year 2000, in 206 cases, visual contrast rating scores would exceed the VRM class objectives for that area. This is a decrease of 65 (or 24 percent) from alternative A projections.

Conclusion

The area in VRM class I would increase by 587,010 acres to 686,860 acres. The area in other VRM classes would decrease a corresponding amount: 205,290 acres in class II to 317,980 acres; 178,780 acres in class III to 439,790 acres; and 202,940 acres in class IV to 334,560 acres.

Lands

Impacts

Transportation and utility corridors would be designated on 85,760 acres (all increase). Lands outside corridors available for transportation and utility systems would decrease 697,140 acres (41 percent); areas to be avoided would increase to a total of 512,460 acres; and areas to be excluded from rights-of-way would increase 98,920 acres (99 percent).

Lands available for disposal under this alternative would increase 3,070 acres over alternative A, to a total of 5,950 acres, as a result of adding parcels for community expansion, community recreation, and isolated parcels not previously identified as suitable for sale. Parcels listed in alternative A that were considered valuable for recreation or wildlife purposes were not included. Disposing of an additional 3,070 acres would be an increase of 107 percent.

The amount of land withdrawn would total 237,960 acres, an increase of 136,050 acres (134 percent) over alternative A. The existing BLM classifications would be retained. In addition, acquired lands that are not now open to entry (9,730 acres), P class areas (198,520 acres), and developed recreation sites (250 acres) would be withdrawn. These overlap the existing classifications to some extent.

Conclusion

In alternative C, 85,760 acres would be designated as transportation and utility corridors; exclusion areas would increase 98,920 acres to a total of 198,770 acres; the lands

available for disposal would increase by 3,070 acres to 5,950 acres; and the area withdrawn from entry would increase 136,050 acres to 237,960 acres.

ECONOMIC CONSIDERATIONS

Impacts

Minerals

The proposed stipulations and special conditions would increase the cost and lower the output value of mineral exploration and development by (1) changing the location, method, or equipment used in mineral exploration and development; (2) increasing the amount of coordination required with the BLM; (3) temporarily idling labor and equipment; and (4) lengthening the duration of mineral exploration and development.

The effect on mineral exploration and development would vary by type and location of stipulation and special condition. Appendix S describes the mineral potentials by type of stipulation and special condition for locatable and leasable minerals, and appendix A lists all stipulations by alternative.

The no surface occupancy stipulation is the most restrictive on oil and gas activity. Exploration techniques that would be required in these areas can be four times more expensive than standard techniques, and sometimes yield poorer quality data, which can reduce drilling success rates and decrease production. The no surface occupancy stipulation would not affect exploration costs in areas where access is poor and special techniques such as directional drilling would be used regardless of management. Under standard conditions, directional drilling and production from no surface occupancy areas cost about 20 to 30 percent more than standard drilling and production. The added production costs would also render production uneconomical at an earlier date.

The relocation of oil and gas activity due to the special conditions that would protect sensitive soils and cultural sites may either reduce production or increase cost if the

relocation forces the use of directional drilling.

With effective coordination of manpower and equipment, seasonal stipulations would not add to activity cost. However, the seasonal stipulations could be costly (more than a 1 percent cost increase) if they idle equipment and labor. This has rarely been a problem with existing seasonal stipulations.

Oil and gas drilling costs would increase an average of 0.6 percent in cases where cultural resources had to be excavated, and an average of 1 percent where offsite mitigation is required. Other stipulations and special conditions would have little or no effect on costs.

Locatable mineral exploration and development which disturbs less than 5 acres and is not within an ACEC or an area of restricted ORV use would not be affected by stipulations and special conditions.

Most of the more stringent stipulations and special conditions probably could not be implemented because they would prevent locatable mineral exploration and production. Instead, a greater degree of reclamation would be required. On the average, these more stringent requirements would increase reclamation costs 24 percent and total activity costs less than 5 percent. If the offsite wildlife mitigation were applied to locatable mineral activity, total activity costs would increase an average of 15 percent.

The proposed stipulations and special conditions would either increase the cost of developing mineral materials or cause the development to be relocated to a site farther away from the point of use. Relocation would be the most costly response to stringent stipulations and special conditions. Added hauling distances of 10 miles or less would increase the cost of obtaining mineral materials by up to 45 percent.

Much of these increased exploration and development costs would be spent in the local economy, thereby increasing local employment and income. However, the increased costs would also decrease the amount of mineral activity, thereby

decreasing local employment and income. The net effect on the local economy cannot be quantified

The increased acreage where mineral activities would be excluded, either outright or by stipulations and special conditions so stringent that mineral activities cannot comply, would result in a net decrease in economic activity. The resulting local employment and income decrease cannot be projected.

Based on the assumed levels of mineral activity, related local employment and income should decrease by 4 jobs and \$88,000 respectively.

Decreased mineral activity would also decrease revenues to local taxing jurisdictions. Based on the assumptions for mineral activities, taxing revenues should decrease by \$58,000.

Soil and Water

Lake Powell's value loss due to sediment originating in the SJRA would decrease \$2,000 (table 4-9). The Lower Colorado River Basin user costs from salt originating in the SJRA would decrease \$4,000. The analysis assumes that all sediment eventually enters Lake Powell and that water yield would not be affected.

TABLE 4-9

Annual Sediment and Salinity Related Cost, Alternative C

	<u>Baseline</u>	<u>Alternative C</u>
Sediment	\$ 17,500	\$ 15,500
Salinity	36,500	32,500
Total	\$ 54,000	\$ 48,000

Note: Assumes that all sediment yield enters Lake Powell. Sediment which in fact enters other capital investments would greatly increase sediment related costs.

Livestock Grazing

Livestock forage AUMs would increase because of new land treatments, while AUMs would be lost because of oil and gas activity, land disposals, rights-of-way, lower levels of use in the P and SPNM ROS classes, and exclusions from riparian areas and mesa tops. Together these actions would increase the public rangeland forage available to 8 operators by 2 percent, and decrease the public rangeland forage available to 16 livestock operators by 28 percent. Thirty of 54 livestock operators would not be affected by this alternative. Changes in available forage would affect rancher income by affecting herd sizes, weight gains, or calf survival rates.

Eleven of the 54 livestock operators would be excluded from using public rangeland forage at some point in the spring. The spring livestock exclusions would be of particular concern, as most operators have few options with which to respond to these exclusions. Replacing forage lost through spring exclusions with hay would represent a worst-case analysis. The ranch budgets used in the impact analysis projected that ranchers would respond to the spring exclusions through a combination of increasing hay feed and reducing herd size.

The combined effects of the forage increases, forage decreases, and spring exclusions would benefit 3 operators, increasing their returns to labor and investment by 2 percent, and be detrimental to 25 operators, decreasing their returns to labor and investment by 90 percent (table 4-10). The number of operators affected, the degree of impact, and the related effects on local employment and income are presented in table 4-11.

Based on the direct effects from the budget analysis and on the indirect and induced effects derived from a county economic model, it is estimated that local employment, income, and tax revenues would decrease by 15 jobs, \$26,000, and \$7,000 respectively.

Any grazing permit change could affect operator wealth. The decrease from active preference under this alternative could decrease the total

TABLE 4-10

Number and Degree of Livestock Operator Impacts, Alternative C

	Operators With An Increase From Existing Use and Net Revenues			Operators Not Affected	Operators With A Decrease From Existing Use and Net Revenues		
	+ 51%	11-50%	1-10%		1-10%	11-50%	+ 51%
Public rangeland forage	0	1	7	30	3	12	1
Total feed requirements	0	0	8	30	10	6	0
Operator returns to labor and investment	0	0	3	26	5	13	7

TABLE 4-11

Aggregate Economic Impacts to Livestock Operators, Alternative C

<u>Livestock Operators</u>	<u>Current Situation</u>	<u>Alternative C</u>
Gross Revenue	\$ 3,437,800	\$ 3,046,900
Total Variable Cost	1,853,100	1,721,500
Returns Above Variable Cost	1,584,700	1,325,400
Returns to Labor and Investment ^a	403,300	174,800
Herd Size (animals)	12,440	11,030
Hired Labor (jobs)	18	16
Total Local Income	\$ 1,013,000	\$ 753,000
Total Local Employment (jobs)	176	161

NOTE: These budgets assume that ranchers have no long-term outstanding debt, that all operating capital is borrowed, and that existing ranchers would not go out of business.

^aReturns net of variable and fixed costs to management, non-hired labor, machinery, equipment, and land.

operator wealth by as much as \$2,171,000, a 7 percent decrease.

Base properties are used as collateral for some types of loans. Since aggregate base property values are projected to decrease under this alternative, the level of total indebtedness allowed would also decrease. The operators' ability to obtain and repay loans would change in proportion to changes in their projected incomes.

The analysis accounts for those projects that either would not be allowed or would be abandoned due to stipulations and special conditions. Some stipulations and special conditions, such as those that limit ORV use or require projects to blend with the natural environment, would not prevent livestock use and rangeland projects, but would increase their cost. The requirement to avoid cultural sites by 250 feet would have the greatest effect on the cost of livestock projects, by decreasing the treatment acreage in areas with high site densities.

Recreation

Recreation use of the SJRA and its related local importance is projected to increase as described in alternative A. The relative mix of uses may change because of changes in recreational opportunities from alternative A (see impacts to recreation). The local economic effect of this changing mix of opportunity settings is unknown. However, judging from the existing economic importance of recreation in the SJRA (0.2 percent of local employment and income) these changes would have little effect on the local economy.

The seven additional developed recreation sites should increase use and related local expenditures. The services offered should not compete with, and therefore not affect, privately owned recreation developments or commercial outfitters. The increased use would be minor relative to total visitation in the SJRA, and related local expenditures would be insignificant.

Existing land based commercial outfitters rely heavily on the P and SPNM opportunity settings

available in the SJRA, and existing water based commercial outfitters rely heavily on SPNM opportunity settings where the only motorized use is from boats. The 14 percent projected gain in acreage of P and SPNM ROS classes from alternative A could increase the demand for the services of land based commercial outfitters.

There is no known relationship between special management designations and recreation use. Publicity following designation could increase public awareness of these lesser known areas, and therefore increase visitation and related local expenditures. Even if visitation to these special designation areas were doubled, the local economic effect would be insignificant. This effect, however, could be significant to outfitters who might use these areas.

Desert bighorn sheep, antelope, and deer populations are projected to increase. Assuming that population/harvest and harvest/hunter ratios would remain constant, projected hunter pressure and expenditures would increase local employment by 1.3 jobs, earnings by \$14,600, and taxing revenues by \$800. However, the assumed constant harvest/hunter ratios overstate the increases to some degree.

Other Land Uses

The proposed land disposals would be widely scattered and would represent a 1.5 percent increase in the existing private land base, having little or no effect on nearby land values. Under private ownership, these lands would increase local taxing revenues by at least \$6,000.

The cost of environmental review of major utility lines is typically \$8,000 to \$15,000 per mile. This review would only cost an estimated \$1,500 to \$2,000 per mile in the utility corridors proposed for designation under this alternative [Pacific Gas, 1981].

Activities within areas of restricted ORV use would require a lands action (such as a project survey) which previously was not required. The applicants for these activities would bear additional coordination costs, BLM processing costs, and rental fees. Some stipulations and

special conditions, such as the requirement to avoid cultural sites by 250 feet and the special conditions to protect sensitive soils, could force the relocation of activities and would probably increase costs, generally by less than 10 percent. Activity costs would increase an average of \$4,000 where cultural resource excavations were required, and an average of \$8,000 where offsite big game habitat mitigation is required. Other stipulations and special conditions would have little or no effect on other land use activity cost.

Much of these increased costs would be spent in the local economy, thereby increasing local employment and income. However, the increased costs would also decrease the amount of mineral activity, thereby decreasing local employment and income. The net effect on the local economy cannot be quantified

Some stipulations and special conditions, such as no surface occupancy, could force some rights of way and permits to be denied. The resulting local employment and income forgone cannot be quantified.

Plan Budget

The local direct, indirect, and induced effects resulting from the plan's budget would generate an estimated 38 jobs and \$737,000 of earnings in the local economy.

Conclusion

Mineral related local employment would be reduced by 4 jobs, income by \$88,000 and taxing revenues by \$58,000. Sediment and salinity related costs would decrease by \$2,000 and \$4,000 respectively. Livestock related local employment would be reduced by 15 jobs, income by \$260,000, taxing revenues by \$7,000, and total rancher wealth by \$2,171,000. Recreation use and related local employment and income should increase, along with the demand for commercial outfitter services. Wildlife use and related local employment would increase by 1.3 jobs, income by \$14,600, and taxing revenues by \$800. Land disposals would further increase local taxing revenues by \$3,000. Increased management restrictions would increase the cost

of land disturbing activities, and the increased acreage where land disturbing activities would be allowed would allow additional economic activity, but the net effect on the local economy is unknown. The added cost of implementing this plan would generate 13 jobs and \$243,000 in income.

SOCIAL CONDITIONS

None of the management actions would impact local communities so far as to noticeably affect their social conditions. A number of livestock operators would be significantly affected. Some operators may be forced to seek a second job, and operators who are forced to sell their operations would have to change their way of life entirely. Many ranchers do not have the training and skills to enter new job markets.

ALTERNATIVE D

OVERVIEW

Actions occurring under alternative D would conform to the generalized zoning plan shown in figure S-3. Surface use would be severely restricted on 1,054,870 acres to ensure natural succession of vegetation on large areas; minerals leases would not be issued. Surface disturbance would be minimized on 213,770 acres to protect the Lockhart Basin, Alkali Ridge, and Hovenweep ACECs, and developed recreation sites. Special conditions would be applied to the remainder of the resource area (510,550 acres) to protect vegetative resources, floodplains and riparian areas, sensitive soils, and existing land use leases.

ASSUMPTIONS

The following assumptions regarding surface disturbance from minerals, grazing, and other development were used to determine impacts on other environmental indicators.

It was assumed that 19 wells per year would be drilled between 1985 and 2000, and that each well pad and associated access road would total about 6.5 acres. Of the 19 wells, it was assumed that 18 would be in the Blanding Basin and 1 in the Paradox Fold and Fault Belt. The well

pads were assumed to overlie areas that had previously been disturbed by geophysical exploration; 25 percent of the actual acres disturbed were assumed to overlap acres previously disturbed by geophysical activities. It was further assumed that 8 of the 19 wells would be productive, and the remaining 11 would be abandoned and reclaimed, and that reclamation would be successful, with a cover of grasses and shrubs (mix of native and exotic species) within 5 years. It was assumed that the vegetation mix and time frames used would meet natural succession area requirements (appendix A).

It was assumed that 725 miles of geophysical lines would be run per year, using the same assumptions given in alternative C.

It was assumed that 75 acres per year from 1985 to 2000 would be opened to (disturbed by) mineral materials disposal; and that of the 75 acres, 55 acres would be successfully reclaimed with grasses and shrubs (native and exotic species seed mix) within 5 years.

It was assumed that disturbance for annual assessment work and plans of operations between 1985 and 2000 would be the same as under alternative A.

It was assumed that no surface disturbance would be caused by exploration or production of coal, tar sand, potash, or any other mineral.

For grazing uses, it was assumed that there would be no large-scale surface disturbance such as from land treatments.

The assumptions under alternative D for transportation and utility corridors are the same as those given for alternative A.

MINERAL COMPONENTS

Oil and Gas

Impacts

When compared to alternative A, long-term trend in new field discoveries and production would decrease. Under this alternative, 509,190 acres would be placed in category 1 leasing status (a

decline of 999,290 acres or 66 percent); 213,770 acres in category 2 (an increase of 99,650 acres, or 87 percent); and 1,054,870 acres (59 percent of the SJRA) in category 3, no leasing (an increase of 899,640 acres, or 580 percent).

All areas left open to leasing would be subject to special conditions or no surface occupancy stipulations. In some areas these would restrict development to the extent that would render wells uneconomical to produce as a result of compliance. Areas of heaviest impact to oil and gas development would be in the Blanding Basin and Paradox Fold and Fault Belt where exploration and operating costs for the lessee or operator would increase due to the reclamation requirements (appendix S).

The no surface occupancy stipulations within the Alkali Ridge ACEC would effectively halt exploration and development of new leases in the greater portion of the Blanding Basin. Any attempt at development through directional drilling would add significantly to drilling and operating costs, and long-term production would decline. Designation of the Lockhart Basin ACEC would also adversely impact oil and gas leasing in the Paradox Fold and Fault Belt where a high potential exists for new field discoveries. There has been minor production from small fields located north and northeast of the Lockhart Basin area.

Closing 1,054,870 acres to leasing would also adversely impact oil and gas production. Although the majority of these areas (909,010 acres, or 86 percent) occur in the Monument Upwarp section of the SJRA, there would be a negative trend in long-term production, as these lands would be precluded from any type of exploration for new fields in the future, as currently productive lands are depleted of recoverable reserves. The remaining 145,860 acres occur in the Paradox Fold and Fault Belt, an area of high potential for new field discoveries and production.

Geophysical projects searching for new field discoveries would have special project conditions imposed. This would regulate the seismic methods that would be acceptable in certain areas. Geophysical projects are now

restricted only on a case-by-case basis under certain specialized conditions, to meet legal requirements.

Under alternative D, geophysical operations would be permitted only with special conditions. In 1,266,640 acres (about 72 percent of SJRA) these conditions would limit geophysical operations to those that would leave no lasting evidence of surface disturbance.

The restrictions imposed on geophysical operations under alternative D would result in a long-term decrease in new field discoveries and subsequent production. This decrease would result from poor quality data from limited data acquisition means, denial of access, or seasonal use restrictions. Costs to mineral operators to run their own projects or to purchase data from independent seismic contractors would increase.

Due to the conditions, a greater decline in the rate of miles of line per year would occur than under alternative A. It is projected that 725 miles per year would be run (a decline of 25 miles, or 3 percent). Of that 725 miles, 700 would be in the Blanding Basin and 25 in the Paradox Fold and Fault Belt. About 400 miles (55 percent) of the 725 miles would be subject to stringent requirements to limit surface disturbance.

Conclusion

The area available for lease would decrease by 899,640 acres compared to alternative A. The area available for lease under category 1 would decrease by 999,290 acres to 509,190 acres. The area available under category 2 with no surface occupancy stipulations would increase by 99,650 acres to 213,770 acres. The area closed to leasing would increase 889,640 acres to 1,054,870 acres.

Coal

Impacts

The impacts to coal resources would be the same as described under alternative A.

Conclusion

There would be no change from alternative A. No area would be available for lease, and no coal would be produced.

Tar Sand

Impacts

Part of the STSA, 6,460 acres, would fall within a natural succession zone under this alternative, and would be closed to lease. This would be an increase of 6,300 acres, or almost 40 times, over the category 3 area in alternative A. The remainder, 1,520 acres, would be under category 1 with special conditions applied (a decrease of 6,180 acres, or 80 percent, compared to alternative A).

Conclusion

Alternative D would apply category 1 leasing requirements, with special conditions, to 1,520 acres, and category 3 to 6,460 acres within the STSA. Production of tar sand would not change; none would be produced.

Mineral Materials

Impacts

Alternative D would greatly decrease the acreage available for material disposal, reduce production, and increase the cost of providing material from the smaller open area for use in the rest of the SJRA (appendix S).

Only 510,550 acres, or about one-third of the SJRA, would be open for material disposal under this alternative. This represents a decrease of 1,168,790 acres (70 percent), which would have a detrimental effect on the availability of usable material. This entire acreage would have special conditions applied. No disposal would be allowed on 1,268,640 acres.

The production of material would decline about 50 percent. A lot of production would come from sites that are not as conveniently located or do

not possess the same quality of material that may be located in areas closed under this alternative, and this would increase hauling and processing costs.

Conclusion

The area available for mineral materials disposal would decrease by 1,168,790 acres to 510,550 acres.

Production would decline by 50 percent, to 96,000 cubic yards of material per year.

Locatable Minerals

Impacts

Alternative D would be the most restrictive for locatable minerals. This alternative would segregate an additional 944,200 acres (913 percent) from mineral location when compared to alternative A; 1,047,550 acres would be closed to mineral entry. A total of 730,280 acres would remain open to entry, a decrease of 944,200 acres (56 percent).

A high percentage of the areas that would be segregated have mineral potential (appendix S). Nearly 500,000 acres would be in moderate or high mineral potential areas; the remaining area would have low potential. This could result in an adverse impact to mining, but because of current industry conditions, this impact is not expected to be felt before the year 2000.

In alternative D any plan of operations filed would require the application of special conditions within the 730,280 acres open to entry. Many of the special conditions generated in alternative D are currently being applied on a case-by-case basis to individual projects, to meet legal requirements. Preparing and filing plans of operation and complying with special conditions would result in added cost to the operator. This could result in an unquantified decrease in production, which would be significant for individual operators.

Conclusion

The area available for mining claim location

would decrease by 944,200 acres to 730,280 acres.

There would be an unquantified decrease in production that could be significant to individual operators.

Other Nonenergy Leasable Minerals

Impacts

The area available for exploration and lease of other nonenergy minerals would decrease by 1,054,870 acres (59 percent). In the remainder of SJRA, zones of restricted development would be placed on leasing, exploration, and development of other nonenergy leasable minerals. The area available for development under standard conditions would be eliminated; all area open to lease would be subject to special conditions (509,190 acres) or no surface occupancy stipulations (213,770 acres). These special conditions or stipulations would not have been attached to any lease under alternative A.

About 202,300 acres (68 percent) of the total potash area would be closed to exploration and development under alternative D when compared to alternative A (appendix S). This would not change the projected production; potash production would not occur by the year 2000.

Impacts to other nonenergy minerals would be the same as under alternative A.

Conclusion

The area available for exploration and lease of other nonenergy minerals would decrease by 1,054,870 acres to 722,960 acres. Special conditions would apply to 509,190 acres. No surface occupancy stipulations would be applied to 213,770 acres. No area would be available for development under standard conditions.

The area available for potash development would be 97,700 acres.

Production would be the same as under alternative A; there would be no production by 2000.

BIOTIC COMPONENTS

Air

Impacts

Impacts to air quality would be the same as under alternative A.

Conclusion

There would be no change to air quality under alternative D.

Soils

Impacts

Soil loss would decrease by about 13 percent from alternative A. This would represent a decrease of 83,420 tons per year, compared to alternative A, to a total of 557,910 tons per year. Over a 15-year period, from 1985 to 2000, this would amount to a total decrease of about 1,251,300 tons, or a total loss of 8,368,650 tons.

The major reduction in soil loss estimates under this alternative would result from the reduction in licensed cattle use to 25 percent of the past 5 years average use on 1,356,720 acres. Reductions in mineral activities under this alternative would reduce soil loss from geophysical activities to less than 12,000 tons per year, from mineral material site development to about 1,200 tons per year, and from mining claim assessment and development to less than 1,000 tons per year. Long-term reductions in soil loss from maintenance of existing land treatments would be less than 2,000 tons per year.

Conclusion

The rate of soil loss would decrease to about 557,910 tons per year.

Water

Impacts

Surface water quality would increase under alternative D when compared to alternative A.

The increase would correspond to the decreased rate of soil loss (see Soils).

The rate of sediment yield to the Colorado River would decrease by 23 acre-feet per year (14 percent) to 137 acre-feet per year. This represents a total of 2,055 acre-feet (a decrease of 345) by 2000.

The rate of salt yield to the Colorado River would decrease by 80 tons per year (13 percent) to 550 tons per year. This represents a total of 8,250 tons (a decrease of 1,200) by 2000.

Other impacts to surface water would be the same as under alternative A.

The impacts to ground water would be the same as under alternative A, and cannot be quantified.

Conclusion

Surface water quality would improve under alternative D compared to alternative A. Sediment yield would decline to 137 acre-feet per year, and salinity to 550 tons per year.

No change to ground water quality is projected.

Vegetation

Impacts

Temporary vegetation disturbance would occur on 15,745 fewer acres (40 percent) than in alternative A (appendix W). This would be primarily due to fewer acres of land treatments. A total of 23,655 acres would have a short-term loss. Maintenance of existing land treatments and oil, gas, and mineral activities would be the principal causes of disturbance. Maintenance of land treatments on 14,000 acres would eliminate most of the shrubs and trees leaving mostly adventive grasses. Oil, gas, and mineral activity would cause a temporary disturbance on 7,900 acres. Disturbance from other causes would occur on 1,750 acres. Recovery of vegetation would occur within 5 years through natural succession or artificial seeding to primarily native species. All disturbance from land treatments and minerals would occur outside the natural process areas.

Permanent vegetation loss would occur on 790 fewer acres than in alternative A (a decrease of 15 percent). This loss would occur from land disposals (2,870 acres), rights-of-way (300 acres) and oil and gas production (1,170 acres), for a total residual loss of 4,340 acres.

Anticipated changes in ecological condition are shown in table 4-12.

TABLE 4-12

**Anticipated Changes in Ecological Condition,
Alternative D**

Ecological Condition Class	Ecological Condition by Percent of Resource Area	
	Present (1985)	Future (2000)
Climax	9	11
Late seral	23	23
Mid seral	34	32
Early seral	13	13
Rock outcrop/ badlands	21	21

Changes to higher seral stages would result from implementation of existing AMPs and elimination of continual spring grazing. AMPs and elimination of continual spring grazing would allow periodic rest of vegetation to recover from grazing thus producing a higher density of livestock forage species which would result in a higher seral stage. Land treatments would improve livestock forage condition in the treated areas.

Impacts to sensitive or T/E plants would be the same as under alternative A. Impacts to riparian vegetation are discussed under Wildlife.

Only 17 percent of woodlands would be available for any type of woodland harvest. The area removed from harvest of forest products by surface disturbance would decrease by 12,840

acres (25 percent) to 38,060 acres. A decrease of 365,840 acres (77 percent) would occur to the area available for private and commercial fuelwood harvest, and of 426,490 acres (79 percent) for harvest of other forest products.

Greater losses to forested areas from fire could occur under alternative D than under alternative A. Suppression of fires would occur on 264,750 acres, a decrease of 1,460,040 acres (85 percent). This could result in a significant decline of forested area if widespread fires occurred throughout SJRA, but this is considered unlikely.

Conclusion

Short-term loss of vegetation would decrease by 15,745 acres to 23,655 acres. Residual loss would decrease by 790 acres to 4,340 acres.

The area available for private and commercial harvest of all forest products would decrease to 110,320 acres.

Wildlife

Impacts

The population of desert bighorn sheep would increase to about 1,500 animals, an increase of about 300 animals (25 percent) by the year 2000 compared to alternative A. Crucial bighorn sheep habitat would increase to 349,750 acres, an increase of 20,000 acres (6 percent).

The net gain of about 300 desert bighorn sheep would result primarily from the following factors:

- about 60 percent of the crucial habitat area (about 200,000 acres, or a 950 percent increase from alternative A) would be closed to oil and gas and combined hydrocarbon leasing to protect natural succession areas;
- as a secondary impact from use restrictions in natural succession areas, vegetation and habitat protection would reduce stress and increase food and cover, result in an assumed gain of 10 percent, or 20,000 acres

of crucial bighorn sheep habitat and a gain of about 175 animals;

- within the total habitat area, management of the Lockhart Basin ACEC and the Dark Canyon, Beef Basin, and Grand Gulch Plateau SRMAS would also allow bighorn to increase;
- outside of the natural succession areas, development projects and woodland product use would result in stress and could disturb habitat areas, resulting in a loss of 75 animals;
- livestock grazing in the crucial habitat areas within natural succession areas would be reduced to 25 percent of current use, which would decrease competition for forage on winter range or rutting or lambing areas, resulting in a bighorn population increase of about 115 animals; and
- reductions in livestock use on three of the five mesa tops (about 19,000 acres) and prevention of land treatments within the natural succession areas would allow the bighorn sheep population to increase by about 85 animals.

The population of antelope would increase to about 75, an increase of about 25 animals (50 percent) by the year 2000 compared to alternative A. Crucial habitat would be the same as under alternative A, or 12,930 acres.

The population increase would result primarily from changes in the seasons of livestock use, which would decrease competition for spring and early summer forbs and grasses within antelope fawning areas;

The population of deer would increase to about 9,162 animals, an increase of about 1,805 animals (25 percent) by the year 2000 compared to alternative A. Crucial deer habitat would increase to 192,150 acres, an increase of 230 acres (1 percent).

The net gain of about 1,805 deer would result primarily from the following factors:

- special conditions, applied to all development activities, woodland product use, and ORV use, would protect about 36,360 acres of crucial deer winter habitat (about 20 percent of the total), increasing the crucial habitat area by about 3,640 acres (10 percent), resulting in a total of about 40,000 acres protected; assuming that a gain of one deer would occur for about every 50 acres protected, these actions would result in a gain of 800 animals;
- outside of the natural succession areas, development projects and woodland product use would result in stress and could disturb habitat areas, resulting in a loss of 94 animals;
- loss of protective conditions to protect deer winter range on oil and gas leases would result in development on about 1,460 acres of crucial habitat, causing a loss of about 146 deer;
- geophysical activities would disturb about 1,950 additional acres of crucial deer winter range, resulting in a loss of 195 animals;
- livestock use would be modified to protect vegetation resources, which would result in a secondary impact of more available forage for the deer; and
- the seasons of livestock use would be modified to fall/winter on 12 allotments, to protect vegetative resources, decreasing competition for late winter and spring forage and resulting in a gain of about 1,440 animals.

The area of riparian/aquatic habitat would increase by about 440 acres (30 percent) by 2000, compared to alternative A. Habitat for known T/E wildlife species occurs in the riparian/aquatic areas and would increase a corresponding amount.

The net increase of about 440 acres of riparian/aquatic habitat would result primarily from the following factors:

- protective conditions, applied to all development activity in riparian areas, and limitation of ORV use to existing roads and trails would eliminate losses now occurring (a total of 30 acres, as reflected in alternative A);
- management to protect natural succession areas and designation of the Alkali Ridge and Lockhart Basin ACECs would protect riparian/aquatic areas from disturbance, resulting in an increase of about 295 acres of riparian/aquatic habitat.
- livestock exclusions from riparian areas (24 allotments), the reduced stocking rate in alternative D, and rest-rotation grazing systems would allow riparian/aquatic habitat to increase by about 115 acres.

Conclusion

Desert bighorn sheep populations would increase by about 300 animals from alternative A, and crucial bighorn sheep habitat would increase by 20,000 acres. Antelope would increase by about 25 animals, and crucial antelope habitat would remain constant. Deer would increase by about 1,805 animals, and crucial deer habitat would increase by 230 acres. Riparian/aquatic habitat and related T/E species habitat would increase by 440 acres.

HUMAN USES

Grazing

Impacts.

Grazing would be allowed on 25,960 more acres in this alternative than in alternative A, on the same number of allotments. Areas excluded from grazing would include relict vegetation study areas, riparian areas, the Grand Gulch ACEC, and developed recreation sites.

In this alternative livestock AUMs would decrease 18,559 from alternative A (33 percent). This decrease would result primarily from licensing at 25 percent of the 5 year average in natural succession areas. It is assumed that this reduced licensing rate would

allow natural plant succession to occur. Other decreases would result from land disposals (75 AUMs), oil and gas production (52 AUMs), rights-of-way (20 AUMs), and fencing of riparian areas (144 AUMs). The only increase would be from permittee demand, an estimated 840 AUMs. Total AUMs in this alternative would be 38,176 by the year 2000.

Sixteen new AMPs could be developed but only 5 existing AMPs could be developed to full potential in this alternative. The other 4 existing AMPs could not be fully developed because of restrictions on development and maintenance of range improvements in the natural succession areas. These AMPs would provide for periodic winter and spring seasonal rest to favor improved vigor and density of livestock forage species. Range improvements in these AMPs would also help correct problems of uneven livestock distribution.

Thirteen allotments would be totally or partially in natural succession areas (appendix U). Grazing would be reduced by 75 percent, and management would be minimal because of licensing at 25 percent of the past 5 years average use, the prohibition on construction of new range improvements, and restrictions on maintenance of existing ones. Grazing at this reduced rate would benefit desirable livestock forage species by allowing for improved vigor and density.

New land treatments would not be allowed in this alternative. Maintenance of existing seedings would be allowed only in areas outside natural succession areas; 28,000 acres on 22 allotments would be maintained (a 51 percent decrease). The remaining 29,000 acres of seedings in natural succession areas on 9 allotments would be abandoned and allowed to revert to pre-seeding conditions.

Season of use would be changed to eliminate or provide periodic rest on spring range annually after March 31 on 25 allotments and to delay late spring grazing until June 1 on 5 allotments. This would allow natural plant succession to predominate and allow improved vigor and density of livestock forage species, particularly cool season grasses.

Conclusion

The area available for grazing would increase 25,960 acres to 1,746,930 acres.

Livestock forage use would decrease by 18,559 AUMs to 38,176 AUMs.

Cultural Resources

Impacts

The number of sites damaged under this alternative would decrease by about 1,475 (9 percent), compared to alternative A, to about 14,289 as a result of the restriction on vegetative disturbance, which would apply both inside and outside of the identified natural succession areas. These conditions would reduce damage to cultural resources resulting from other activities, especially oil and gas (less exploration and development), recreation (fewer impacts in existing SRMAs, the extensive RMA, and through ORV use limitations), and grazing (a reduction in grazing, abandonment of some existing land treatments and absence of new land treatments).

The number of sites protected under this alternative would increase by about 17,580 (69 percent), compared to alternative A, to about 42,960. The types of impacts would be the same as under alternative C.

The amount of direct and indirect damage to cultural resources under this alternative would decrease compared to alternative A. Increases in the number of sites impacted by recreation use in the new SRMAs would be more than offset by decreases in recreation use in the remainder of the SJRA, as well as by lower disturbance levels from oil and gas and grazing activities. The number of sites protected under this alternative would increase over current management.

Conclusion

The number of cultural sites damaged would decrease by about 1,475 to about 14,289. The number of sites protected would increase by about 17,580 to about 42,960.

Recreation

Impacts

This alternative would protect the P and SP ROS classes. In some areas, recreation use demand would not be met, as no additional facilities would be developed, and some current ORV use areas would be closed to ORVs.

The majority of the P, SPNM, and SPM ROS classes are within the natural succession areas and would be maintained as a secondary result of the restrictions on development. Therefore, the impacts to the ROS classes would be as given in alternative C, except that a slight change to SPM and RN classes would occur; 1,820 acres (less than 1 percent) would shift from RN to SPNM.

No additional recreation sites or facilities would be developed. The problems of user conflicts, trash, and human waste would continue as in alternative A.

Besides the ONAs listed in alternative C, one additional ONA (Arch Canyon, 4,200 acres) would be designated. It would be managed as described for other ONAs under alternative C; however, for all ONAs, VRM class I objectives would have to be met for any development project.

A total of 423,940 acres would be designated as open to ORV use, a decrease of 1,255,400 acres (75 percent); 300,380 acres designated as limited (all increase); and 1,054,870 acres designated as closed (an increase of 955,020 acres, or 956 percent). This would have an adverse impact on providing opportunities for meeting the present and increased ORV use demands.

Under alternative D, the identified natural succession areas would be closed to ORV use. While much of this area is not now subject to recreational ORV use, this would result in a secondary impact, in that some areas currently receiving substantial recreational ORV use, such as the area adjacent to Indian Creek Falls, would be designated as closed to ORV use. In the Alkali Ridge ACEC and in developed recreation sites, ORV use would be limited to

designated roads and trails (170,470 acres total); in riparian/aquatic areas, areas of sensitive soils, and in Lockhart Basin ACEC, use would be limited to existing roads and trails (129,910 acres total).

Conclusion

Compared to alternative A, the acreage in ROS classes would shift toward the P classes. The P class would increase 137,330 acres to 198,520 acres; SPNM 49,392 acres to 512,360 acres; SPM 68,520 acres to 324,810 acres; and RN 19,420 acres to 728,460 acres. The R and U class areas would not change.

Areas open to ORV use would decrease by 1,225,400 acres to 423,940 acres. Areas designated as limited would increase to 300,380 acres, where no areas are now managed as such. The area closed to ORV use would increase 955,020 acres to 1,054,870 acres.

Visual Resources

Impacts

Alternative D would place 1,323,570 acres (74 percent of the resource area) in VRM class I. This represents an increase of 1,223,720 acres (1,225 percent) over alternative A. The increase includes the natural succession areas (1,054,870 acres total); ONAs (281,200 acres, with some overlap with natural succession areas); Lavender Mesa, Bridger Jack, North Abajo, and Grand Gulch ACECs (all within natural succession areas), and Lockhart Basin and Alkali Ridge ACECs. Class I areas would be managed so as to require class I objectives to be met; this could cause some projects to be denied.

Other VRM class areas would remain the same as under alternative A, except where acreage was shifted into class I. Class II would decrease 382,030 acres (73 percent); class III 449,990 acres (73 percent); and class IV 391,700 acres (73 percent). There would continue to be no area designated as class V.

It is projected that by the year 2000, in 203 cases, visual contrast rating scores would exceed the VRM class objectives for that area.

This would be a decrease of 68 (or 25 percent) from alternative A projections.

Conclusion

The area in VRM class I would increase by 1,223,720 acres to 1,323,570 acres. The area in other VRM classes would decrease a corresponding amount: 382,030 acres in class II to 141,240 acres; 449,990 acres in class III to 168,580 acres; and 391,700 acres in class IV to 145,800 acres.

Lands

Impacts

Corridors for transportation and utility systems would be designated on 85,760 acres (all increase). Areas available outside of transportation and utility corridors would decrease 1,254,550 acres (75 percent), avoidance acres would increase to a total of 213,620 acres, and exclusion areas would increase 955,170 acres (956 percent).

Lands available for disposal under this alternative would decrease 10 acres (less than 1 percent) from alternative A, to a total of 2,870 acres. Some of the parcels in alternative A were eliminated because they were considered to have value for natural succession. However, some isolated parcels not previously identified as suitable for sale and parcels for community expansion would be included.

The amount of land withdrawn would be 1,046,110 acres, an increase of 944,200 acres (927 percent) over alternative A. Existing BLM classifications on 92,130 acres would be formally withdrawn. Acquired lands not now open to entry (9,730 acres), the natural succession areas (1,054,870 acres), and developed recreation sites (150 acres) would be withdrawn. These overlap somewhat with existing classifications.

Conclusion

Under alternative D, 85,760 acres would be designated as transportation and utility corridors; there would be an increase of 955,170 acres to be excluded for rights-of-way, to a

total of 1,055,020 acres; a decrease of 10 acres, to 2,870, in the lands available for disposal; and an increase of 944,200 acres in the area withdrawn from entry, to 1,046,110 acres.

ECONOMIC CONSIDERATIONS

Impacts

Minerals

The proposed stipulations and special conditions would increase the cost and lower the output value of mineral exploration and development. Except for locatable minerals, the acreage of those stipulations that increase costs would be larger than under alternative A; the acreage segregated and closed to leasing and mineral material development would increase significantly.

The large decrease in area available for new mineral activity would be far more significant than any increased local expenditures due to added stipulations. Based on the assumed level of mineral activity under this alternative, mineral related local employment and income should decrease by 147 jobs and \$3,083,000.

Decreased mineral activity would also decrease revenues to local taxing jurisdictions. Based on the assumptions for mineral activities, taxing revenues should decrease by \$1,734,000.

Soil and Water

Lake Powell's value loss due to sediment originating in the SJRA would decrease \$2,300 (table 4-13). The Lower Colorado River Basin user costs from salt originating in the SJRA would decrease \$4,600. The analysis assumes that all sediment eventually enters Lake Powell and that water yield would not be affected.

Livestock Grazing

Livestock forage AUM losses from land disposals, rights-of-way, lower levels of use in natural succession areas, and riparian exclusions would decrease the available forage to 25 livestock operators by 125 percent. Twenty-eight of 54

TABLE 4-13

Annual Sediment and Salinity Related Cost, Alternative D

	<u>Baseline</u>	<u>Alternative D</u>
Sediment	\$ 17,500	\$ 15,200
Salinity	<u>36,500</u>	<u>31,900</u>
Total	\$ 54,000	\$ 47,100

Note: Assumes that all sediment yield enters Lake Powell. Sediment which in fact enters other capital investments would greatly increase sediment related costs.

livestock operators would not be affected by this alternative. Changes in available forage would affect rancher income by affecting herd sizes, weight gains, or calf survival rates.

Eleven of the 54 livestock operators would be excluded from using public rangeland forage at some point in the spring. The spring livestock exclusions would be of particular concern as most operators have few options with which to respond to these exclusions. Replacing forage lost through spring exclusions with hay would represent a worst-case analysis. The ranch budgets used in the impact analysis projected that ranchers would respond to the spring exclusions through a combination of increasing hay feed and reducing herd size.

The combined affects of the forage increases, forage decreases, and spring exclusions would benefit 1 operator, increasing his returns to labor and investment by 7 percent, and be detrimental to 25 operators, decreasing their returns to labor and investment by 150 percent (tables 4-14 and 4-15).

Based on the direct effects from the budget analysis and on the indirect and induced effects derived from a county economic model, it is estimated that local employment, income, and tax

TABLE 4-14

Number and Degree of Livestock Operator Impacts, Alternative D

	Operators With An Increase From Existing Use and Net Revenues			Operators Not Affected	Operators With A Decrease From Existing Use and Net Revenues		
	+ 51%	11-50%	1-10%		1-10%	11-50%	+ 51%
Public rangeland forage	0	0	1	34	10	5	4
Total feed requirements	0	0	1	34	13	6	0
Operator returns to labor and investment	0	0	1	28	9	4	12

TABLE 4-15

Aggregate Economic Impacts to Livestock Operators, Alternative D

<u>Livestock Operators</u>	<u>Current Situation</u>	<u>Alternative D</u>
Gross Revenue	\$ 3,437,800	\$ 2,720,800
Total Variable Cost	1,853,100	1,583,100
Returns Above Variable Cost	1,584,700	1,137,700
Returns to Labor and Investment ^a	403,300	36,400
Herd Size (animals)	12,440	9,800
Hired Labor (jobs)	18	14
Total Local Income	\$ 1,013,000	\$ 573,000
Total Local Employment (jobs)	176	149

NOTE: These budgets assume that ranchers have no long-term outstanding debt, that all operating capital is borrowed, and that existing ranchers would not go out of business.

^aReturns net of variable and fixed costs to management, non-hired labor, machinery, equipment, and land.

revenues would decrease by 27 jobs, \$440,000, and \$13,000 respectively.

Any grazing permit change could affect operator wealth. The decrease from active preference under this alternative could decrease the total operator wealth by as much as \$2,535,600, an 8 percent decrease.

Base properties are used as collateral for some types of loans. Since aggregate base property values are projected to decrease under this alternative, the level of total indebtedness allowed should also decrease. The operators' ability to obtain and repay loans would change in proportion to their projected incomes.

Recreation

Recreation use of the SJRA and its related local importance are projected to increase as in discussed alternative A. The relative mix of uses may change because of changes in the mix of recreational opportunities from alternative A (see impacts to recreation). The local economic effect of this changing mix of opportunity settings is unknown. However, judging from the existing economic importance of recreation in the SJRA (0.2 percent of local employment and income) these changes would have little effect on the local economy.

Some of the restrictions would reduce ORV use in certain areas. The resulting effect on local expenditures would be insignificant to the local economy.

Existing land based commercial outfitters rely heavily on the P and SPNM opportunity settings available in the SJRA, and existing water based commercial outfitters rely heavily on SPNM opportunity settings where the only motorized use is from boats. The 14 percent projected gain of acreages in the P and SPNM ROS classes from alternative A could increase the demand for the services of land based commercial outfitters.

There is no known relationship between special management designations and recreation use. Publicity following designation could increase public awareness of these lesser known areas and therefore increase visitation and related local

expenditures. Even if visitation to these special designation areas were doubled, the local economic effect would be insignificant. This effect, however, could be significant to the outfitters who might use these areas.

Desert bighorn sheep, antelope, and deer populations are projected to increase. Assuming that population/harvest and harvest/hunter ratios would remain constant, projected hunter pressure and expenditures would increase local employment by 0.8 job, earnings by \$9,400, and taxing revenues by \$500. However, the assumed constant harvest/hunter ratios overstate the increases to some degree.

Other Land Uses

The proposed land disposals would be widely scattered and would represent a 0.7 percent increase in the existing private land base, having little or no effect on nearby land values. Under private ownership, these lands would increase local taxing revenues by at least \$3,000.

The cost of environmental review for major utility lines is typically \$8,000 to \$15,000 per mile. This review would cost only an estimated \$1,500 to \$2,000 per mile in the utility corridors proposed for designation under this alternative [Pacific Gas, 1981].

Stipulations and special conditions would increase the cost of mineral activities, and there would be a significant increase in the acreage either closed outright or essentially closed to other land uses due to management restrictions. The large decrease in area effectively open to other land uses would be far more significant than any increase in local expenditures due to the added stipulations. The resulting local employment, income, and taxing revenue loss cannot be projected.

Plan Budget

The local direct, indirect, and induced effects resulting from the plan's budget would generate an estimated 37 jobs and \$725,000 of earnings in the local economy.

Conclusion

Mineral related local employment would be reduced by 147 jobs, income by \$3,083,000 and taxing revenues by \$1,734,000. Sediment and salinity related costs would decrease by \$2,000 and \$4,000 respectively. Livestock related local employment would decrease by 27 jobs, income by \$440,000, taxing revenues by \$13,200, and total rancher wealth by \$2,535,000. Recreation use and related local employment and income should increase, along with demand for commercial outfitter services. Wildlife use and related local employment by would increase by 0.8 job, income by \$9,400, and taxing revenues by \$500. Increased management restrictions and acreage where land disturbing activities would be excluded would reduce local economic activity and related employment, income, and taxing revenues. The added cost of implementing this plan would generate 12 jobs and \$231,000 in income.

SOCIAL CONDITIONS

Activity exclusions and restrictions would have a local economic impact large enough to affect existing social conditions. The mineral and livestock industries would be most affected; however, the economic impacts would spread and affect most industries except manufacturing and industries related to recreation. The loss of employment opportunity would cause both a reduction of living standards and some outmigration from the area. Livestock operators would be most affected. Some operators would be forced to seek a second job, and operators who are forced to sell their operations would have to change their way of life entirely. Few ranchers have the training and skills to enter new job markets.

ALTERNATIVE E

OVERVIEW

Alternative E is the preferred alternative, and represents a balance of land uses and resource protection drawn from other alternatives. Actions occurring under alternative E would conform to the generalized zoning plan shown in figure S-4. Surface disturbance would be minimized on 251,980 acres to protect ROS class P areas and SPM areas in the San Juan River SRMA,

the Dark Canyon and Grand Gulch ACECs, the two RNAs, the area next to Hovenweep NM, and developed recreation sites.

Special conditions would be applied to 930,900 acres. Seasonal restrictions on 540,260 acres of this area would protect bighorn sheep lambing and rutting areas, antelope fawning areas, and crucial deer winter range. Surface use restrictions would protect floodplains and riparian areas, sensitive soils, ROS SPNM class, the Alkali Ridge, Shay Canyon, and Cajon Pond ACECs, and existing land use leases. In addition, grazing uses would be limited to protect five mesa tops in bighorn sheep habitat, sagebrush areas on crucial deer winter range, and the Upepr Indian Creek riparian area.

ASSUMPTIONS

The following assumptions regarding surface disturbance from minerals, grazing, and other development were used to determine impacts on other environmental indicators.

Assumptions for oil and gas development were the same as alternative A, except that it was assumed that the vegetation mix and time frames used would meet ROS class requirements (appendix A).

It was assumed that 750 miles of geophysical lines would be run per year (930 acres disturbance per year). Of this, 300 miles (30 acres) would be reclaimed with a cover of grasses and shrubs within 1 year; 325 miles (650 acres) within 5 years; 100 miles (200 acres) within 10 years; and the remaining 25 miles (50 acres) would not be reclaimed, due either to continued use, to rock outcrop, or to unsuccessful reclamation. It was assumed that a vegetation mix would be used to meet ROS class or ACEC requirements, where required.

It was assumed that disturbance for mineral materials disposal, annual assessment work, and plans of operations between 1985 and 2000 would be the same as under alternative A.

It was assumed that no surface disturbance would be caused by exploration or production of coal, tar sand, potash, or any other mineral.

For grazing uses, it was assumed that 5 percent of the new land treatments proposed would actually be implemented by 2000. This amounts to 6,340 acres that would actually be treatable.

The assumptions under alternative E for transportation and utility corridors are the same as those given for alternative A.

MINERAL COMPONENTS

Oil and Gas

Impacts

The area available for lease would increase by 155,230 acres (10 percent) compared to alternative A. Under alternative E 1,525,850 acres would be placed in leasing category 1 (an increase of 17,370 acres, or 1 percent). Of this, 930,900 acres would carry special conditions. Category 2 (leasing with no surface occupancy) would be applied to 251,980 acres (an increase of 137,860 acres, or 121 percent). No areas would be placed in category 3 (closed to leasing).

The overall impact of alternative E on exploration and development of oil and gas resources would be a relatively insignificant increase by 2000. Although more lands would be available for leasing, more acres would be placed in leasing category 2. Most of the acreage in category 1 would contain special conditions, which would result in increased exploration and development costs to operators. Overall production could increase, but the increase would be negligible, since increasing operator costs could result in premature field abandonments as wells would reach their economic limits sooner.

Special conditions would be applied to 930,900 acres of category 1 lands. The special conditions in category 1 could render some wells uneconomical to operate. The special conditions in the Blanding Basin area would result in cumulative adverse impacts on oil and gas exploration and development. The seasonal deer winter range conditions and the Alkali Ridge ACEC conditions would occur in areas of high oil and gas potential.

Of secondary concern would be the impact of restrictions applied to leases in the Paradox Fold and Fault Belt. Exploration activity and leasing interest has been high in this part of the SJRA. Lease restrictions within the Monument Upwarp would also discourage leasing and exploration, which could result in oil and gas production opportunities foregone even though the area has a low to moderate potential for new field discoveries.

Application of category 2 stipulations would also have an adverse impact on oil and gas production. The area with the most potential for adverse impacts would be the Blanding Basin; however, surface occupancy would be denied only in the Pearson Canyon SRMA (1,920 acres). The areas within the Paradox Fold and Fault Belt with no surface occupancy stipulations to protect RNAs and ROS P class areas would also adversely impact oil and gas production. Leasing and exploration has been high in these areas and they contain excellent potential for new field discoveries. The remainder of the no surface occupancy areas would occur on the Monument Upwarp. Although potential for new field discoveries is low to moderate in this area, and no current or past production has taken place, leasing with no surface occupancy would halt any future exploration in this area.

Under alternative E, geophysical operations would be allowed with no special limitations on 596,310 acres, a 66 percent decline from alternative A. Operations on 1,182,880 acres would have special conditions attached. On 251,980 acres (14 percent of the SJRA), these conditions would limit geophysical operations to those that would leave no lasting evidence of surface disturbance.

The restrictions imposed on geophysical operations under alternative E could result in a long-term decrease in new field discoveries and subsequent production. Impacts would be the same as discussed under alternative C.

The same number of miles of seismic line would be run per year as discussed under alternative A (750 miles per year), in the same areas (700 in the Blanding Basin, 25 in the Paradox Fold and Fault Belt, and 25 in the Monument Upwarp). Due to the special conditions, about 300 miles (40

percent) of the 750 miles would be subject to requirements to minimize surface disturbance.

Conclusion

The area available for lease would increase by 155,230 acres compared to alternative A. The area available for lease under category 1 would increase by 17,370 acres to 1,525,850 acres. The area available for lease under category 2 with no surface occupancy stipulations would increase by 137,860 acres to 251,980 acres.

The annual production rates of oil and gas would show a slight but unquantified increase.

The number of miles of seismic line run per year would not change.

Coal

Impacts

The impacts to coal resources would be the same as described under alternative A.

Conclusion

There would be no change from alternative A. No area would be available for lease, and no coal would be produced.

Tar Sand

Impacts

Under this alternative the entire STSA would be leasable, 160 acres (12 percent) more than is presently open to lease. The area under no surface occupancy would decrease by 40 acres to 80 acres (a 33 percent decrease). Most of the STSA (7,900 acres) would be in category 1 (200 acres, or 3 percent, more than under alternative A). Production of tar sand would not change from alternative A.

Conclusion

Alternative E would allow leasing and development on 7,900 acres of the STSA. Production of tar sand would not change; none would be produced.

Mineral Materials

Impacts

Under alternative E, 1,527,210 acres would be open for mineral materials disposal. Of this, standard conditions would be applied to 596,130 acres and special conditions to 930,900 acres; currently all work is done under standard conditions.

The acreage closed to disposal would be 251,980 acres (an increase of 152,130 acres, or 9 percent, compared to alternative A) but this would not change mineral materials production in the SJRA. Only a small fraction of the closed area would be a potentially important source of usable material (appendix S).

Conclusion

The area available for mineral materials disposal would decrease by 152,130 acres to 1,527,210 acres.

Production would remain the same as under alternative A, 192,000 cubic yards per year.

Locatable Minerals

Impacts

Under alternative E, 116,940 acres would be segregated from mineral entry. Compared to alternative A, an additional 13,590 acres (about 13 percent increase) would be segregated. Of this, 11,750 acres would fall into high or moderate mineral potential areas, and 1,840 acres into low mineral potential areas (appendix S).

The areas with moderate or high mineral potential that would not be open to entry would be the Pearson Canyon SRMA (1,920 acres), which has potential for uranium, and the SPM ROS class in the San Juan River SRMA (9,830 acres) which has potential for gold and limestone. The combined acreage for these two areas equals 11,750 acres.

The San Juan River segregation could result in the most change to mineral production. There has been a continued interest in mining for gold along the river, and there is currently one active mining operation. Interest has also been

expressed in a limestone mining operation along the San Juan River; some of the limestone deposits fall into the SRMA segregation area. However, there has been no production of limestone from this area (as of 1985).

In alternative E, 527,760 acres would have standard development conditions applied for any plan of operation, and 1,133,130 acres would require special conditions. Under current management all operations would have standard conditions applied. Many of the special conditions generated under alternative E are currently being applied on a case-by-case basis to individual projects. The seasonal conditions for wildlife and the sensitive soils conditions are currently being applied to meet legal requirements to the degree that the operator's rights are not curtailed. Filing plans of operations and compliance with special conditions would increase the operators' cost. This could result in an unquantified decrease in production, which could be significant for individual operators.

Conclusion

The area available for mining claim location would decrease by 13,590 acres to 1,660,890 acres.

There would be an unquantified decrease in production that could be significant to individual operators.

Other Nonenergy Leasable Minerals

Impacts

Zones of restricted development would be placed on leasing, exploration, and development of other nonenergy leasable minerals. The area available under standard conditions would be 594,950 acres, a decrease 1,182,000 acres (66 percent) compared to alternative A. The area with special conditions would increase from 0 to 930,900 acres. However, many of the special conditions (such as concern for sensitive soils or riparian areas) would be covered on a case-by-case basis for specific projects under alternative A. The area of no surface occupancy would increase from 0 to

251,980 acres. No area would be closed to leasing, which is the same as under alternative A.

The acreage open for potash development under alternative E would be reduced slightly from alternative A. Compared to 0 acres under present management, 1,920 acres (1 percent of the total) would be closed to development under alternative E (appendix S). This would not affect production rates; potash production would not occur by 2000.

Impacts to other minerals would be the same as under alternative A.

Conclusion

The area available for exploration and lease of other nonenergy minerals under standard conditions would be 594,950 acres. Special conditions would be applied on 930,900 acres, and no surface occupancy stipulations on 251,100 acres that would remain unrestricted under alternative A.

The area available for potash development would decrease by 1,920 acres to 298,080 acres.

Production would be the same as under alternative A; there would be no production by the year 2000.

BIOTIC COMPONENTS

Air

Impacts

Impacts to air quality would be the same as under alternative A.

Conclusion

There would be no change in air quality under alternative E.

Soils

Impacts

Soil loss and sediment yield would decrease by about 9 percent from alternative A. This would represent a decrease of 61,745 tons per year,

compared to alternative A, to a total of 581,975 tons per year. Over a 15-year period, from 1985 to 2000, this would amount to a total decrease of 926,175 tons, to a total loss of 8,729,625 tons.

The major reductions in soil loss would result from the exclusion of livestock on 138,120 acres of land, and long-term projected benefits from range treatments on 6,300 acres. This would lead to a projected reduction of about 34,000 tons per year of soil loss, primarily from the exclusion of livestock. Other major declines would be projected as a result of reductions in mineral activities. Soils loss from geophysical activities would decline to about 15,000 tons per year; from mineral materials to about 1,500 tons per year; and from mining claim assessment and development to less than 1,000 tons per year.

Long-term reductions in soil loss from maintenance of existing land treatments and proposed new land treatments on about 31,300 acres would reduce soil loss by about 2,000 tons per year.

Conclusion

The rate of soil loss would decrease to about 581,975 tons per year.

Water

Impacts

Surface water quality would increase under alternative E when compared to alternative A. The increase would correspond to the decreased rate of soil loss (see Soils). Sediment yield would decrease by 30 acre-feet per year (a 19 percent decrease) to 130. Salinity would decrease by 90 tons per year (a 14 percent decrease) to 540. The types of impacts would be the same as under alternative C.

Other impacts to surface water would be the same as under alternative A.

The impacts to ground water would be the same as under alternative A, and cannot be quantified.

Conclusion

Surface water quality would improve, compared to alternative A. Sediment yield would decline to 130 acre-feet per year, and salinity to 540 tons per year.

No change to ground water quality is projected.

Vegetation

Impacts

Temporary vegetation disturbance would occur on 5,400 more acres (a 14 percent increase) than in alternative A (appendix W). More land treatments would be the main cause of the increase. As in all alternatives, land treatments and oil, gas, and other mineral activities are the main causes of disturbances. Construction and maintenance of land treatments would change the vegetation on 31,300 acres. The change would be from shrubs and trees to adventive grasses and native shrubs and forbs. Oil, gas, and mineral activities would temporarily disturb 11,650 acres. Disturbance from various other causes would occur on 1,850 acres. Vegetation in these disturbed areas would recover within 5 years through natural succession or artificial seeding to native and adventive species (appendix A).

Permanent loss of vegetation would occur on 3,420 more acres than in alternative A (a 66 percent increase). This loss would result from land disposals (6,300 acres), rights-of-way (300 acres) and oil and gas production (1,950 acres).

Anticipated changes in ecological condition are shown in table 4-16.

Changes to higher seral stages would result from implementation of existing AMPs and elimination of continual spring grazing. AMPs and elimination of continual spring grazing would allow periodic rest of vegetation to recover from grazing thus producing a higher density of livestock forage species which would result in a higher seral stage. Land treatments would improve livestock forage condition in the treated areas.

TABLE 4-16

**Anticipated Changes in Ecological Condition,
Alternative E**

Ecological Condition Class	Ecological Condition by Percent of Resource Area	
	Present (1985)	Future (2000)
Climax	9	12
Late seral	23	22
Mid seral	34	32
Early seral	13	13
Rock outcrop/ badlands	21	21

Impacts to sensitive or T/E plants would be the same as under alternative A. Impacts to riparian areas are discussed under Wildlife.

Less land would be available for forest product harvest than under alternative A, mainly as a result of increased surface disturbance, which would remove 173,720 acres from forest product harvest (an increase of 122,820 acres, or 241 percent). A loss of 115,080 acres (24 percent) would occur to the area available for private and commercial fuelwood harvest. A decrease of 175,730 acres (33 percent) would occur to the area available for harvest of other forest products. However, supplies of forest products should remain adequate through 2000.

Greater losses to forested areas from fire could occur under alternative E than under alternative A. Suppression of fires would occur on 266,060 acres, a decrease of 1,458,730 acres (82 percent). This could result in a significant decline of forested acres if widespread fires occurred throughout SJRA, but this is considered unlikely.

Conclusion

Short-term loss of vegetation would increase by 5,400 acres to 44,800 acres. Residual loss would increase by 3,420 acres to 8,550 acres.

The area available for forest product use would decrease when compared to alternative A. The area available for private and commercial fuelwood harvest and for harvest of other forest products would decrease to 361,110 acres.

Wildlife

Impacts

The population of desert bighorn sheep would increase to about 1,400, an increase of about 200 animals (17 percent) by the year 2000 compared to alternative A. Crucial bighorn sheep habitat would decrease to about 328,750 acres, a decrease of about 1,000 acres (less than 1 percent).

The net gain of about 200 bighorn sheep would result primarily from the following losses and gains:

- a continued population increase as discussed in alternative A;
- seasonal conditions would be applied to oil and gas leases and CHLs on 216,647 acres more than under alternative A, and the seasonal exclusions extended to protect the rutting season;
- management to protect P and SPNM ROS classes would minimize disturbance on large tracts of land within the total habitat area, allowing the bighorn population to increase by about 150 animals.
- livestock use would increase somewhat in the crucial habitat areas, which could increase competition for forage on winter range, possibly decreasing bighorn populations;
- livestock exclusions from five mesa tops (56,740 acres, or 17 percent of the crucial habitat area), would maintain large tracts of land in undisturbed condition and protect vegetation used by the sheep for food and cover;
- livestock exclusions and prevention of land treatments and grazing project developments in Dark Canyon ACEC (62,040 acres or 19

percent of the crucial habitat area) would allow bighorn to increase by about 70 animals;

- harvest of woodland products on the mesa tops would result in a decrease of about 10 animals; and
- range project developments (water, land treatments, or fences) within crucial bighorn habitat would be constructed so as not to interfere with the sheep; land treatments would occur on about 1,000 acres of crucial rutting or lambing areas, resulting in a loss of habitat and a secondary loss of about 10 animals (assuming that 100 acres of habitat are needed per animal).

The population of antelope would increase to about 85 animals by 2000, an increase of about 35 animals (70 percent) over alternative A. Crucial antelope habitat would be the same as under alternative A, or 12,930 acres.

The net gain of about 85 antelope would result primarily from the following factors:

- seasonal use conditions, applied to all development activities, woodland product use, and ORV use, would result in a gain of about 5 antelope;
- livestock grazing, managed for range improvement purposes, would decrease competition for spring and early summer forbs and grasses on 2 allotments within fawning areas, with insignificant gains in antelope population; and
- development of additional water facilities on spring fawning range would result in an increase of about 30 animals.

The population of deer would increase to about 8000, an increase of about 643 animals (9 percent) by the year 2000 compared to alternative A. Crucial deer habitat would decrease to 187,805 acres, a decrease of about 4,115 acres (2 percent).

The net gain of about 643 deer would result primarily from the following factors:

- seasonal use conditions, applied to all development activities, woodland product use, and ORV use, would reduce stress and improve habitat conditions on about 52,750 acres (until 2000), resulting in a gain of about 1,055 animals, assuming a 2 percent per acre increase in the population as a result of the protective seasonal conditions;
- even with the seasonal conditions, geophysical activities would disturb 3,495 acres of crucial habitat by 2000, resulting in a loss of 350 deer; oil and gas development activities and related road construction would disturb an additional 1,470 acres, resulting in a loss of an additional 147 deer by 2000, for a total loss of about 497 deer.
- livestock grazing at projected levels would allow the deer population to expand until deer are forced to compete with each other and with livestock for winter/spring forage (this threshold point cannot be known until until range monitoring studies are compiled); and
- exclusion of about 850 acres of sagebrush in crucial winter range from new land treatments would result in an increase in crucial habitat of about 850 acres and, assuming each deer needs 10 acres, about 85 deer.

The area of riparian/aquatic habitat would increase by 140 acres (10 percent) by 2000 compared to alternative A. Habitat for known T/E wildlife species occurs in the riparian/aquatic areas and would increase a corresponding amount.

The net increase of about 140 acres of riparian/aquatic habitat would result primarily from the following factors:

- protective conditions, applied to all development activity, and limiting ORV use to existing roads and trails within the riparian/aquatic zones would eliminate

losses now occurring (a total of about 30 acres, as reflected in alternative A);

- livestock exclusions from the upper Indian Creek riparian area and in 20 acres of the Cajon Pond ACEC (now fenced) would allow riparian/aquatic habitat in these areas to increase in vigor (60 acres total, or 4 percent of the total riparian area); and
- management to protect P and SPNM ROS classes, and SPM class in the San Juan River SRMA, and designation of the Alkali Ridge, Shay Canyon, Grand Gulch, and Dark Canyon ACECs would allow riparian/aquatic habitat to improve in vigor and increase where these areas would be protected from disturbance, for a gain of about 50 acres.

Conclusion

Desert bighorn sheep populations would increase by about 200 animals from alternative A, to about 1,400, and crucial bighorn sheep habitat would decrease by 1,000 acres to about 328,750 acres. Antelope would increase by about 35 animals, to about 85, and crucial antelope habitat would remain constant. Deer would increase by about 643 animals, to about 8,000, and crucial deer habitat would decrease by about 4,115 acres to about 187,805 acres. Riparian/aquatic habitat and related T/E species habitat would increase by 140 acres.

HUMAN USES

Grazing

Impacts

Grazing would be allowed on 100,400 fewer acres than in alternative A (a 6 percent decrease), but on the same number of allotments. Areas excluded from grazing would include 40 acres of riparian areas along upper Indian Creek, mesa tops in crucial desert bighorn sheep habitat areas, relict vegetation study areas, Grand Gulch and Dark Canyon ACECs, Pearson Canyon SRMA, and developed recreation sites.

Livestock AUMs would increase 367 compared to alternative A (less than 1 percent). Increases

would result from permittee demand (2000 AUMs) and new land treatments (790 AUMs). Decreases would result from land disposals (118 AUMs), oil and gas production (130 AUMs), rights-of-way (20 AUMs) and exclusion of grazing from riparian areas (4 AUMs), desert mesa tops in desert bighorn sheep crucial habitat areas (160 AUMs), and Dark Canyon ACEC (100 AUMs). Exclusion of grazing in part of the Grand Gulch ACEC would be the same as in alternative A. Total AUMs in this alternative through the year 2000 would be 57,102.

Twenty new AMPs would be implemented in addition to the nine that now exist. These AMPs would provide for periodic winter and spring seasonal rest to allow an increase in vigor and density of livestock forage species. Range improvements would also help distribute livestock use more evenly over allotments (appendix U).

Season of use would be changed on 4 allotments to eliminate grazing during the critical spring growth period. This would allow an increase in vigor and density of cool season grasses.

New land treatments would be completed on 6,300 acres. This assumes that only 5 percent of the actual treatable acres could be treated by the year 2000 because of permittee and BLM budget constraints. These treatments would convert existing woody vegetation undesirable for livestock to herbaceous vegetation desirable for livestock forage.

Conclusion

The area available for grazing would decrease 100,400 acres to 1,620,570 acres.

Livestock forage would increase by 367 AUMs to 57,102 AUMs.

Cultural Resources

Impacts

Under this alternative about 15,678 sites would be damaged, a decrease of 86 (less than 1 percent) compared to alternative A. Application of restrictive conditions to P and SPNM ROS classes would reduce damage to cultural

resources caused by recreationists, especially in the existing SRMAs and extensive RMA. Another effect of these conditions would be to decrease damage from ORV use.

The number of sites protected under this alternative would increase by about 2,730 (10 percent). This would be a result of restrictive conditions protecting sites within the new National Register cultural properties (Kachina Panel, Monarch Cave, Ruin Spring, and Three-Story Ruin), archaeological districts (Cedar Mesa, Fable Valley, and Tin Cup Mesa), and in the cultural ACECs (Alkali Ridge, Shay Canyon, and Grand Gulch). The development and implementation of CRMPs (Alkali Ridge, Cedar Mesa, and Fable Valley) would serve to strengthen and reinforce the protection of many of these sites. The protection of cultural sites through restrictive conditions is also reflected in the reduction in the number of sites damaged.

The magnitude of direct and indirect damage to cultural resources under this alternative would decrease when compared to current management under alternative A. Increases in the number of sites damaged by recreational use in the new SRMAs would be offset somewhat by decreased damage resulting from the protection of P and SPNM ROS classes in the remainder of SJRA. The number of sites protected under this alternative would increase from current management.

Conclusion

The number of cultural sites damaged would decrease by about 86 to about 15,678. The number of sites protected would increase by about 2,730 to about 28,110.

Recreation

Impacts

This alternative would protect as the majority of the P class and the SPM class within the San Juan River SRMA. This would be a loss of 18 percent of the SPNM and 11 percent of the SPM class, reducing opportunities for semiprimitive recreation.

Development and expansion of recreation facilities would help to meet the increased demand for

these opportunities. Designation of SRMAs and ACECs for recreation related values would help focus management of these areas on recreational uses and maintenance of natural and cultural resources.

With management actions for alternative E, the ROS classes would shift toward the P end of the spectrum when compared to alternative A. P class areas would increase by 134,690 acres (220 percent). SPNM areas would decrease by 140,710 acres (25 percent); and SPM areas by 104,310 acres (27 percent). RN areas would increase by 110,400 acres (15 percent). The R class would remain at 14,720 acres and U at 320 acres.

There would be a loss of 2,710 acres (1 percent of current) of P class. The SPNM class would lose 91,317 acres (18 percent) and SPM class would lose 35,787 acres (11 percent) due to actions such as land treatments and oil and gas development. These changes would result in an increase of 110,395 acres of RN class. The change in ROS classes would occur mostly in the Squaw Canyon, Cross Canyon, and Grand Gulch Plateau areas.

A loss of P class would occur in the Squaw and Cross Canyon areas, now P class, because they would not be subject to the special conditions developed to maintain other P class areas. This is the only P class on the eastern edge of the resource area; subsequently primitive recreation opportunities in that area would be reduced. Additionally, there would not be mineral segregations on any of the P class areas.

A large portion of the changes to semiprimitive settings would occur on the Grand Gulch Plateau due to land treatments. This would displace users from these settings and could also change user perception of the plateau as a location for nonmotorized recreation opportunities. Use would be displaced to other locations in and outside the resource area. Because the Grand Gulch and Dark Canyon Primitive Areas are very attractive recreationists, a system for limiting use would probably be necessary to preserve the primitive settings.

Two ACECs would be designated under this alternative for their recreation, cultural, and

natural values: Grand Gulch (49,130 acres) and Dark Canyon (62,040 acres). This would help to focus management direction to protect the values present.

The river character in the San Juan River SRMA would continue to experience increased demand for river running with current use limits being reached for the Sand Island to Mexican Hat and Mexican Hat to Clay Hills Crossing sections. The SPM ROS class portion of this SRMA would be maintained by a mineral segregation, closing to minerals leasing, and special conditions to limit development. Increased user demand would also be present for the Montezuma Creek to Sand Island section where oil and gas development and gravel production could reduce the scenic quality, but probably not change the RN class.

In this alternative developments at Sand Island would be expanded with additional camp/picnic sites. The Mexican Hat launch point would be developed with trash and human waste facilities. These improvements would reduce user conflicts, trash, and human waste problems.

The developed recreation sites in the Grand Gulch Plateau SRMA would experience increased visitation, but would not be substantially impacted by the increased use or development activities. Camping and use of undeveloped locations would increase in the SRMA. This alternative would provide for two semideveloped campsites (Comb Wash/U-95 and Arch Canyon) which would help reduce the human waste and trash problems in these areas.

This alternative would designate three additional SRMAs, which would provide motorized recreation opportunities. About 80,000 acres in the Indian Creek drainage would be designated as an SRMA and would receive additional recreation management, with 50,000 acres being managed for ORV use. Semideveloped campsites would be developed at the falls and along the creek between Newspaper Rock and Dugout Ranch. This would help reduce the trash and human waste problems.

The Beef Basin SRMA (66,450 acres) would also be managed with a recreation emphasis. This area

would provide motorized recreation opportunities. No developments are currently planned. The potential would exist for motorized travel off existing routes to damage the scenic quality of the area.

The Pearson Canyon SRMA (1,920 acres) would provide motorized semideveloped camping and hiking opportunities close to Monticello and Blanding.

Impacts to other recreation resources would be as under alternative A.

Recreational ORV use is projected to increase in SJRA, as described under alternative A. The 289,020 acres of SPM and 858,280 acres of RN class (1,147,300 acres total) should be able to accommodate the increased use without substantial user conflicts.

There would be 651,880 acres designated as open to ORV (a decrease of 1,027,460 acres, or 61 percent); 853,470 acres in the limited category (all increase), and 273,840 acres in the closed category (an increase of 173,990 acres, or 174 percent).

ROS P class areas except in the Squaw and Cross Canyon areas (196,040 acres total), the Bridger Jack and Lavender Mesa RNAs, and the Dark Canyon ACEC (mostly in P class), would be closed to ORV use. These areas are not currently subject to recreational ORV use.

ORV use would be subject to seasonal limitations to protect crucial bighorn sheep, antelope, and deer habitat areas (540,260 acres total, which overlaps 203,940 acres with other ORV limitations). ORV use would be limited to existing roads and trails to protect 1,500 acres of floodplains and riparian areas and the Alkali Ridge and Shay Canyon ACECs. The SPNM ROS classes would be limited to existing roads and trails, which could allow some motorized use to occur and conflict with nonmotorized use. The area around Road, Fish Creek and Owl Creek Canyons would be in this situation. ORV use would be limited to designated roads and trails to protect the Grand Gulch ACEC (where not closed because of P ROS class), the Cajon Pond ACEC, the Pearson Canyon SRMA, and developed recreation sites (250 acres).

Arch Canyon would remain available for ORV use and the potential for conflicts between recreational users would continue. Comb Wash would also remain open to ORVs, and damage to cultural sites would continue.

It is anticipated that recreational ORV use would continue to be limited to nonexistent in rugged or remote areas, even when these are designated as open to ORV use.

Conclusion

Compared to alternative A, the acreage in ROS classes would shift toward the P classes. The P class would increase 1,374,690 acres to 195,810 acres; the SPNM class would decrease 140,710 acres to 421,040 acres; and SPM 104,310 acres to 289,020 acres. RN would increase 110,400 acres to 858,280 acres. The R and U class areas would not change.

Areas open to ORV use would decrease by 1,027,460 acres to 651,880 acres. Areas designated as limited would increase to 853,470 acres, where no areas are now managed as such. The area closed to ORV use would increase 173,990 acres to 273,840 acres.

Visual Resources

Impacts

Alternative E would place 223,260 acres (13 percent of the resource area) in VRM class I. This represents an increase of 123,410 acres (124 percent) over alternative A. The increase includes P ROS class areas except in Squaw and Cross Canyons (195,810 acres total), the SPM class area in the San Juan River SRMA, both RNAs, and Dark Canyon and Grand Gulch ACECs (almost total overlap with P ROS class).

Other VRM class areas would remain the same as under alternative A, except where acreage was shifted into class I. Class II would decrease 88,700 acres (17 percent); class III 7,090 acres (21 percent); and class IV 27,620 acres (5 percent). There would continue to be no area designated as class V.

It is projected that by the year 2000, in 271 cases, visual contrast rating scores would exceed the VRM class objectives for that area. This would be no change from alternative A projections.

Conclusion

The area in VRM class I would increase by 123,410 acres to 223,260 acres. The area in other VRM classes would decrease a corresponding amount: 88,700 acres in class II to 434,570 acres; 7,090 acres in class III to 611,480 acres; and 27,620 acres in class IV to 509,880 acres.

Lands

Impacts

Corridors for transportation and utility systems would be designated on 85,760 acres (all increase). Areas available for transportation and utility facilities outside of corridors would decrease 237,890 acres (14 percent), avoidance areas would increase to a total of 128,810 acres, and exclusion areas would increase 23,320 acres (23 percent) to 123,170 acres.

Lands available for disposal under this alternative would increase 3,470 acres over alternative A, to a total of 6,350 acres. This addition would be a result of adding parcels for community expansion and isolated parcels not previously included that are not needed for other surface resource uses. Disposing of an additional 3,470 acres would be an increase of 120 percent.

The amount of land withdrawn would be 115,500 acres, an increase of 13,590 acres (13 percent) over alternative A. Existing BLM classifications would be formally withdrawn on 92,130 acres. Acquired lands not now open to entry (9,730 acres), the Grand Gulch ACEC (49,130 acres), the Pearson Canyon SRMA (1,920 acres), SPM class in the San Juan River SRMA (9,830 acres), and developed recreation sites would be withdrawn. These areas overlap the existing classifications somewhat.

Conclusion

Under alternative E, 85,760 acres would be designated as transportation and utility corridors; there would be an increase of 23,320 acres in exclusion areas to a total of 123,170 acres; an increase of 3,470 acres, to 6,350 acres, in the lands available for disposal; and an increase of 13,590 acres in the area withdrawn from entry, to 115,500 acres.

ECONOMIC CONSIDERATIONS

Impacts

Minerals

The proposed stipulations and special conditions would increase the cost and lower the output value of mineral exploration and development. Stipulations and special conditions would increase the cost of mineral activities (see impacts to oil and gas, mineral materials, and locatable minerals). Except for locatable minerals, the acreages of those stipulations that increase costs would increase from alternative A. The acreage segregated, closed to leasing, and closed to mineral material development would be greater than under alternative A.

The effect of these stipulations and special conditions on local employment, income, and taxing revenues cannot be projected; however, based on the assumed mineral activity projections under this alternative, the overall effect would be small.

Soil and Water

Lake Powell's value loss due to sediment originating in the SJRA would decrease \$2,600 (table 4-17). The Lower Colorado River Basin user costs from salt originating in the SJRA would decrease \$5,200. The analysis assumes that all sediment eventually enters Lake Powell and that water yield would not be affected.

Livestock

The livestock forage AUM increases from new land treatments, with AUM losses from oil and gas activity, land disposals, rights-of-way, and

TABLE 4-17

Annual Sediment and Salinity Related Cost, Alternative E

	<u>Baseline</u>	<u>Alternative E</u>
Sediment	\$ 17,500	\$ 14,900
Salinity	36,500	31,300
Total	\$ 54,000	\$ 46,200

Note: Assumes that all sediment yield enters Lake Powell. Sediment which in fact enters other capital investments would greatly increase sediment related costs.

exclusions from relict vegetation study areas, ACECs, recreation sites, and riparian areas would together increase the public rangeland forage available to 11 operators by 4 percent and decrease the forage available to 6 livestock operators by 2 percent. Forty-two of 54 livestock operators would not be affected by this alternative. Changes in available forage would affect rancher income by affecting herd sizes, weight gains, or calf survival rates.

Four of the 54 livestock operators would be excluded from using public rangeland forage at some point in the spring. The spring livestock exclusions would be of particular concern, as most operators have few options with which to respond to these exclusions. Replacing forage lost through spring exclusions with hay would represent a worst-case analysis. The ranch budgets used in the impact analysis projected that ranchers would respond to the spring exclusions through a combination of increasing hay feed and reducing herd size.

The combined affects of the forage increases, forage decreases, and spring exclusions would benefit 9 operators, increasing their returns to labor and investment by 3 percent, and be detrimental to 10 operators, decreasing their returns to labor and investment by 31 percent (tables 4-18 and 4-19).

TABLE 4-18

Number and Degree of Livestock Operator Impacts, Alternative E

	Operators With An Increase From Existing Use and Net Revenues			Operators Not Affected	Operators With A Decrease From Existing Use and Net Revenues		
	+ 51%	11-50%	1-10%		1-10%	11-50%	+ 51%
Public rangeland forage	0	2	9	37	5	1	0
Total feed requirements	0	0	11	37	6	0	0
Operator returns to labor and investment	0	0	9	35	6	2	2

TABLE 4-19

Aggregate Economic Impacts to Livestock Operators, Alternative E

<u>Livestock Operators</u>	<u>Current Situation</u>	<u>Alternative E</u>
Gross Revenue	\$ 3,437,800	\$ 3,426,900
Total Variable Cost	1,853,100	1,863,400
Returns Above Variable Cost	1,584,700	1,563,500
Returns to Labor and Investment ^a	403,300	384,200
Herd Size (animals)	12,440	12,400
Hired Labor (jobs)	18	18
Total Local Income	\$ 1,013,000	\$ 896,000
Total Local Employment (jobs)	176	175

NOTE: These budgets assume that ranchers have no long-term outstanding debt, that all operating capital is borrowed, and that existing ranchers would not go out of business.

^aReturns net of variable and fixed costs to management, non-hired labor, machinery, equipment, and land.

Based on the direct effects from the budget analysis and on the indirect and induced effects derived from a county economic model, it is estimated that local employment, income, and tax revenues would decrease by 1 job, \$117,000, and \$200 respectively.

Any grazing permit change could affect operator wealth. The decrease from active preference under this alternative could decrease the total operator wealth by as much as \$1,471,000, a 4 percent decrease.

Base properties are used as collateral for some types of loans. Since aggregate base property values are projected to decrease under this alternative the level of total indebtedness allowed should also decrease. The Operators' ability to obtain and repay loans should change in proportion to their projected incomes.

Recreation

Recreation use of the SJRA and its related local importance are projected to increase as discussed in alternative A. The relative mix of uses may change as a result of a changing mix of recreational opportunities from alternative A (see impacts to recreation). The local economic effect of this changing mix of ROS classes is unknown. However, judging from the existing economic importance of recreation in the SJRA (0.2 percent of local employment and income) these changes would have little effect on the local economy.

The seven additional developed sites should increase use and related local expenditures. The services offered should not compete with, and therefore not affect, privately owned recreation developments or commercial outfitters. The increased use would be minor relative to total visitation in the SJRA, and related local expenditures would be insignificant.

Existing land based commercial outfitters rely heavily on the P and SPNM opportunity settings available in the SJRA, and existing water based commercial outfitters rely heavily on SPNM opportunity settings where the only motorized use is from boats. The 1 percent projected loss of acreage in the P and SPNM ROS classes from

alternative A would have little effect on land based commercial outfitters. The special protections afforded the San Juan River corridor could increase the demand for the services of water based commercial outfitters, but use limitations would prevent increased use.

There is no known relationship between special management designations and recreation use. Publicity following designation could increase public awareness of these lesser known areas and therefore increase visitation and related local expenditures. Even if visitation to these special designation areas doubled, the local economic effect would be insignificant. This effect, however, could be significant to outfitters who might use these areas.

Desert bighorn sheep, antelope, and deer populations are projected to increase. Assuming that population/harvest and harvest/hunter ratios would remain constant, projected hunter pressure and expenditures would increase local employment by 0.3 job, earnings by \$3,400, and taxing revenues by \$200. However, the assumed constant harvest/hunter ratios overstate the increases to some degree.

Other Land Uses

The proposed land disposals would be widely scattered and would represent a 1.6 percent increase in the existing private land base, having little or no effect on nearby land values. Under private ownership, these lands would increase local taxing revenues by at least \$6,000.

The cost of environmental review for major utility lines is typically \$8,000 to \$15,000 per mile. This review would cost only an estimated \$1,500 to \$2,000 per mile in the utility corridors proposed for designation under this alternative [Pacific Gas, 1981].

Stipulations and special conditions would increase the cost of other land uses on a greater acreage than under alternative A. The acreage either closed outright or essentially closed to other land uses due to management restrictions would be essentially the same as in alternative A. The aggregate effect on local employment,

income, and taxing revenues cannot be projected; however, the effect is expected to be small.

Plan Budget

The local direct, indirect, and induced effects resulting from the plan's budget would generate an estimated 31 jobs and \$609,000 of earnings in the local economy.

Conclusion

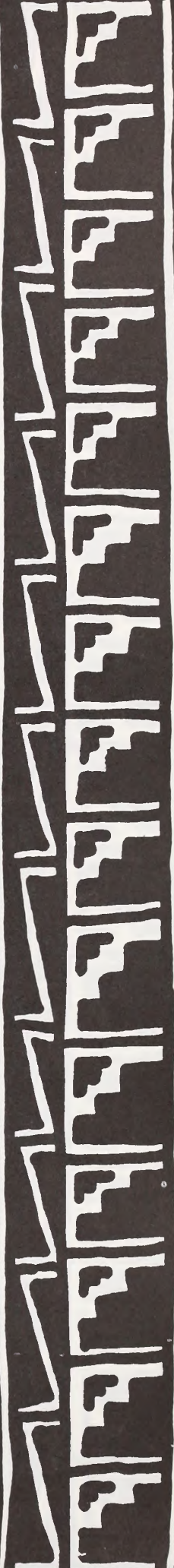
Sediment and salinity related costs would decrease by \$2,600 and \$5,200 respectively. Live-stock related local employment would be reduced by 1 job, income by \$117,000, taxing revenues by \$200, and total rancher wealth by \$1,471,000. Recreation use and related local employment and income should increase, along with demand for

commercial outfitter services. Wildlife use and related local employment would increase by 0.3 job, income by \$3,400, and taxing revenues by \$200. Land disposals would increase taxing revenues by \$3,000. Increased management restrictions would increase the cost of land disturbing activities, and the increased acreage where land disturbing activities would be allowed would allow additional economic activity, but the net effect on the local economy is unknown. The added cost of implementing this plan would generate 6 jobs, and \$115,000 in income.

SOCIAL CONDITIONS

None of the management actions would impact local communities so far as to noticeably affect existing social conditions.

CHAPTER 5





CHAPTER 2

CHAPTER 5 — CONSULTATION AND COORDINATION

OVERVIEW

This chapter presents information on consultation and coordination with other federal, state, and local agencies and Indian tribal councils, including other offices of the BLM, as required by 40 CFR 1502.25 and 43 CFR 1610.3.

Formal plans and policies of other agencies that may have a bearing on the San Juan Resource Management Plan (RMP) are summarized here. The proposed RMP and final environmental impact statement (EIS) will discuss whether the proposed RMP is or is not consistent with these plans.

This chapter also discusses public participation in this planning effort.

CONSULTATION

AGENCIES AFFECTED

The area covered by this RMP/EIS includes lands administered by various other federal, state and local governments. The agencies listed below were presumed to be directly affected by this plan. Agencies administering lands adjacent to the San Juan Resource Area (SJRA) are not listed, although they may be indirectly affected by the RMP.

Department of Agriculture

Forest Service (USFS)
Manti-La Sal National Forest (NF)

Department of the Interior

Bureau of Indian Affairs (BIA)
Navajo Indian reservation

Bureau of Land Management (BLM)
Grand Resource Area, Moab District, Utah
San Juan Resource Area, Montrose District, Colorado
Farmington Resource Area, Albuquerque District, New Mexico

National Park Service (NPS)
Canyonlands National Park (NP)
Glen Canyon National Recreation Area (NRA)
Hovenweep National Monument (NM)
Natural Bridges NM
Rainbow Bridge NM

State of Utah

Division of Lands and Forestry
State lands

Division of Oil, Gas and Mining
State minerals

Division of State Parks
Newspaper Rock State Park
Edge of the Cedars State Park
Goosenecks State Park

Division of Wildlife Resources
Wildlife and hunting, SJRA

Indian Tribes

Navajo Nation
Navajo Indian reservation

Ute Mountain Tribe
Ute Indian allotments

Local Governments

San Juan County
County facilities
Law enforcement
Land administration

City Governments
Monticello
Blanding

Other federal, state, or local agencies having management, advisory, or consultant responsibility for resources within SJRA not directly tied to specific tracts of land are discussed under Agencies Consulted or listed under Distribution, below.

AGENCIES CONSULTED

Various agencies have been consulted throughout the planning process. Information, ideas, and interpretations were exchanged through formal and informal meetings, telephone calls, and correspondence. The results of these consultations are summarized in table 5-1. Complete records of these contacts may be reviewed in the SJRA office.

The Area Manager explained the planning process and the upcoming RMP to the San Juan County Commission, the Monticello City Council, and the Blanding City Council in January and February of 1985.

The U.S. Fish and Wildlife Service (FWS) provided an informal consultation for the San Juan RMP/EIS under Section 7 of the Endangered Species Act in June 1985. The requirement for formal consultation with the Advisory Council on Historic Preservation and the FWS will be met by providing these agencies with a copy of this draft EIS for review.

An informal interagency coordination meeting held July 25, 1985 was attended by representatives from Manti-LaSal NF; Glen Canyon NRA; Hovenweep NM; Natural Bridges NM; San Juan Resource Area, Montrose District, BLM; and Farmington Resource Area, Albuquerque District, BLM.

CONSISTENCY WITH OTHER PLANS

The BLM planning regulations (43 CFR 1610.3-2) require that RMPs be consistent with the plans of other federal agencies, state and local governments, and Indian tribes, so long as the RMP is also consistent with federal law and regulations governing management of the public lands. Where no formal land use plans have been developed, the RMP must be consistent with officially approved policy and programs of the other agencies.

Formal land use plans already developed or under preparation for several areas covered by the San Juan RMP are summarized below.

DEPARTMENT OF AGRICULTURE

The USFS released a proposed management plan and draft EIS for all units of the Manti-LaSal NF in August 1985. The following discussion is limited to the unit of the Manti-LaSal NF that lies within the SJRA.

The USFS draft plan, which may be revised in response to public review and comment, shows zones for general big game winter range, grazing use by domestic livestock, and wood-fiber production and harvest. Except for the Dark Canyon Wilderness Area, all USFS lands bordering public lands fall into one of these three zones. The zones are consistent with base data used in the RMP/EIS, although treatment of public lands adjacent to the proposed USFS zones would vary by alternative in the RMP/EIS.

The USFS draft plan establishes visual resource management areas within the NF, based on a system similar to, but not exactly the same as, BLM's visual resource management (VRM) system. BLM and USFS personnel have worked together to reconcile differences between the two systems along USFS-BLM boundaries.

The USFS draft plan also establishes recreation management areas within the NF, according to a system similar to, but not exactly the same as, BLM's recreation opportunity spectrum (ROS) system.

TABLE 5-1

Agencies Consulted

Agency Consulted	Topics Discussed
<u>FEDERAL AGENCIES</u>	
Bureau of Indian Affairs, Shiprock	Reservation management plans.
Federal Aviation Administration	Bluff Airport surface use stipulation.
National Park Service, Denver, CO	Site-specific data on fine particulate matter (air quality).
National Park Service, Canyonlands NP	Air quality monitoring information; management plan consistency; mining claim status.
National Park Service, Glen Canyon NRA	Mineral management plan.
U.S. Forest Service	Management plan comparison (minerals); management of recreation and visual resources.
<u>STATE AGENCIES</u>	
Utah Department of Transportation	Mineral material use from state lands.
Utah Division of Air Quality	Application requirements; definition of major polluting source; visibility regulations.
Utah Division of State Lands, Forestry, and Fire Control	Fire suppression on state lands.
Utah Division of Water Resources	Watershed acreages; new water developments.
Utah Division of Water Rights	Water rights information; status of Senate Bill 198; Utah water rights allocations.
Utah Division of Wildlife Resources	Big game management plan status.
<u>COUNTY AND LOCAL AGENCIES</u>	
San Juan County	Mexican Hat water quality data; irrigation water demand statistics.

TABLE 5-1 (Concluded)

Agency Consulted	Topics Discussed
<u>COUNTY AND LOCAL AGENCIES (Concluded)</u>	
San Juan County Clerk	Town populations within San Juan County.
San Juan County Commission	Industrial water demand statistics.
San Juan County Recorder	Verification of state and private land acreages.
San Juan County Road Department	County road maintenance needs (mineral materials).
San Juan Water Conservancy District	Status of Montezuma Creek project; current water use.
City of Blanding	Blanding water demand statistics.
Bluff Water Department	Bluff water demand statistics.
City of Monticello	Monticello water demand statistics.
<u>OTHER ORGANIZATIONS</u>	
Aerocomp, Inc.	Inhalable particulate standards (air quality).
Blanding Irrigation Company	Water use agreement.
Mexican Hat Trading Post	Water demand statistics.
Navajo Tribal Utility Authority	Montezuma Creek water demand statistics; Montezuma Creek water source.

The USFS draft plan outlines management for the Dark Canyon Wilderness Area, the boundaries of which align with the Dark Canyon Primitive Area (Instant Study Area [ISA]). Management of the ISA, if Congress does not designate it as wilderness, would differ under the RMP/EIS alternatives. However, management of specific projects would consider use of the adjacent wilderness area under any alternative.

The USFS draft plan would close the Dark Canyon Wilderness Area to off-road vehicle (ORV) use and impose ORV travel restrictions in a municipal watershed area above Monticello. The closed area aligns with the BLM Dark Canyon Primitive Area, which would also be closed to ORV travel in all but one RMP/EIS alternative.

The USFS draft plan shows no utility corridors or windows. All alternatives in the RMP/EIS are consistent in this regard.

ENVIRONMENTAL PROTECTION AGENCY

The BLM has reviewed the Environmental Protection Agency's (EPA) concerns regarding the management of air, watershed, and soils resources on public lands and incorporated them into the RMP analysis wherever possible. Some watershed concerns would be handled at the activity planning stage, instead of within this RMP/EIS. Site-specific concerns, such as the use of pesticides or herbicides, would be included National Environmental Policy Act (NEPA) documentation prepared for a specific project.

DEPARTMENT OF THE INTERIOR

National Park Service

The NPS has prepared general management plans for Canyonlands NP and Glen Canyon NRA, as well as activity plans to cover specific resource uses in these areas. General management plans have been drafted for Hovenweep and Natural Bridges NMs; the plans are subject to revision before being issued in final form.

Canyonlands NP

A general management plan for Canyonlands NP, prepared in May 1978, established ORV use zones and showed NPS wilderness proposals for lands within the NP. Most of the lands within Canyonlands NP were proposed for wilderness designation, including lands along the NPS-BLM boundary, except road corridors leading to the NP and the area around Squaw Flat. The Dark Canyon ISA, Indian Creek Wilderness Study Area (WSA), Butler Wash WSA, and South Needles WSA are adjacent to the NPS proposed wilderness. Most of the public lands along the Canyonlands NP boundary have been identified as primitive (P), semiprimitive nonmotorized (SPNM), or semiprimitive motorized (SPM) ROS class. Management would vary by RMP/EIS alternative, but would be consistent with NPS management under the alternatives geared to maintaining P or SPNM ROS classes.

The NPS plan provides for motorized corridors in Davis and Lavender Canyons, Devils Lane, and Squaw Flat. Management of adjacent public lands would vary by RMP/EIS alternative and may or may not be consistent with NPS ORV designations.

The NPS has also prepared activity plans to cover specific land uses within Canyonlands NP. The Natural Resource Management Plan (September 1985) and the Back Country Management Plan (December 1985) do not address uses of the adjacent public lands.

Glen Canyon NRA

The general management plan for Glen Canyon NRA (November 1979) established four management zones: natural, recreation and resource utilization, development, and cultural. Lands along the NRA-BLM boundary fall into all four zones.

The natural zones coincide with NPS wilderness recommendations and are managed so as to maintain their natural character. ORV use, utility corridors, and mineral uses are prohibited. Four of these zones fall along the

border with public lands. Three align with the Dark Canyon ISA, the Mancos Mesa WSA, and the Grand Gulch ISA Complex, all in the P ROS class. The fourth NPS natural zone is in the vicinity of Wilson Mesa and is not adjacent to any BLM wilderness review unit; the adjacent public lands have been identified as ROS class SPNM or SPM. Management of the adjacent public lands would vary by RMP/EIS alternative; alternatives geared to maintaining P or SPNM ROS classes would be consistent with management of the NPS natural zones.

ORV use, utility lines, and minerals uses would be allowed in the NRA recreation and resource utilization zones. This designation covers four general areas bordering public lands in SJRA. Except for existing road corridors into the NRA, the adjacent public lands fall in the SPNM or SPM ROS class. Management of public lands would vary by RMP/EIS alternative and may or may not be consistent with NPS management.

The development zones in the NRA were established to provide for permanent facilities, and the cultural zones for interpretation and study of cultural resources. Mineral uses are prohibited, and grazing may be. Near the NRA-BLM boundary, development zones form narrow corridors along the major highways into the NRA. The only cultural zone adjacent to public lands is a corridor along the road across Wilson Mesa (the Hole-in-the-Rock Trail). Because these zones are so small, no RMP/EIS alternative would be inconsistent.

The general management plan calls for deletion of 3,730 acres from the NRA in the vicinity of Beef Basin. The area proposed for deletion is adjacent to SJRA public lands immediately north of the Dark Canyon Primitive Area. If deleted from the NRA, the area would probably be returned to SJRA management, and the RMP would be revised accordingly.

The Glen Canyon NRA mineral management plan (March 1980) covers leasable minerals. (Under the provisions of the law establishing Glen Canyon NRA, nonleaseable minerals could be leased.) All of the RMP/EIS alternatives would be consistent with this management provision.

Hovenweep NM

Hovenweep NM is made up of several discrete parcels. Within the area covered by this RMP/EIS, only the Square Tower unit is adjacent to public lands. The Cajon unit falls within the Navajo Indian reservation. The other units are in Colorado, but the Holly unit is on the state line adjacent to private lands in Utah.

The environmental assessment (EA) for the Hovenweep NM general management plan (October 1985) did not identify a proposed plan or preferred alternative. Each alternative assessed made use of a protection zone around the various units of the NM. The zone around the Square Tower, Holly, and Hackberry units includes 5,412 acres of federal, state and private land in both Utah and Colorado, of which about 1,800 acres are public lands in SJRA.

Under one alternative, the NPS nominated the lands within the protection zone to be designated as an area of critical environmental concern (ACEC) by the BLM. To accommodate this nomination, a 2,000-acre potential ACEC has been analyzed under alternative D in this draft RMP/EIS (figure 2-5). The potential ACEC lies in two tracts and is adjacent to the Anasazi Cultural Use Area ACEC designated by the San Juan Resource Area, Montrose District, BLM.

The NPS proposed other alternatives for managing the protection zone, including a memorandum of understanding to ensure protection of cultural resources, and expanding the NM boundaries to cover the entire area. The consistency of these two plans cannot be judged until alternatives are selected by both the NPS and the BLM.

Natural Bridges NM

The Natural Bridges NM proposed management plan (September 1985) would not affect management of adjacent public lands. Any of the alternatives in this RMP/EIS would be consistent with the NPS proposed plan; however, the proposed plan may be revised in response to public comment before it is published in final form.

Bureau of Land Management

RMPs have been completed for two adjacent resource areas: Grand Resource Area, Moab District, to the north, and the San Juan Resource Area, Montrose District, to the east. An RMP is being prepared for the Farmington Resource Area, Albuquerque District, in northwestern New Mexico, but is not yet available for review.

Grand RMP

The Grand Resource Area RMP, adopted in June 1985, included management decisions for several programs. Those affecting lands along the SJRA boundary concerned grazing, ORV designations, utility corridors, and minerals management.

The Grand RMP identified most of the area adjacent to the SJRA as suitable for livestock manipulation techniques. Existing land treatments would be maintained and new ones implemented adjacent to the SJRA. The remainder of the area was identified for continuation of current livestock management. Grazing management of adjacent public lands in SJRA would vary by RMP/EIS alternative and may or may not be consistent with the Grand RMP.

The Grand RMP limited ORV use to existing roads and trails in an area adjacent to the SJRA; however, ORV management designations in SJRA would not conflict, because the area is separated from SJRA by the cliffs along Harts Point.

Utility corridors established in the Grand RMP follow U.S. Highway 191 near the SJRA border. The corridors considered in this draft RMP/EIS align with those in the Grand RMP; management would therefore be consistent.

The Grand RMP designated two areas along the SJRA boundary as oil and gas leasing category 2, open with special stipulations. (This corresponds to category 1 under the revised system used in this draft RMP/EIS.) One of the two areas is on top of Harts Point and definitely would not conflict with management designations in SJRA. The other is a riparian area along East Canyon and aligns with the riparian area

identified in SJRA. Management of adjacent public lands in SJRA would vary by RMP/EIS alternative and may or may not be consistent with management under the Grand RMP.

The Grand RMP identified two areas adjacent to the SJRA as open for potash development. These areas are adjacent to the known potash leasing areas (KPLAs) identified in SJRA. Management of adjacent public lands in SJRA would vary by RMP/EIS alternative and may or may not be consistent with management under the Grand RMP.

San Juan/San Miguel RMP

The San Juan/San Miguel RMP (September 1985) established multiple use emphasis areas throughout the resource area and recommended both the Squaw Canyon and Cross Canyon WSAs, on the state line, as unsuitable for wilderness designation. This recommendation covers not only the portions of the WSAs in Colorado, but those in Utah as well.

Areas within the Cross, Squaw, and Papoose Canyons will be closed to ORV use under the San Juan/San Miguel RMP. The draft San Juan RMP/EIS would restrict ORV use in these areas within SJRA only under alternative C.

The San Juan/San Miguel RMP did not identify specific utility or transportation corridors for public lands along the state line. It did identify all of the isolated parcels of public land in Colorado along the state line as suitable for disposal. No RMP/EIS alternative would be inconsistent.

Under the San Juan/San Miguel RMP, all public lands along the state line south of Squaw and Papoose Canyons area are part of the Anasazi Cultural Use Area ACEC. Three known geologic structures (KGSs) lie adjacent to or very close to the state line within the ACEC. Other emphasis areas close to the state line, also within the ACEC, are for management of livestock, aquatic and riparian areas, and cultural resources. Management of adjacent public lands within the SJRA would vary by RMP/EIS alternative and may or may not be consistent with the San Juan/San Miguel RMP.

STATE OF UTAH

The state does not have a comprehensive land use plan, but it did propose in Project BOLD [UDNR, 1982] to block up the pattern of state and federal land ownership. If Project BOLD is implemented, the San Juan RMP would probably have to be amended or revised to bring it into conformance with the new ownership pattern.

The Utah Division of Wildlife Resources (UDWR) has proposed to introduce more elk to the Abajo Mountains within Manti-LaSal NF. The USFS (in early 1986) is still considering this proposal, pending approval of its land use plan. The transplant could be allowed if it did not conflict with other land uses identified in the USFS plan. If implemented, this proposal could require an adjustment in the data base used for this draft RMP/EIS.

In 1980 the state completed the Utah Outdoor Recreation Plan, which shows outdoor recreation use and projected increases. Recreation management on public lands within the SJRA would vary by RMP/EIS alternative and may or may not allow for increased recreation use levels consistent with the state recreation plan.

INDIAN TRIBES

Neither the Navajo Nation nor the Ute Mountain Tribe has developed a formal land use plan. Both tribes will be provided with copies of this draft RMP/EIS for their review, which will meet the requirement for consultation with Indian tribes.

LOCAL GOVERNMENTS

The Southeastern Utah Association of Governments has been preparing water quality management plans under Section 208 of the Water Pollution Control Act. Plans for Montezuma and Recapture Creeks, completed in 1981, establish cooperative management of the watersheds among several federal, state and local government agencies, including the BLM. Management of the watersheds would be consistent with these plans under all alternatives analyzed in this draft RMP/EIS.

The San Juan County general plan [Planning and Research Associates, 1967], which projected use of the lands within the county to 1985, has not been updated and is still in effect. The plan recommends three major use categories for public lands: forest and open range, community development, and future agricultural use. Management of public lands within the SJRA under this draft RMP/EIS would vary by alternative and may or may not be consistent with the San Juan County plan.

COORDINATION

The SJRA coordinates with other federal, state and local governments for management of certain aspects of federal lands and resources. These are summarized here and explained more completely in the management situation analysis (MSA).

U.S. DEPARTMENT OF AGRICULTURE

The BLM is responsible for issuing mineral leases and to record and adjudicate mining claims on USFS lands. The USFS sets the reclamation requirements and participates in BLM's approval of applications for permit to drill (APDs) on USFS lands.

DEPARTMENT OF THE INTERIOR

National Park Service

Public Law 92-593, which established Glen Canyon NRA, provided that the lands within the NRA would be managed under the NPS Organic Act. The law further provided that BLM would administer the minerals and grazing leases, following the same policies used on public lands. The law withdrew the lands within the NRA from mineral entry, but provided that nonleasable minerals could be leased upon preparation of suitable regulations. However, no regulatory provision has yet been made to lease locatable or salable minerals. Under current regulations and agency policy, minerals can be developed in the NRA only under an oil and gas lease. An APD for a lease on the NRA would be handled the same as APDs on USFS lands.

The BLM administers livestock grazing within the NRA on three grazing allotments (figure 3-14)

totaling 312,660 acres. The NPS is consulted prior to approval of any range improvement.

Recreational use of the San Juan River is administered jointly by the SJRA and the NPS, under the terms of a memorandum of understanding signed in 1979, which covers management from Mexican Hat to the Clay Hills Crossing. The SJRA administers river rafting permits; other resource management actions are handled cooperatively.

Bureau of Land Management

Other BLM offices administer grazing or minerals in certain parts of SJRA. The Grand Resource Area and the San Juan Resource Area, Montrose District administer some grazing allotments (see table I-5), and SJRA administers some grazing allotments in those resource areas. The San Juan Resource Area, Montrose District and the Farmington Resource Area, Albuquerque District share management responsibilities for federal minerals on an area of public land, the Indian reservation, and Indian allotments (table I-4).

STATE AND LOCAL GOVERNMENTS

Management of wildlife within SJRA is covered by several agreements among the BLM, FWS, and UDWR. UDWR administers the wildlife resource and hunting; BLM manages habitat for wildlife.

Control of the roads within the SJRA falls under a memorandum of understanding signed in 1984 between San Juan County and the SJRA, which recognizes the county's rights to class B and D roads under Revised Statute 2477 and state laws.

PUBLIC PARTICIPATION

The Federal Land Policy and Management Act of 1976 (FLPMA), the Council on Environmental Quality (CEQ) regulations, and BLM guidelines require that the planning process include public involvement. A formal call for public review and comment is required for the identification of issues (planning step 1); development of planning criteria (step 2); and the draft RMP/EIS, which documents the formulation of alternatives (step 5), estimation of effects

(step 6), and selection of the preferred alternative (step 7). Provisions are made for formal public protest after selection of the final RMP (step 8). Public participation may also be made a part of the implementation of the plan (step 9) through project-specific NEPA documentation. The BLM will review comments and additional information supplied by the public at any stage of the planning process, and incorporate them where appropriate.

The San Juan RMP/EIS process began with publication of a notice of intent to plan in the Federal Register on March 11, 1983. The notice listed proposed planning issues and called for public comment on those or additional issues. This met the scoping requirement found at 40 CFR 1501.7.

A preplanning analysis, which included a public participation plan, was prepared in November 1984 and distributed to the public to provide information about the San Juan RMP effort.

A 30-day public comment period on the draft planning criteria ended April 1, 1985. The draft criteria were revised in response to the comments received and finalized in June 1985.

Publication of this draft RMP/EIS marks the beginning of a formal public review and comment period. The public is invited to comment on any aspect of the planning process, but especially the alternatives analyzed, data considered in the affected environment, the projection of estimation of effects, and selection of the preferred alternative.

The proposed RMP and final EIS will be prepared after the comments received from the public and from other agencies are reviewed. The data and conclusions originally presented in this draft RMP/EIS may be revised to accommodate additional information or public concerns. The proposed RMP may differ from the preferred alternative presented in the draft RMP/EIS, as a result of public comments, the Governor's consistency review, comments of other agencies, or agency (BLM) review.

The proposed RMP as presented with the final EIS is subject to public protest through a formal

procedure explained at 43 CFR 1610.5-2. The final RMP may incorporate changes resulting from either a successful protest or the Governor's consistency review.

A rangeland program summary (RPS) is required by BLM policy to brief the public on range management decisions and monitoring. The RPS will present information organized by grazing allotment and will be published along with the final RMP.

Public participation has also been used to compile information used in the MSA, the affected environment portion of the EIS, formulation of alternatives, and their analyses. Public nominations were considered in formulating a list of potential ACECs. Ranchers were interviewed to provide information used in grazing analysis. Other individuals and groups have also added to the data base for this RMP/EIS.

Monitoring and evaluation of the final RMP may result in changes to the RMP. These will be documented through plan supplements, amendments, or revisions (appendix B). Amendments and revisions will be subject to the same public participation opportunities as this RMP/EIS. Formulation of activity plans or implementation of specific projects will be open to public involvement through NEPA documentation requirements, usually through an EA.

DISTRIBUTION

Copies of this draft RMP/EIS have been sent to the following individuals, organizations, industries, educational institutions, and government agencies.

INDIVIDUALS

David Anderson, Montrose CO
Rex Anderson, Blanding UT
George H. Barry, Monticello UT
Don Barton, Monticello UT
Francis Barton, Monticello UT
John Bernard, Boulder CO
Elliott Bernshaw, Salt Lake City UT
Phil Briggs, Beckville TX
Richard Bonugli, Livermore CA
Aroe Brown, Blanding UT

Clyde Christensen, Monticello UT
Fred G. Cline, Dolores CO
Sue Cook, Moab UT
Kent Frost, Monticello UT
Wendell Frost, Monticello UT
David Fullmer, Monticello UT
Senator Jake Garn, Washington D.C.
Richard and Deborah R. Gore, Olathe CO
Ed Grumbine, Santa Cruz CA
Sue Halliday, Monticello UT
Juan Hansen, Monticello UT
Paul Happell, Ridgecrest CA
Ashton Harris, Blanding UT
Senator Orrin Hatch, Washington D.C.
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Joshua Jones, Durango CO
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Wilbur Laws, Blanding UT
William J. Lockhart, Salt Lake City UT
Clisbee Lyman, Blanding UT
Steve McDowell, Santa Fe NM
Harry Melts, Porthill ID
Stephen K. Meyer, Blanding UT
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Representative Howard Nielson, Washington D.C.
Lyman D. Nielson, Blanding UT
Preston G. Nielson Blanding UT
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Dorothy Perkins, Blanding UT
George Tim Perkins, Blanding UT
Ray Perkins, Blanding UT
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Ann Phillips, Boulder CO
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Mike Snyder, Littleton CO
Brigham Stevens, Blanding UT
Ecco Storey, Monticello UT
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D.L. Taylor, Moab UT
Edwin Taylor, Monticello UT

Keith Taylor, Monticello UT
Doug Treadway, Glade Park CO
Robert Weissberg, Cortez CO
Margaret Wilburn, Salt Lake City UT
Alice Wilson, Cortez CO
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ORGANIZATIONS

American Mining Congress, Washington D.C.
American Wilderness Alliance, Denver CO
Blanding Chamber of Commerce, Blanding UT
Blanding Historical Society, Blanding UT
Colorado Open Space Council, Denver CO
Daughters of Utah Pioneers, Monticello UT
Desert Bighorn Sheep Society, Blanding UT
Four Corners Wilderness Workshop, Flagstaff AZ
Friends of the Earth, Moab UT
International Water Alliance, Salt Lake City UT
Minerals Exploration Coalition, Denver CO
Monticello Chamber of Commerce, Monticello UT
Mountain Men of the Wasatch, Salt Lake City UT
Mountain States Legal Foundation, Denver CO
National Parks & Conservation Assoc., Moab UT
Natural Resources Defense Council, Denver CO
Red Rock 4-Wheelers, Moab UT
Rocky Mountain Natural Heritage Program,
Denver CO
Rocky Mountain Oil & Gas Assoc., Denver CO
Salt Lake Motorcycle Club, Draper UT
San Juan Farm Bureau, Monticello UT
San Juan Water Conservancy Dist., Blanding UT
Sierra Club, SW Office, Phoenix AZ
Sierra Club, Utah Chapter, Salt Lake City UT
Sierra Club, San Francisco CA
Slickrock Country Council, Montezuma Creek UT
Slickrock Outdoor Society, Price UT
Southern Utah Wilderness Alliance, Springdale UT
The Nature Conservancy, Wellsville UT
UPAC, Salt Lake City UT
Utah Geological Society, Salt Lake City UT
Utah Native Plant Society, Salt Lake City UT
Utah Mining Association, Salt Lake City UT
Utah Public Lands Research, Salt Lake City UT
Utah Travel Council, Salt Lake City UT
Utah Wilderness Assoc., Salt Lake City UT

INDUSTRIES

AA Cattle Company, Monticello UT
A and H Livestock, Monticello UT
Abajo Archaeology, Bluff UT

Adams Livestock Co., Blanding UT
Adventure Discovery, Flagstaff AZ
AMOCO, Denver CO
Apache Corp., Denver CO
ARCO, Denver CO
ARMA Geophysical, Casper WY
Arizona Public Service Co., Phoenix AZ
Atlas Minerals, Moab UT
Bar MK Ranches, Monticello and Blanding UT
Buckhorn Petroleum Co., Denver CO
Canon Tours, Durango CO
Chandler and Associates, Inc., Denver CO
Coastal States Energy Co., Midvale UT
Contel, Tremonton UT
Colorado Outward Bound, Denver CO
Del Webb Enterprises, Halls Crossing UT
Dugan Production Corp., Farmington NM
El Paso Natural Gas Co., El Paso TX
Empire Electric, Cortez CO
Energy Fuels Nuclear, Inc., Denver CO
Fastwater Expeditions, Boulder City NV
Flying R Ranch, Dolores CO
Forest Oil Co., Denver CO
Four Corners Advisor, Silverton CO
Four Corners Pipeline Co., Long Beach CA
Fry Canyon Store, Blanding, UT
Guymon Ranch, Inc., Blanding UT
Halls Ranches, Monticello UT
Hartwell Corporation, Littleton CO
High Country News, Paonia CO
H.I.T. Cattle Company, Blanding UT
H.L. Calliham and Son, Dove Creek CO
Holiday River Expeditions, Salt Lake City UT
Indian Creek Cattle Co., Monticello UT
Jones Enterprises, Blanding UT
Ken Sleight Expeditions, Moab UT
Ladd Petroleum Corp., Denver CO
Marathon Oil Co., Casper WY
MCOR, Houston TX
Meridian Oil Inc., Billings MT
Mid-America Pipeline, Salt Lake City UT
Minatome Corp., Denver CO
Miller Brothers, Cortez CO
Mobil Oil Corp., Denver CO
National Outdoor Leadership School, Lander WY
Nickens and Associates, Montrose CO
Northwest Pipeline, Salt Lake City UT
OARS, Angels Camp CA
Office of Contract Archaeology, Albuquerque NM
Outdoors Unlimited, Ogden UT
Outlaw Rivers, Moab UT
P & M Petroleum, Denver CO

PERMITCO, Denver CO
Permits West, Santa Fe, NM
Phillips Oil Co., Denver CO
Piute Springs Ranch, Monticello UT
Pure Transportation, Van TX
Raymond T. Duncan, Denver CO
Redd Enterprises, Monticello UT
Redd Livestock Co., Monticello UT
San Juan Record, Monticello UT
Seis-Port Explorations, Inc., Englewood CO
Shell Oil Company, Houston TX
SOHIO Petroleum Co., Denver CO
Southern California Edison, Long Beach CA
Spring Creek Ranch, Monticello UT
SS Ranch, Monticello UT
Summers Livestock, Monticello UT
Tag-A-Long Tours, Moab UT
Texaco Trading & Transportation Co., Denver CO
Texaco U.S.A., Denver CO
Texas Eastern Skyline Oil Co., Denver CO
Tours of the Big Country, Bluff UT
TY Cattle Company, Monticello UT
Union Energy Mining Division, Los Angeles CA
Union Oil Co., Moab UT
Utah Antiquities Association, Provo UT
Utah Mining & Oil Gazette, Salt Lake City UT
Utah Power & Light Co., Salt Lake City UT
Wagon Rod Ranch, Monticello UT
Washburn Enterprises, Monticello UT
Western Nuclear, Inc., Wheatridge CO
WEXPRO, Rock Springs WY
White Canyon Cattle Co., Blanding UT
White Mesa Ute Cattle Co., Blanding, Ut
Wild and Scenic River Expeditions, Flagstaff AZ
Wild River Expeditions, Bluff UT
Willard Pease Oil and Gas Co., Grand Junction CO
Wintershall Oil and Gas Co., Englewood, CO
Woods Canyon Archaeological Consultants,
Yellow Jacket CO
Woods Petroleum Corp., Oklahoma City OK
Woodward-Clyde Consultants, Denver CO
Worldwide Explorations, Inc., Flagstaff, AZ
Zonge Engineering, Tucson AZ

EDUCATIONAL INSTITUTIONS

College of Eastern Utah, Price UT
Colorado Mountain College, Leadville CO
Crow Canyon Campus, NW University, Cortez CO
Fort Lewis College, Durango CO
San Juan County Library, Blanding UT
San Juan County Library, Monticello UT

Silverton Public Schools, Silverton CO
San Juan Center for High Education, Blanding UT
University of California, Davis CA
University of Utah, Salt Lake City UT
Utah State University, Logan UT
Washington State University, Pullman, WA

GOVERNMENT AGENCIES

Advisory Council on Historic Preservation
Blanding City Council, Blanding UT
BLM, Cedar City UT
BLM, Durango CO
BLM, Farmington NM
BLM, Montrose CO
BLM, Phoenix AZ
BLM, Richfield UT
Bureau of Reclamation, Salt Lake City UT
Canyonlands NP, Moab UT
Department of Employment Security, Blanding UT
Department of Energy, Columbus OH
Environmental Protection Agency, Denver CO
Environmental Protection Agency, Washington DC
Federal Highway Administration, Salt Lake City UT
Glen Canyon NRA, Page AZ
Hovenweep National Monument, Cortez CO
Minerals Management Service, Salt Lake City UT
Mine Safety and Health Administration,
Salt Lake City UT
Monticello City Council, Monticello UT
Natural Bridges National Monument, Blanding UT
Navajo Nation, Window Rock AZ
Occupational Safety & Health Administration,
Salt Lake City UT
Office of Planning and Budget, Salt Lake City UT
Office of Surface Mining, Denver CO
San Juan County Commission, Monticello UT
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U.S. Forest Service, Monticello UT
U.S. Forest Service, Price UT
U.S. Geological Survey, Moab UT
USU Extension Service, Monticello UT
Utah Department of Transportation, Price UT
Utah Navajo Development Council, Blanding UT
Ute Mountain Tribe, Blanding UT

EIS AVAILABILITY

Copies of this draft RMP/EIS will be available for public inspection at the BLM offices listed below:

Washington Office of Public Affairs
18th and C Streets, NW
Washington DC 20240

Utah State Office
324 South State Street
Salt Lake City, UT 84111-2303
Phone (801) 524-4227

Moab District Office
82 East Dogwood Street
Moab UT 84532-0970
Phone (801) 259-6111

San Juan Resource Area
480 South 100 West Street
Monticello UT 84535-0007
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Copies may be obtained by contacting the San Juan Resource Area office.

LIST OF PREPARERS

QUALITY REVIEW TEAM

C. Delano Backus, Assistant District Manager for Lands and Renewable Resources, has worked in the Moab District since 1974 and has a total of 18 years experience in this and related jobs.

Gary Hansen, Assistant District Manager for Operations, has worked in the Moab District Office (MDO) since 1976 and has a total of 24 years experience in this and related jobs.

Kenneth V. Rhea, Associate District Manager, has worked in the MDO since 1979 and has a total of 25 years experience in this and related jobs.

Edward R. Scherick, San Juan Resource Area Manager, has worked in the SJRA since 1979 and has a total of 19 years experience in this and related jobs.

James J. Travis, Assistant District Manager for Minerals, has worked in the MDO since 1983 and has a total of 37 years experience in this and related jobs.

Daryl A. Trotter, Assistant District Manager for Planning and Environmental Assistance, has worked in the MDO since 1976 and has a total of 10 years experience in this and related jobs.

INTERDISCIPLINARY PLANNING TEAM

Carol B. Behunin, Editorial Assistant, was the principal typist for this planning effort. Carol has worked in the SJRA since 1968 and has a total of 21 years experience in this and related jobs.

Chas Cartwright, Archaeologist, prepared the alternative management actions for and analysis of impacts to natural history, paleontological, and cultural resources. He was also a member of the core team responsible for formulating alternative and analysis parameters. Chas has worked in the SJRA since 1982 and has a total of 10 years experience in this and related jobs.

Joseph G. Cresto, Wildlife Management Biologist, prepared the alternative management actions for and analysis of impacts to wildlife. He was also a member of the core team responsible for formulating alternative and analysis parameters. Joe has worked in the MDO since 1975 and has a total of 19 years experience in this and related jobs.

Les E. Dobson, Staff Hydrologist, prepared the alternative management actions for and analysis of impacts to water quality, air quality, and forestry. Les has worked in the MDO since 1983 and has a total of 4 years experience in this and related jobs.

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Annette Jameson, Realty Specialist, prepared the alternative management actions for and analysis of impacts to rights-of-way, lands, and withdrawal processing and review. Annette has worked in the SJRA since 1982 and has a total of 12 years experience in this and related jobs.

Robert T. Milton, Regional Economist, analyzed the impacts to economic and social conditions. Bob has worked in the MDO since 1980 and has a total of 6 years experience in this and related jobs.

Betty Jo Mortensen, Information Receptionist, served as a typist and assisted with public distribution for this planning effort. Betty has worked in the SJRA since 1983 and has a total of 3 years experience in this and related jobs.

Patricia M. Powell, Geologist, prepared the alternative management actions for and analysis of impacts to mineral leasing, geothermal resources, coal, tar sand, mineral materials, and mining law administration. Tricia has worked in the MDO since 1982 and has a total of 8 years experience in this and related jobs.

Lynn Roth, Cartographic Editor, assisted with graphics and mapping. Lynn has worked in the Utah State Office (USO) since 1976 and has a total of 10 years experience in this and related jobs.

Marilyn R. Rowley, Chief, Administrative Support Staff, coordinated public information and clerical support for this planning effort. Marilyn has worked in the SJRA since 1966 and has a total of 18 years experience in this and related jobs.

Sherwin N. Sandberg, Supervisory Range Conservationist, prepared the alternative management actions for and analysis of impacts to vegetation, livestock grazing, and fire management for this planning effort. He was also a member of the core team responsible for formulating alternative and analysis

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Richard Trujillo, Cartographic Technician, was responsible for graphics and mapping. Richard has worked in the USO since 1983 and has a total of 5 years experience in this and related jobs.

Robert E. Turri, Chief, Realty and Minerals Staff, contributed to the analysis of impacts to oil and gas leasing and to the leasing stipulations and special conditions. Bob has worked in the SJRA since 1969 and has a total of 9 years experience in this and related jobs.

Julie Tygeson, Cartographer, assisted with graphics and mapping. Julie has worked in the USO since 1977 and has a total of 9 years experience in this and related jobs.

Alex D. VanHemert, Supervisory Outdoor Recreation Planner, prepared the alternative management actions for and analysis of impacts to wilderness and recreation. He was also a member of the core team responsible for formulating alternative and analysis parameters. Alex has worked in the SJRA since 1981 and has a total of 9 years experience in this and related jobs.

M. Diana Webb, Planning Coordinator, served as the Team Leader for this planning effort and was responsible for overall review and coordination. She also prepared portions of the text and explanatory matter for this publication. Diana has worked in the MDO since 1978 and has a total of 18 years experience in this and related jobs.

Kathryn N. Wilson, Clerk/Stenographer, provided clerical support to this planning effort. Kay has worked in the SJRA since 1984 and has a total of 15 years experience in this and related jobs.

APPENDICES

APPENDIXES





APPENDIX A — MITIGATION REQUIREMENTS FOR LAND USE ACTIVITIES

OVERVIEW

The purpose of this appendix is to present the stipulations and special conditions that would be applied to land use activities under the various alternatives. These mitigation requirements are the means to eliminate or minimize adverse impacts to certain components of the environment. They are part of each alternative described in chapter 2.

For essentially all actions involving public lands, National Environmental Policy Act (NEPA) documentation would provide a site-specific analysis of the proposal's environmental effects and mitigation requirements to aid the land manager in decision making. Projects that would result in unnecessary and undue degradation of the public lands and resources, or in significantly adverse impacts to the quality of the human environment, would be denied unless the operator could mitigate or lessen the degree of change to an acceptable level.

The resource management plan (RMP) provides one means to gauge whether a proposal would result in unacceptable adverse impacts. For each alternative, the special conditions or stipulations are consistent with the objectives of that alternative. The special conditions would be applied to any projects proposed for the special area identified, to protect the resource value identified. If the project could not meet the requirements, it would have to be either modified or denied.

Some mitigation methods are mandated by law, executive order, or regulation. For example, under the Endangered Species Act, the habitat of a threatened or endangered plant species cannot be disturbed unless it would be beneficial for the species; departmental regulations extend

this requirement to sensitive plant species also. Required mitigation measures are not discussed individually, but would be applied to relevant projects on a case-by-case basis.

Under alternative A, broad-scale stipulations or special conditions would be applied to oil and gas and combined hydrocarbon lease (CHL) development and production activities. Conditions or stipulations would be developed on a case-by-case basis for other projects. These are explained as standard operating conditions. Some types of activities, such as geophysical work or mining claim assessment work, would proceed under a notice of intent. Because no Bureau of Land Management (BLM) decision or authorization would be required, no project stipulations or special conditions would be applied unless needed to mitigate unnecessary or undue degradation.

Under all other alternatives, use allocation zones have been developed to meet the objectives of the alternative. Broad-scale stipulations or special conditions would be applied to all activities occurring within the use allocation zones. Where special conditions or stipulations have not been developed, projects would be conducted under the standard operating conditions given for alternative A. In all cases, BLM may approve exceptions to the special conditions if sufficient justification exists.

Site-specific special conditions would be developed for individual projects on a case-by-case basis, to include standard operating procedures (see alternative A in this appendix) and mitigation required by law, executive order, or regulation.

Special conditions and stipulations for each alternative are as follows. They are arranged

by environmental component protected (as given in table 3-1).

ALTERNATIVE A

INTRODUCTION

The following conditions represent the mitigation measures currently applied to development activities and recreational use in the San Juan Resource Area (SJRA). These are considered to be a part of alternative A and are used to provide a basis for comparison in the analysis of environmental impacts in chapter 4.

They are divided into two parts: stipulations or special conditions applied to oil and gas leases and CHLs in areas open to leasing; and standard operating procedures. Standard operating procedures are arranged in order of the resource value protected (mitigated).

OIL AND GAS LEASING CATEGORY REQUIREMENTS

The four oil and gas leasing categories were applied to SJRA through a programmatic environmental assessment (EA) in 1975 [BLM, 1975] and revised through the statewide tar sand leasing environmental impact statement (EIS) [BLM, 1984c]. For this RMP/EIS, the four-category system has been revised to a three-category system, as explained in appendix L (see also figure 3-1).

Areas in category 3 would not be leased. Under category 2, stipulations would be applied that would prohibit surface occupancy of the lease.

The special conditions applied to areas under category 1 (open to lease) are as follows.

Desert Bighorn Lambing and Rutting Areas

Exploration and development activity will be allowed only from December 15 to April 1 and July 1 to October 15 annually. Within the White Canyon Special Tar Sand Area (STSA), exploration, drilling, and development other than active mining will be allowed only from June 16 through April 30 annually. This limitation does not apply to maintenance and operation of producing mines or wells.

Deer Winter Range

Exploration and development activity will be allowed only from April 1 to November 30 annually. This limitation does not apply to maintenance and operation of producing mines or wells.

Special Recreation Use Areas

The Hole-in-the-Rock Trail will not be used as an access road. No surface occupancy or surface disturbance will be allowed on or within 50 feet of the trail.

Surface use will be limited on the Grand Gulch Plateau to protect cultural and paleontological resources. The operator will provide an inventory of the areas to be disturbed for evidence of cultural resource values. Cultural resource values will be protected; mitigation may include relocation of proposed facilities, testing and salvage, or other protective measures deemed necessary by the BLM.

Significant paleontological resources discovered will be reported to the BLM.

Highway U-95 Scenic Corridor

No access or work trail or road, earth cut or fill, structure, or other improvement, or mine will be permitted within the White Canyon STSA if it can be viewed from U-95.

STANDARD OPERATING PROCEDURES

Soils

Mitigation measures are placed on all surface disturbing actions to protect the watersheds and to prevent offsite sedimentation and salinity within surface watercourses. Surface disturbance and vehicular travel will be limited to the approved location and approved access routes. Any additional area needed will be approved prior to use.

In order to minimize watershed damage during wet or muddy periods, the BLM may prohibit exploration, drilling, development, or other activity. This limitation does not apply to maintenance and operation of producing wells or mines.

Water bars will be constructed on slopes, if required by the BLM.

No oil or lubricants may be drained onto the ground surface.

Reserve pits for mining or oil and gas drilling operations may be required to be lined with commercial bentonite sufficient to prevent seepage. At least half of the capacity will be in cut.

Water

Sealing, plugging, and capping of drill holes will conform to state regulations.

No vibroseis, drilling, or blasting will be allowed within 0.25 mile of any spring or well.

Powder magazines will be located at least 0.25 mile from regularly traveled roads and out of sight from the roads.

Existing fords will be used for drainage crossings where possible.

Low-water crossings will use a cut-and-fill process or upgrade existing crossings unless use of culverts is specifically authorized.

Portable chemical toilets will be provided at all staging areas, base of operations, and storage areas, for projects lasting over 30 days.

Within the Grand Gulch Primitive Area, personal sanitation and disposal of human waste will not be permitted within 200 feet of water sources or campsites. Latrines will be dug at least 1 foot deep and covered with at least 6 inches of soil. Toilet paper must be burned. No camping will be allowed within 100 feet of a water source.

All trips on the San Juan River must have self-contained portable toilets for human waste. This waste must be carried out of the river corridor and deposited in an authorized sewage disposal facility. The only exception to this will be kayak, sport yak, or white water canoe trips without a support boat, and one-day trips. In these cases, where waste is buried,

it will be done in a hole at least 2 feet deep and 10 feet above the water line, 50 feet laterally from the high water line, and 300 feet from any camping area. If chemicals are used, they must be biodegradable.

Soaps, detergents, or other nondegradable foreign substances will not be used for washing in streams or rivers, except that biodegradable soap may be used in the San Juan River.

Along the San Juan River, cans, rubbish, and other trash may not be discarded or buried in the water or along shores or side canyons. All burnable material must be completely burned or carried out. Liquid biodegradable garbage may be poured into the main stream of the river. Other garbage must be carried out.

The holder must obtain from the BLM approval of a written plan prior to the use of insecticides, herbicides, fungicides, rodenticides, and other similar substances. The plan must provide the type and quantity of material to be used; the pest insect, fungus, etc., to be controlled; the method of application; the location for storage and disposal of containers; and other information that the BLM may require. A pesticide may be used only in accordance with its registered uses and within other agency limitations. Pesticides must not be permanently stored on public lands.

If facilities authorized for construction under this right-of-way grant use polychlorinated biphenyls, such use must be in a totally enclosed manner in accordance with provisions of 40 CFR Part 761. Additionally, any release of polychlorinated biphenyls (leaks, spills, etc.) in excess of the reportable quantity must be reported as required by 40 CFR Part 117.

Vegetation

Vegetation removal will be confined to the limits of actual construction. Removed vegetation will be burned, stockpiled, or removed at the direction of BLM. Trees and brush removed for construction will be stockpiled for use in reclamation.

In tall brush, sagebrush parks, and open areas, there will be no removal of brush or grass by blading. Brush may be crushed, or removed by keeping the blade 6 inches off the ground surface.

Reclamation, including seeding, will start immediately upon completion of the project, unless weather conditions prevent start of rehabilitation.

The stockpiled topsoil will be spread evenly over the disturbed area. All disturbed areas and vehicle tracks from overland access will be ripped 4 to 12 inches deep with the contour.

Seed will be broadcast between October 1 and February 28 with a mix prescribed by the BLM, consisting of the following species. Seed will be broadcast on the soil surface after recontouring and scarification. A harrow or similar implement will be dragged over the area to assure seed cover.

Indian ricegrass (Oryzopsis hymenoides)
Shadscale (Atriplex confertifolia)
Galleta (Hilaria jamesii)
Green ephedra (Ephedra viridis)
Crested wheatgrass (Agropyron desertorum)
Cliffrose (Cowania mexicana)
Western wheatgrass (Agropyron smithii)
Desert bitterbrush (Purshia glandulosa)
Alkali sacaton (Sporobolus airoides)
Winterfat (Eurotia lanata)
Sand dropseed (Sporobolus cryptandrus)
Globemallow (Sphaeralcea ambigua)
Fourwing saltbush (Atriplex canescens)

On all cut slopes, the seeding must extend from the bottom of the ditch to the top of the cut slope. On embankment slopes, the seeding must extend from the roadway shoulder to the toe of the slope. Seeding will also be done on all borrow pit areas and on all "side cast" in areas of full bench construction.

A reclamation bond will be required. Revegetation must be successfully established within 5 years after project completion for release of the bond.

Woodland products may be harvested only in designated areas. During periods when a fire closure is in effect, whenever a chain saw is in use, permittees will carry shovels and attempt to prevent or control any fire that may result from their cutting operation.

During other types of activities, living trees must not be cut or otherwise damaged unless authorized by the BLM.

Precautions must be taken at all times to prevent wildfire. Permittees will be held responsible for suppression costs for any fires on public lands caused through negligence. No burning of debris will be allowed without specific authorization from the BLM.

For cooking, the use of small campstoves is recommended. Campfires must be kept to a minimum size and utilize only dead and down wood.

Grazing

Range management facilities, such as fences, reservoirs, and other improvements, must not be disturbed without prior approval of the BLM. Where disturbance is necessary, the operator will return the facility to its original condition.

When it is necessary to gain access across a fenceline, the fence must be braced. Four-inch timber or equivalent must be installed and the gateway kept closed when not in actual use. All gates found closed during the course of the operation must be reclosed after each passage of equipment and crew members. A cattleguard may be required on main travel routes.

If road construction cuts through natural topography which serves as a livestock barrier, a fence must be constructed.

Three sides of any drilling pits will be fenced to keep livestock out of the pit during drilling. The fourth side will be fenced as soon as the drilling is completed. The fence will be kept in good repair until the pit is dry.

Cultural Resources

All areas subject to surface disturbance or rehabilitation that have not been previously inventoried for archaeological resources must be inventoried, prior to starting the activity, by a BLM-approved archaeologist hired by the operator. Surface disturbance will be allowed only after an intensive cultural resource inventory is completed (100 percent coverage) and the operator and BLM have agreed upon mitigation of known sites, to the extent possible without curtailing valid rights. The operator will avoid, monitor, or mitigate impacts to cultural resources located by this inventory or uncovered by development work, as required by the BLM. The operator will inform all employees that they are subject to the antiquities laws and will be prosecuted if they disturb archaeological sites or collect artifacts.

If any evidence of human skeletal remains is encountered during the course of testing or excavation, the consultant will cease work in that location and immediately notify the BLM. Work will not resume until the BLM has given permission.

The consultant must not conduct any flint knapping or lithic replication experiments at any archaeological site, aboriginal quarry source, or nonsite location that might be mistaken for an archaeological site as a result of such experiments.

Field work conducted by the consultant must be carried out in such a way as not to impede other legitimate uses of the public lands, except when the BLM has made special provision. Vehicular activity will be restricted to existing roads and trails.

Disturbance must be kept to the minimum area consistent with the nature and purpose of the field work. The consultant must take precautions to protect livestock, wildlife, the public, and other users of the public lands from accidental injury in any excavation unit.

National Register Cultural Properties and Archaeologic Districts

National Register cultural properties and archaeological districts and eligible properties and districts total 14,720 acres and are listed in table 2-2 and shown in figure 3-15. Some are in recreation opportunity spectrum (ROS) primitive (P) or semiprimitive nonmotorized (SPNM) class. For these areas, the special conditions given are in addition to the ROS special conditions, and the ROS special conditions take precedence.

Both direct and indirect damage to National Register cultural properties and archaeological districts, and eligible properties and districts, will be avoided to the extent possible without curtailing valid rights. If avoidance is not possible, impacts will be mitigated through limited or complete excavation.

Surface disturbance occurring within 250 feet of National Register cultural properties or archaeological districts, or eligible properties or districts, must be reclaimed as directed by the BLM.

Recreation

Recreational use within certain areas will be limited through a permit system.

Within the Grand Gulch Plateau Special Recreation Management Area (SRMA), group size for the Grand Gulch Primitive Area and Slickhorn, Road, Lime, Fish Creek and Owl Creek Canyons will be restricted to 15 individuals, and pack stock parties will be restricted to 12 animals. No more than three stock parties, totaling 25 animals, will be allowed in the Grand Gulch Primitive Area or Fish Creek and Owl Creek Canyons at any one time. All organized groups and parties using stock are required to obtain a reservation.

No group may spend more than two consecutive nights at the heavily used campsites (Junction, Turkey Pen, Split Level, Jailhouse, and the mouth of Bullet Canyon).

Stock use will be confined to Grand Gulch, Kane Gulch, Collins Canyon, Bullet Canyon up to Perfect Kiva, and Fish Creek and Owl Creek Canyons. Stock users are required to take all feed necessary to sustain their animals while on the trip; no grazing is allowed.

Animals will be tethered at all times while not in use, at least 100 feet away from any archaeological site or water source. No stock will be allowed within 100 feet of any ruin. Stock may not travel in streams except when crossing.

Within the San Juan River SRMA, use is limited to 25 passengers per group.

Camping along the San Juan River at Slickhorn and Grand Gulch Canyons is limited to one night per party. A backcountry permit is required for hiking more than 3 miles up Grand Gulch or Slickhorn Canyons from the river.

The primitive areas are closed to all types of mechanized travel.

Visual Resources

To maintain aesthetic values, all semipermanent and permanent facilities must blend with the natural surroundings. Painting or camouflage may be required by the BLM.

Existing roads or trails may be improved (bladed) only if impassable by vehicles or equipment. No widening or realignment will be allowed unless approved by the BLM. Existing trails may have to be reclaimed or brought back to original conditions.

New trails may be constructed only when vehicle and equipment passage is impossible, and only with the concurrence of the BLM. No straight line trails will be allowed.

Road construction must meet BLM class III standards. (These may be reviewed at the SJRA.)

There will be no straight "line-of-sight" bulldozing. Any path dozed through a timbered area will take a zig-zag path. Any pushed trees are to be readily retrievable without additional

disturbance, and will be pulled and spread back onto the bladed area during reclamation.

Upon termination, relinquishment, or cancellation of the project and access thereto, the area will be reclaimed to as near the original condition as possible.

All disturbed areas will be recontoured to blend as nearly as possible with the natural topography. This includes removing all berms and refilling all cuts, including all roads.

Drill hole cuttings will be placed down the hole, and any remaining cuttings will be buried at the drill hole location.

After seeding is complete, any stockpiled trees will be scattered evenly over the disturbed areas. Access will be blocked.

For drilling or mining projects, a trash pit will be constructed near the project and dug at least 6 feet into solid undisturbed material. It will be totally enclosed with a fine wire mesh before the rig moves in. The road and pad will be kept litter-free.

Immediately on completion of drilling, all trash and debris will be collected from the location and surrounding area, placed in the trash pit, compacted, and buried under at least 2 feet of compacted soil.

For other types of activities, trash will be collected and contained during the operation. All garbage, trash, flagging, lath, etc. will be removed from the area and hauled to an authorized dump site.

ALTERNATIVE B

INTRODUCTION

The interdisciplinary team has developed the following special conditions to mitigate potential adverse environmental impacts caused by surface disturbing activities, while meeting the overall objectives of alternative B. These special conditions are considered to be a part of alternative B, and the analysis of environ-

mental impacts in chapter 4 takes these stipulations into account.

These special conditions are meant as general guidelines (both for analysis purposes and to guide development of specific project stipulations). They may not apply to all management actions given in table 2-7.

SOILS

Floodplains and Riparian/Aquatic Areas (1,500 acres)

Floodplains and riparian/aquatic areas are shown in figures 3-9 and 3-12. These areas are managed in accordance with Executive Orders 11988 and 11990 and the Endangered Species Act. Acreage was determined using a 25-foot-wide corridor.

No surface occupancy (except vehicular use of existing roads and trails), surface disturbance, or structural development (except fences) will be allowed within floodplains or riparian/aquatic areas, as identified in figure S-1.

Take-down panels or water gates will be installed on all fences that cross intermittent or perennial stream channels.

Sensitive Slopes (acreage undetermined)

Vegetation manipulation techniques on slopes greater than 10 percent will be limited to chemical treatments and broadcast seedings; chainings, railings, or other surface disturbing methods will not be allowed.

VEGETATION

Bridger Jack and Lavender Mesa RNAs (2,400 acres)

The Bridger Jack and Lavender Mesa Research Natural Areas (RNAs) are shown in figure 2-3. Under alternative B, RNAs would be protected to meet the requirements of 43 CFR 2071.1 and used for experiments to provide a baseline for rangeland research.

No surface occupancy or disturbance by mechanized or motorized equipment will be allowed, except helicopter access for scientific study. All surface disturbance will be subject to visual resources management (VRM) class I objectives (appendix G). Foot and horseback access will be allowed for recreational or scientific study purposes.

Surface disturbance from minerals prospecting, exploration, or development will be allowed only to the extent necessary to avoid curtailing valid rights. In an ACEC, a plan of operations is required for annual assessment work, as well as for mining.

Disturbed areas will be revegetated with native plant species naturally occurring on the mesa top. Rehabilitation must be successful within 5 years (the standard reclamation bond period).

No grazing (including grazing by pack animals) will be allowed. No land treatments or facilities will be allowed, except test plots or facilities necessary for scientific study of relict or near-relict plant communities. No watershed control structures will be allowed.

No private or commercial harvest of woodland products will be allowed, except limited onsite collection of dead fuelwood for campfires.

No leases or permits will be issued for uses of the public lands that are inconsistent with the purpose of the RNA designation.

RECREATION

Developed Recreation Sites (150 acres)

Developed recreation sites are listed in table 2-3 and shown in figure 3-17. Special conditions given are those necessary to protect the Federal Government's investment in capital improvements and facilities.

The developed recreation sites will not be used for minerals exploration, development, or production, or for grazing purposes, range improvements, or watering of livestock.

No fuelwood, live or dead, will be collected within developed recreation sites; no consumptive use of other woodland products occurring on the sites will be allowed.

LANDS

Existing special land use leases carry conditions to ensure that the public lands remain suitable for the purpose for which the lease was issued. Special conditions would be applied to other land use activities consistent with these prior lease rights. Mineral leases issued under this alternative would carry special conditions as indicated in table S-1. Existing rights-of-way would remain in effect with stipulations in place when issued.

Special conditions that would be applied to protect existing special land use leases under alternative B are as follows.

Bluff Airport Lease (400 acres)

Uses of the lands now covered by the Bluff Airport lease will be allowed only when consistent with the use of the leased land for airport purposes. Use of the land for extraction or production of natural resources, including grazing, will be allowed only with the consent of the airport. The party wishing to use the land must file with the Federal Aviation Administration (FAA) and will be bound by FAA regulations, Part 77, "Objects Affecting Navigable Airspace."

Recapture Lake R&PP Lease (20 acres)

There will be no surface occupancy in the developed area. In the remainder of the recreation and public purpose (R&PP) lease, development or exploration activities will be allowed from November 1 to March 31. The seasonal restriction does not apply to maintenance or operation of a facility or grazing operation.

Blanding Education Center R&PP Lease (120 acres)

There will be no surface occupancy except as authorized in the R&PP lease.

Material Site Rights-of-Way (900 acres)

The seven material site rights-of-way (shown in figures 3-5 and 3-6) are segregated from mineral entry as long as the right-of-way is in effect. When relinquished by the grantee, the lands will be reopened to mineral entry.

ALTERNATIVE C

INTRODUCTION

The following special conditions have been developed by the interdisciplinary team to mitigate potential adverse environmental impacts caused by surface disturbing activities, while meeting the overall objectives of alternative C. These special conditions are considered to be a part of alternative C, and the analysis of environmental impacts in chapter 4 takes them into account.

These special conditions are meant as general guidelines (both for analysis purposes and to guide development of specific project special conditions). They may not apply to all management actions given in table 2-7.

SOILS

Floodplains and Riparian/Aquatic Areas (1,500 acres)

Floodplains and riparian/aquatic areas are shown in figures 3-9 and 3-12. They are managed in accordance with Executive Orders 11988 and 11990 and the Endangered Species Act. Acreage was determined using a 25-foot-wide corridor. These areas are in ROS classes P, SPNM, semiprimitive motorized (SPM), roaded natural (RN), and rural (R); the special conditions given below are in addition to the ROS special conditions.

No surface occupancy (except vehicular use of existing roads and trails), surface occupancy, or structural development (except fences) will be allowed within floodplains or riparian/aquatic areas.

Take-down panels or water gates will be installed on all fences that cross intermittent or perennial stream channels.

Grazing and other livestock uses will not be allowed.

Sensitive Soils Areas (195,000 acres; sensitive soils: 45,000 acres)

Within the identified areas (figure 3-9), which total 195,000 acres, approximately 23 percent of the soils (45,000 acres) are classified as sensitive. Sensitive soils are those on sloping to steep terrain with badland and gypsumland soils. They are subject to erosion and difficult to revegetate. Not all areas with these soils are sensitive. If there is any question as to whether soils within a given project area are or are not sensitive, the operator should consult the BLM. The sensitive soils areas fall in ROS classes SPNM, SPM, RN, and R; the special conditions given below are in addition to the ROS special conditions.

Construction and development are to be avoided where possible in areas with the following characteristics: slopes in excess of 10 percent, soils high in clay content, and soils high in salt or gypsum content. Operations will be located so as to reduce erosion and improve the opportunity for revegetation within areas of sensitive soils. Motorized access will be allowed only on existing roads and trails.

Prior to commencement of surface disturbing activities, the operator will visit the area with the BLM surface protection specialist, who will identify areas of sensitive soils for the operator.

Grading operations will be allowed only when soils are dry. Cross-country travel or construction activity will be allowed only when soils are dry or frozen or have snow cover.

New roads will be constructed so as to avoid areas of sensitive soils where possible. In areas of sensitive soils where roads must be allowed, new roads will be constructed with water bars and graded to spread drainage, instead of channeling runoff. No road grades in excess of 15 percent will be allowed; no surface disturbance from vehicle chains or leads will be allowed on slopes greater than 15 percent. No

vehicular access will be allowed across slopes in excess of 25 percent.

Reclamation on sites with sensitive soils will require grading using slopes of 5 percent or less where possible, and grading the site so as to collect water for revegetation onsite.

Revegetation will be with adapted native species and prostrate Kochia, where allowed by vegetation special conditions.

Sensitive Slopes (acreage undetermined)

Vegetation manipulation techniques on slopes greater than 10 percent will be limited to chemical treatments and broadcast seedings; chainings, railings, or other surface disturbing methods will not be allowed.

VEGETATION

Bridger Jack Mesa and Lavender Mesa ACECs (5,930 acres)

The Bridger Jack Mesa (5,290 acres) and Lavender Mesa (640 acres) Areas of Critical Environmental Concern (ACECs) are shown in figure 2-4. Under alternative C, they will be managed to protect relict and near-relict plant communities, and to provide interpretation of these for recreational interests. Both ACECs are in ROS class SPNM; the special conditions given below are in addition to the ROS special conditions.

No surface occupancy or disturbance by mechanized or motorized equipment will be allowed, except helicopter access for scientific study. All surface disturbance will be subject to VRM class I objectives. Foot and horseback access will be allowed for recreational or scientific study purposes, but no motorized access will be allowed.

Surface disturbance from minerals prospecting, exploration, or development will be allowed only to the extent necessary to avoid curtailing valid rights. In an ACEC, a plan of operations is required for annual assessment work, as well as for mining.

Disturbed areas will be revegetated with native species naturally occurring on the mesa top. Rehabilitation must be successful within 5 years.

No grazing (including grazing by pack animals) will be allowed. No land treatments or facilities will be allowed, except test plots or facilities necessary for scientific study of relict or near-relict plant communities. No watershed control structures will be allowed.

No private or commercial harvest of woodland products will be allowed, except limited onsite collection of dead fuelwood for campfires.

No special purpose leases or permits, other than minerals leases, will be issued.

Recreational use may be limited through a permit system to prevent resource damage to the near-relict plant communities, or if recreational use exceeds the capability of the ACEC to absorb recreational impacts.

WILDLIFE

Seasonal Wildlife Protection

Under alternative C, crucial big game habitats will be subject to special conditions regulating use during certain seasons. These special conditions apply in addition to any other stipulations or conditions in effect for that area.

The Area Manager may grant exceptions on a case-by-case basis during any year if it can be shown that: (1) legal rights would be curtailed; (2) the animals are not present in a specific project location in a given year; or (3) the activity can be conducted so as not to adversely affect the animals.

Bighorn Sheep Crucial Habitat (329,750 acres)

The bighorn crucial habitat area falls in ROS classes P, SPNM, SPM and RN; the special conditions given below are in addition to the ROS special conditions.

Use within the crucial bighorn sheep habitat (figure 3-11) will be limited during the lambing

season (April 1 to July 15 annually) and the rutting (mating) season (October 15 to December 31 annually). During these periods no activities may take place which require a continued human presence (over 12 hours) within the area; involve sudden loud noises (such as detonation of a surface charge) or sustained noise (such as a chain saw or diesel generator); or require the use of low-flying aircraft.

Within the crucial habitat areas, no land treatments will be allowed.

Antelope Crucial Habitat (12,960 acres)

The antelope crucial habitat area falls in ROS classes SPM and RN; the special conditions given below are in addition to the ROS special conditions.

Use within the crucial antelope habitat (figure 3-11) will be limited during the fawning season (May 15 to June 30 annually). During this period no activities may take place which require a continued human presence (over 12 hours) within the area; involve sudden loud noises (such as detonation of a surface charge) or sustained noise (such as a chain saw or diesel generator); or require the use of low-flying aircraft.

Deer Crucial Winter Range (197,550 acres)

The deer crucial winter range areas fall in ROS classes SPNM, SPM, RN, and R; the special conditions given below are in addition to the ROS special conditions.

Use within the crucial deer winter habitat areas (figure 3-12) will be limited during periods of critical winter use (December 15 to April 30 annually). During this period no surface disturbing activities that would remove deer forage and browse plants may take place in these areas. During this period no activities may take place which require a continued human presence (over 12 hours) within the area; involve sudden noises (such as detonation of a surface charge) or sustained noise (such as a chain saw or diesel generator); or require the use of low-flying aircraft.

Hunting during a recognized hunting season established by the Utah Division of Wildlife Resources (UDWR) will be allowed.

Offsite Mitigation, Big Game Habitat (540,260 acres)

Within the crucial bighorn sheep, antelope, and deer winter range areas (figures 3-11 and 3-12), offsite mitigation will be required in addition to standard reclamation practices when 10 acres or more are disturbed for more than 2 years. These areas fall in ROS classes P, SPNM, SPM, RN and R; the special conditions given below are in addition to the ROS special conditions.

Offsite mitigation will be required for the purpose of replacing habitat lost through disturbance lasting more than 2 years (such as construction of a road, drill pad, etc.) when the total area disturbed (including back slopes or fill slopes) is over 10 acres. The offsite mitigation must be within the known habitat area (figures 3-11 and 3-12), but does not have to be within the crucial habitat area. Offsite mitigation is to compensate for the specific habitat lost and could include such measures as seeding or planting vegetation species favorable to the big game animals displaced or constructing water projects that would allow the animals to use other parts of the habitat area.

Projects involving large-scale surface disturbance such as land treatments (chainings) will not be allowed in the bighorn habitat area or in certain crucial sagebrush areas of the crucial deer winter range, because loss of forage species cannot be mitigated (figures 3-11 and 3-12).

Offsite mitigation projects must be approved in advance by the Area Manager. Operators may discuss potential projects with BLM wildlife specialists at SJRA or the Moab District Office (MDO). The BLM may require certain specific projects to be done, but may not require projects that are prohibitively expensive or technically infeasible.

Identified Mesa Tops, Bighorn Sheep Habitat (56,740 acres)

Five mesa tops within the crucial bighorn sheep habitat (figure 3-11) have been identified as areas of potential conflict. Conflict could occur between bighorn and surface disturbing activities that results in removal of critical forage species.

The identified mesa tops fall in ROS classes SPNM, SPM, and RN; the special conditions given below are in addition to the ROS special conditions.

Onsite mitigation will be required for projects that disturb or remove forage and browse species used by desert bighorn; the purpose of the mitigation is to replace the food lost.

In addition to standard reclamation practices, revegetation of disturbed areas must be accomplished using native plant species palatable to bighorn, and must be successful within 5 years.

No surface disturbance from minerals prospecting, exploration, or development will be allowed, to the extent possible without curtailing valid rights. No other type of surface use or motorized access will be allowed.

Grazing uses will not be allowed. This includes range development projects and land treatments.

Crucial Deer Winter Range, Sagebrush Areas (9,800 acres)

Certain sagebrush parks within crucial deer winter range areas (figure 3-12) have been identified as providing a concentrated food source for wintering deer. Large-scale removal could cause a significant loss of winter forage for the deer. The areas fall within various ROS classes; the special conditions given here are in addition and take precedence.

No land treatments will be allowed.

CULTURAL RESOURCES

Alkali Ridge and North Abajo ACECs (235,770 acres)

The Alkali Ridge and North Abajo ACECs, shown in figure 2-4, would be managed under alternative C to protect cultural resources. The Alkali Ridge ACEC would be managed so as to provide maximum opportunity for potential scientific and management use of cultural resources, and the North Abajo ACEC for conservation for future use and public (recreational) use (see Glossary). The Alkali Ridge ACEC is in ROS classes RN and R, and the North Abajo ACEC in SPNM, SPM and RN. The special conditions given below are in addition to the ROS special conditions.

Surface disturbance will be minimized so as to provide maximum opportunity for use of cultural resources as stated above. Both direct and indirect damage of cultural resources will be avoided or, if avoidance is not possible, mitigated through limited or complete excavation. Surface disturbance will be limited to that which can be successfully reclaimed within 5 years.

In an ACEC, a plan of operations is required for annual assessment work, as well as for mining. Other development activities will be allowed only after intensive cultural inventory, so long as ROS special conditions are met. Surface disturbance will be limited to that which can be successfully reclaimed within 5 years. Motorized access will be allowed only on existing roads and trails.

Grazing at existing levels will be allowed. New land treatments will be implemented only so long as cultural resources are avoided by at least 250 feet. Existing land treatments will be maintained so long as direct and indirect damage of cultural resources is avoided.

Small-scale wildlife habitat improvements (less than 1 acre) will be allowed only so long as cultural resources are avoided by at least 250 feet.

Grand Gulch ACEC (4,240 acres)

The Grand Gulch ACEC coincides with the designated archaeological district and is shown in figure 2-4. It would be managed under alternative C to protect cultural resources, and to provide the maximum opportunity for public (recreational) and potential scientific uses of cultural resources (see Glossary). The ACEC is in ROS class P. The special conditions given below are in addition to the ROS special conditions.

Surface use, including recreational use, will be allowed only to provide the opportunity for uses of cultural resources as stated above. All surface disturbance will be subject to VRM class I objectives. Both direct and indirect damage to cultural resources will be avoided or, if avoidance is not possible, mitigated through limited or complete excavation.

No new wildlife projects will be implemented.

Use restrictions will be imposed to protect cultural resources from damage through recreational use.

National Register Cultural Properties and Archaeologic Districts (14,720 acres)

National Register cultural properties and archaeological districts and eligible properties and districts are listed in table 2-2 and shown in figure 3-15. Some are in ROS class P or SPNM. For these areas, the special conditions given are in addition to the ROS special conditions, and the ROS special conditions take precedence.

Both direct and indirect damage to National Register cultural properties and archaeological districts and eligible properties and districts will be avoided to the extent possible without curtailing valid rights. If avoidance is not possible, impacts will be mitigated through limited or complete excavation.

Surface disturbance occurring within 250 feet of National Register cultural properties or archaeological districts, or eligible properties or districts, must be reclaimed as directed by the BLM.

RECREATION

ROS Classes

These special conditions are necessary to ensure that a specific ROS class is maintained. No special conditions have been identified to maintain the ROS R or urban (U) class. Under alternative C, ROS R and U class areas would be managed under the standard operating procedures given for alternative A. ROS classes are shown in figure 3-16.

Primitive (P) Class (198,520 acres)

The area would be managed under alternative C so as to be essentially free of evidence of human use and to maintain an environment of isolation (not more than 10 group encounters per day). Levels of management and use would be aimed at maintaining natural ecosystems. The area would be segregated from mineral entry.

Surface disturbance will be limited to that which can be reclaimed within 1 year to visually match pre-existing conditions. All surface disturbance will be subject to VRM class I objectives.

No surface disturbance from minerals prospecting, exploration, or development will be allowed, to the extent possible without curtailing valid rights. No other type of surface use, motorized access, or development will be allowed.

Grazing will be licensed at 25 percent of the average of the past 5 years licensed use (1979-1984). New land treatments or range projects will not be allowed. No watershed control structures will be allowed.

No private or commercial harvest of woodland products will be allowed, except limited onsite collection of dead fuelwood for campfires.

Cultural resources will be allowed to remain subject to natural forces.

Only native plant and wildlife species will be introduced.

Fires will be allowed to burn unless they threaten life or property; nonmotorized suppression methods will be utilized where possible.

Semiprimitive Nonmotorized (SPNM) Class (512,460 acres)

Under alternative C, the ROS SPNM class area would be managed so as to provide a predominantly natural environment, with limited evidence of human use and to maintain an environment of isolation (not more than 20 group encounters per day). Levels of management and use would be aimed at maintaining natural ecosystems.

Surface disturbance will be limited to that which can be reclaimed within 1 year to visually match pre-existing conditions. All surface disturbance will be subject to VRM class I objectives. No surface disturbance from development of mineral leases will be allowed.

Construction of development projects will be allowed only so long as they are made to blend with the natural character of the land and nonmotorized access is used.

Grazing will be licensed at 50 percent of the average of the past 5 years licensed use (1979-1984). Facilities necessary to maintain adequate distribution, seasons of use, and grazing systems, will be allowed only so long as they are made to blend with the natural character of the land. New land treatments will not be allowed.

No private or commercial harvest of woodland products will be allowed, except limited onsite collection of dead fuelwood for campfires.

Only those cultural resources management activities that blend with the natural character of the land will be allowed.

Natural fires will be allowed to burn unless they threaten life or property; other fires and all fires in riparian areas will be suppressed; nonmotorized suppression methods will be utilized where possible.

Semiprimitive Motorized (SPM) Class (327,660 acres)

Under alternative C, the ROS SPM class area would be managed to provide a predominantly natural environment with subtle evidence of human use and to maintain a low concentration of users.

Surface disturbance will be allowed, but facilities will be required to blend with the natural environment, both while in use and after reclamation. Revegetation will be required to be successful within 5 years. Certain routes may be left for continued access at the request of the BLM.

Grazing use will be licensed at 50 percent of the average of the past 5 years licensed use (1979-1984). Facilities necessary to maintain adequate distribution, seasons of use, and grazing systems will be allowed only so long as they are made to blend with the natural character of the land. New land treatments will not be allowed.

Onsite use of woodland products and noncommercial harvest of dead and down fuelwood will be allowed in designated areas. Commercial or noncommercial harvest of other woodland products will not be allowed.

Cultural resources management activities will be required to blend with the natural character of the land.

Natural fires will be allowed to burn unless they threaten life or property; other fires and all fires in riparian areas will be suppressed; suppression activities will be reclaimed to blend with the natural character of the land.

Outstanding Natural Areas (277,000 acres)

Eight areas, listed in table 2-6 and shown in figure 2-4, would be designated as outstanding

natural areas (ONAs). ONAs would be protected and managed to meet the requirements of 43 CFR 8352. They would be used to emphasize outdoor recreation in a natural setting.

The ONAs are in ROS classes P, SPNM, SPM, and RN; the special conditions given below are in addition to the ROS special conditions.

The ONAs will be managed as VRM class I.

Developed Recreation Sites (250 acres)

Developed recreation sites are listed in table 3-13 and shown in figure 3-17. Special conditions given are those necessary to protect the Federal Government's investment in capital improvements and facilities. These sites are in ROS classes SPM and RN; the special conditions given below are in addition to the ROS special conditions.

The developed recreation sites will not be used for minerals exploration, development, or production, or for grazing purposes, range improvements, or watering of livestock.

No private or commercial harvest of woodland products will be allowed, except limited onsite collection of dead fuelwood for campfires.

Vehicle use will be allowed only on designated roads and trails.

VISUAL RESOURCES

Lockhart Basin ACEC (56,660 acres)

The Lockhart Basin ACEC is shown in figure 2-4. It would be managed to protect scenic quality as viewed from the Canyonlands and Needles Overlooks on Hatch Point, in Grand Resource Area. The ACEC is in ROS classes P, SPNM, and SPM; the special conditions given below are in addition to the ROS special conditions.

Unless prohibited by the ROS special conditions, surface disturbance from minerals prospecting, exploration, or development will be allowed only if scenic values are protected, to the extent possible without curtailing valid rights. In an ACEC, a plan of operations is required for

annual assessment work, as well as for mining. Other development activities will be conducted in such a manner that scenic values are protected. Development activities will be subject to VRM class I objectives. Motorized access will be allowed only on existing roads and trails.

Disturbed areas will be revegetated using only native plants; revegetation must be successful within 5 years.

LANDS

Existing special land use leases carry conditions to ensure that the public lands remain suitable for the purpose for which the lease was issued. Special conditions would be applied to other land use activities consistent with these prior lease rights. Mineral leases issued under this alternative would carry special conditions as indicated in table S-1. Existing rights-of-way would remain in effect with stipulations in place when issued.

Special conditions that would be applied to protect existing special land use leases under alternative C are as follows.

Bluff Airport Lease (400 acres)

Uses of the lands now covered by the Bluff Airport lease will be allowed only when consistent with the use of the leased land for airport purposes. Use of the land for extraction or production of natural resources, including grazing, will be allowed only with the consent of the airport. The party wishing to use the land must file with the FAA and will be bound by FAA regulations, Part 77, "Objects Affecting Navigable Airspace."

Recapture Lake R&PP Lease (20 acres)

There will be no surface occupancy in the developed area. In the remainder of the R&PP lease, development or exploration activities will be allowed from November 1 to March 31. The seasonal restriction does not apply to maintenance or operation of a facility or grazing operation.

Blanding Education Center R&PP Lease (120 acres)

There will be no surface occupancy of the lease area except as authorized in the R&PP lease.

Material Site Rights-of-Way (900 acres)

The seven material site rights-of-way (shown in figures 3-5 and 3-6) are segregated from mineral entry as long as the right-of-way is in effect. When relinquished by the grantee, the lands will be reopened to mineral entry.

ALTERNATIVE D

INTRODUCTION

The following special conditions have been developed by the interdisciplinary team to mitigate potential adverse environmental impacts caused by surface disturbing activities, while meeting the overall objectives of alternative D. These special conditions are considered to be a part of alternative D, and the analysis of environmental impacts in chapter 4 takes them into account.

These special conditions are meant as general guidelines (both for analysis purposes and to guide development of specific project special conditions). They may not apply to all management actions given in table 2-7.

SOILS

Floodplains and Riparian/Aquatic Areas (1,500 acres; 800 outside natural succession areas)

Floodplains and riparian/aquatic areas are shown in figures 3-9 and 3-12. They are managed in accordance with Executive Orders 11988 and 11990 and the Endangered Species Act. Acreage was determined using a 25-foot-wide corridor. Within identified natural succession areas, the special conditions for those areas take precedence.

No surface occupancy or surface disturbance will be allowed, except vehicular use of existing roads and trails. Structural development,

except fences, will be prohibited within actual floodplains or riparian/aquatic areas.

Take-down panels or water gates will be installed on all fences that cross intermittent or perennial stream channels.

Livestock grazing and range improvements will be excluded from all riparian areas. This applies to all riparian areas and will take precedence within identified natural succession areas.

Sensitive Soils Areas (195,000 acres; sensitive soils: 45,000 acres)

Within the identified areas, which total 195,000 acres (figure 3-9), approximately 23 percent of the soils (45,000 acres) are classified as sensitive. Sensitive soils are those on sloping to steep terrain with badland and gypsumland soils. They are subject to erosion and difficult to revegetate. Not all areas with these soils are sensitive. If there is any question as to whether soils within a given project area are or are not sensitive, the operator should consult the BLM. Some sensitive soils areas fall in natural succession areas; the special conditions given below are in addition to those special conditions.

Construction and development are to be avoided where possible in areas with the following characteristics: slopes in excess of 10 percent, soils high in clay content, and soils high in salt or gypsum content. Operations will be located so as to reduce erosion and improve the opportunity for revegetation within areas of sensitive soils. Motorized access will be allowed only on existing roads and trails.

Prior to commencement of surface disturbing activities, the operator will visit the area with the BLM surface protection specialist, who will identify areas of sensitive soils for the operator.

Grading operations will be allowed only when soils are dry. Cross-country travel or construction activity will be allowed only when soils are dry or frozen or have snow cover.

New roads will be constructed so as to avoid areas of sensitive soils where possible. In areas of sensitive soils where roads must be allowed, new roads will be constructed with water bars and graded to spread drainage, instead of channeling runoff. No road grades in excess of 15 percent will be allowed; no surface disturbance from vehicle chains or leads will be allowed on slopes greater than 15 percent. No vehicular access will be allowed across slopes in excess of 25 percent.

Reclamation on sites with sensitive soils will require grading using slopes of 5 percent or less where possible, and grading the site so as to collect water for revegetation onsite.

Revegetation will be with adapted native species and prostrate Kochia, where allowed by vegetation special conditions.

VEGETATION

Natural Succession Areas (1,054,870 acres)

The four identified natural succession areas are shown in figure 2-1. Under alternative D, these areas will be managed so as to minimize surface disturbance for the purpose of protecting vegetative communities.

Within identified natural succession areas, surface disturbing activities will be allowed only so long as natural succession of plant species is not disrupted. If vegetation would be permanently disturbed, such as through grading, excavation, embankments, blading, use of chain saws, etc., projects would be denied.

The natural succession areas will be managed as VRM class I. Only projects that meet VRM class I objectives will be allowed.

Reclamation of disturbed areas would require revegetation with native plant species which occur naturally in the immediate area; revegetation must be successful within 5 years to meet the pre-existing conditions.

The natural succession areas will be closed to mineral leasing and disposal of mineral materials. They will be segregated from mineral

entry. Assessment work, as well as mining on valid existing claims, will require a plan of operations.

The natural succession areas will be closed to vehicular access.

No private or commercial harvest of woodland products will be allowed, except limited onsite collection of dead fuelwood for campfires.

Within the natural succession areas, grazing will be limited to 25 percent of the past 5 years average licensed use (1979-1984). Range improvements will be allowed only if vegetation is not disturbed. Within the natural succession areas, maintenance of existing land treatments and construction of new land treatments will not be allowed. No watershed control structures will be allowed.

Vegetation Resources (724,320 acres)

These special conditions would apply to all public land in SJRA outside of the natural succession areas (figure 2-1).

New surface disturbance will be limited to that which can be reclaimed to visually match the initial conditions within 5 years.

Bridger Jack Mesa and Lavender Mesa RNAs

The Bridger Jack Mesa (5,290 acres) and Lavender Mesa (640 acres) RNAs are shown in figure 2-5. Under alternative D, the RNAs would be managed to meet the requirements of 43 CFR 2071.1 to use the lands for research and experiment purposes to provide a baseline for rangeland research of relict and near-relict plant communities. Both RNAs are completely overlapped by a natural succession area; the special conditions given below are in addition to those developed for natural succession areas and take precedence.

No surface occupancy or disturbance by mechanized or motorized equipment will be allowed, except helicopter access for scientific study. Foot and horseback access will be allowed for scientific study purposes.

No grazing (including grazing by pack animals) will be allowed. No land treatments or facilities will be allowed, except test plots or facilities necessary for scientific study of relict or near-relict plant communities.

No special purpose leases or permits will be issued.

CULTURAL RESOURCES

Alkali Ridge and Hovenweep ACECs

The Alkali Ridge and Hovenweep ACECs are shown in figure 2-5. Under alternative D, these areas would be managed to protect cultural resources, and to provide the maximum opportunity for potential scientific and management use of cultural resources (see Glossary). The ACECs do not overlap any of the identified natural succession areas.

Surface disturbance will be prevented to the maximum extent possible to preserve and protect cultural resources. Both direct and indirect damage to cultural resources will be avoided. If avoidance is not possible, impacts will be mitigated through limited or complete excavation.

No surface occupancy will be allowed on any lease or permit.

The areas will be managed as VRM class I. Only activities that meet class I objectives will be allowed.

In an ACEC, a plan of operations is required for annual assessment work, as well as for mining. Motorized access will be restricted to designated roads and trails.

Grazing will be allowed at existing levels only so long as cultural resources are not damaged. New range improvements will not be allowed. Maintenance of existing range improvements will be allowed only so long as cultural resources are not damaged.

No private or commercial harvest of woodland products will be allowed, except limited onsite collection of dead fuelwood for campfires.

New wildlife habitat improvements will not be allowed.

North Abajo ACEC (65,450 acres)

The North Abajo ACEC is shown in figure 2-5. Under alternative D, this area would be managed to protect cultural resources, and to provide the maximum opportunity for conservation for future use and public (recreational) use of cultural resources (see Glossary). The ACEC is completely overlapped by a natural succession area. The special conditions given below are in addition to those developed for natural succession areas and take precedence.

Surface disturbance will be prevented to the maximum extent possible to preserve and protect cultural resources. Both direct and indirect impacts to cultural resources will be avoided. If avoidance is not possible, impacts will be mitigated through limited or complete excavation. All surface disturbance must be reclaimed within 1 year to meet the original conditions.

New wildlife habitat improvements will not be allowed.

Grand Gulch ACEC (4,240 acres)

The Grand Gulch ACEC is shown in figure 2-5 and includes only the archaeological district. It would be managed under alternative D to protect cultural resources, and to provide the maximum opportunity for potential scientific and public (recreational) use of cultural resources (see Glossary). The ACEC is completely overlapped by a natural succession area; the special conditions given below are in addition to those developed for natural succession areas and take precedence.

Surface disturbance will be prevented to the maximum extent possible to preserve and protect cultural resources. Both direct and indirect impacts to cultural resources will be avoided. If avoidance is not possible, impacts will be mitigated through limited or complete excavation. All surface disturbance must be reclaimed within 1 year to meet the original conditions.

New wildlife habitat improvements will not be implemented.

No grazing or range improvements will be allowed.

Recreational use will be restricted if cultural resources are being damaged. If damage cannot be prevented, impacts will be mitigated through limited or complete excavation. In addition, a long-term stabilization and interpretation program will be implemented.

National Register Cultural Properties and Archaeologic Districts (416,850 acres)

National Register cultural properties and archaeological districts and eligible properties and districts are listed in table 2-2 and shown in figure 3-15. Some are in natural succession areas. For these areas, the special conditions given are in addition to the vegetation special conditions, which take precedence.

Both direct and indirect damage to National Register cultural properties and archaeological districts and eligible properties and districts will be avoided to the extent possible without curtailing valid rights. If avoidance is not possible, impacts will be mitigated through limited or complete excavation.

Surface disturbance occurring within 250 feet of National Register cultural properties or archaeological districts, or eligible properties or districts, must be reclaimed as directed by the BLM.

RECREATION

Outstanding Natural Areas (281,200) acres

Nine areas, listed in table 2-6 and shown in figure 2-5, would be designated as ONAs. ONAs would be protected and managed to meet the requirements of 43 CFR 8352. They would be used to emphasize outdoor recreation in a natural setting.

The ONAs are all within natural succession areas and would be managed under the special conditions developed for those areas.

Developed Recreation Sites (250 acres)

Developed recreation sites are listed in table 3-13 and shown in figure 3-17. Special conditions given are those necessary to protect the Federal Government's investment in capital improvements and facilities.

The developed recreation sites will not be used for minerals exploration, development, or production, or for grazing purposes, range improvements, or watering of livestock.

No private or commercial harvest of woodland products will be allowed, except limited onsite collection of dead fuelwood for campfires.

VISUAL RESOURCES

Lockhart Basin ACEC (56,660 acres; 41,300 acres outside the natural succession area)

The Lockhart Basin ACEC is shown in figure 2-5. Under alternative D, it would be managed to protect scenic quality as viewed from the Needles and Canyonlands overlooks on Hatch Point in the Grand Resource Area.

The ACEC overlaps part of an identified natural succession area; within that area, the special conditions for natural succession areas take precedence.

The area will be managed as VRM class I. Only activities that meet class I objectives will be allowed.

No surface occupancy or surface disturbance from mechanized or motorized equipment will be allowed on any lease or permit. Vehicular use will be allowed only on existing roads and trails.

In an ACEC, a plan of operations is required for annual assessment work, as well as for mining. Surface disturbance will be kept to the minimum necessary to allow claimants to exercise their legal rights.

Grazing will be allowed at present levels.

Disturbed areas will be revegetated with only native plants; revegetation must be successful within 5 years (the standard reclamation bond period) to visually match the initial conditions.

LANDS

Existing special land use leases carry conditions to ensure that the public lands remain suitable for the purpose for which the lease was issued. Special conditions would be applied to other land use activities consistent with these prior lease rights. Mineral leases issued under this alternative would carry special conditions as indicated in table S-1. Existing rights-of-way would remain in effect with stipulations in place when issued.

Special conditions that would be applied to protect existing special land use leases under alternative D are as follows.

Bluff Airport Lease (400 acres)

Uses of the lands now covered by the Bluff Airport lease will be allowed only when consistent with the use of the leased land for airport purposes. Use of the land for extraction or production of natural resources, including grazing, will be allowed only with the consent of the airport. The party wishing to use the land must file with the FAA and will be bound by FAA regulations, Part 77, "Objects Affecting Navigable Airspace."

Recapture Lake R&PP Lease (20 acres)

There will be no surface occupancy in the developed area. In the remainder of the R&PP lease, development or exploration activities will be allowed from November 1 to March 31. The seasonal restriction does not apply to maintenance or operation of a facility or grazing operation.

Blanding Education Center R&PP Lease (140 acres)

There will be no surface occupancy of the lease area except as authorized in the R&PP lease.

Material Site Rights-of-Way (900 acres)

The seven material site rights-of-way (shown in figures 3-5 and 3-6) are segregated from mineral entry as long as the right-of-way is in effect. When relinquished by the grantee, the lands will be reopened to mineral entry.

ALTERNATIVE E

INTRODUCTION

The following special conditions have been developed by the interdisciplinary team to mitigate potential adverse environmental impacts caused by surface disturbing activities, while meeting the overall objectives of alternative E. These special conditions are considered to be a part of alternative E, and the analysis of environmental impacts in chapter 4 takes them into account.

These special conditions are meant as general guidelines (both for analysis purposes and to guide development of specific project stipulations). They may not apply to all management actions given in table 2-7.

Floodplains and Riparian/Aquatic Areas (1,500 acres)

Floodplains and riparian/aquatic areas are shown in figures 3-9 and 3-12. They are managed in accordance with Executive Orders 11988 and 11990 and the Endangered Species Act. Acreage was determined using a 25-foot-wide corridor. Some of these areas are in ROS classes P, SPNM, and SPM; the special conditions given below are in addition to the ROS special conditions.

No surface occupancy (except vehicular use of existing roads and trails), surface occupancy, or structural development (except fences) will be allowed within actual floodplains or riparian/aquatic areas.

Take-down panels or water gates will be installed on all fences which cross intermittent or perennial stream channels.

Grazing and other livestock uses will not be allowed.

Sensitive Soils Areas (195,000 acres; sensitive soils: 45,000 acres)

Within the identified areas, which total 195,000 acres (figure 3-9), approximately 23 percent (45,000 acres) of the soils are classified as sensitive. Sensitive soils are those on sloping to steep terrain with badland and gypsumland soils. They are subject to erosion and difficult to revegetate. Not all areas with these soils are sensitive. If there is any question as to whether soils within a given project area are or are not sensitive, the operator should consult the BLM. The sensitive soils areas fall in ROS classes SPNM, SPM, RN, and R; the special conditions given below are in addition to the ROS special conditions.

Construction and development are to be avoided where possible in areas with the following characteristics: slopes in excess of 10 percent, soils high in clay content, and soils high in salt or gypsum content. Operations will be located so as to reduce erosion and improve the opportunity for revegetation within areas of sensitive soils. Motorized access will be allowed only on existing roads and trails.

Prior to commencement of surface disturbing activities, the operator will visit the area with the BLM surface protection specialist, who will identify areas of sensitive soils for the operator.

Grading operations will be allowed only when soils are dry. Cross-country travel or construction activity will be allowed only when soils are dry or frozen or have snow cover.

New roads will be constructed so as to avoid areas of sensitive soils where possible. In areas of sensitive soils where roads must be allowed, new roads will be constructed with water bars and graded to spread drainage, instead of channeling runoff. No road grades in excess of 15 percent will be allowed; no surface disturbance from vehicle chains or leads will be allowed on slopes greater than 15 percent. No vehicular access will be allowed across slopes in excess of 25 percent.

Reclamation on sites with sensitive soils will require grading using slopes of 5 percent or less where possible, and grading the site so as to collect water for revegetation onsite.

Revegetation will be with adapted native species and prostrate Kochia, where allowed by vegetation special conditions.

Sensitive Slopes (acreage undetermined)

This stipulation applies only to broad-scale land treatments (vegetation manipulations) because of the large area involved. Under alternative E, it would apply only to specific portions of these areas where the ground slope is greater than 10 percent. In areas within ROS class P or SPNM, the ROS special conditions will take precedence.

Vegetation manipulation techniques on slopes greater than 10 percent will be limited to chemical treatments and broadcast seedings; chainings, railings, or other surface disturbing methods will not be allowed.

VEGETATION

Bridger Jack Mesa and Lavender Mesa RNAs (5,930 acres)

The Bridger Jack and Lavender Mesa RNAs are shown in figure 2-6. Under alternative E, the RNAs would be managed to meet the requirements of 43 CFR 2071.1 to use the lands for research and experiment purposes to provide a baseline for rangeland research of relict and near-relict plant communities. Both RNAs are in ROS class SPNM. The following special conditions are in addition to the ROS special conditions and take precedence.

No surface occupancy or disturbance by mechanized or motorized equipment will be allowed, except helicopter access for scientific study. All surface disturbance will be subject to VRM class I objectives. Foot and horseback access will be allowed for scientific study purposes.

Disturbed areas will be revegetated with native plant species naturally occurring on the mesa top. Rehabilitation must be successful within 5

years (the standard reclamation bond period) to visually match pre-existing conditions.

No grazing (including grazing by pack animals) will be allowed. No land treatments or facilities will be allowed, except test plots or facilities necessary for scientific study of relict or near-relict plant communities. No watershed control structures will be allowed.

No special purpose leases or permits, other than minerals leases, will be allowed; no surface occupancy will be allowed within the RNAs. In an area closed to off-road vehicle (ORV) use, a plan of operations is required for annual assessment work, as well as for mining.

No private or commercial harvest of woodland products will be allowed, except limited onsite collection of dead fuelwood for campfires.

Recreational use will be limited through a permit system if needed to prevent resource damage to the relict and near-relict plant communities, or if recreational use exceeds the capability of the RNAs to absorb recreational impacts.

WILDLIFE

Seasonal Wildlife Protection Areas

Under alternative E, crucial big game habitats would be subject to special conditions regulating use during certain seasons. These special conditions apply in addition to any other stipulations or conditions in effect for that area.

The Area Manager may grant exceptions on a case-by-case basis during any year if it can be shown that (1) legal rights would be curtailed; (2) the animals are not present in a specific project location in a given year; or (3) the activity can be conducted so as not to adversely affect the animals.

Bighorn Sheep Lambing and Rutting Areas (329,750 acres)

Part of the bighorn crucial habitat area falls in ROS class P and SPNM. The special conditions

given below are in addition to the ROS special conditions, which take precedence.

Use of the crucial bighorn sheep habitat (figure 3-11) will be limited during the lambing season (April 1 to July 15 annually) and the rutting (mating) season (October 15 to December 31 annually). During these periods no activities may take place which require a continued human presence (over 12 hours) within the area; involve sudden loud noises (such as detonation of a surface charge) or sustained noise (such as a chain saw or diesel generator); or require the use of low-flying aircraft.

Antelope Fawning Area (12,960 acres)

The antelope crucial habitat area is not subject to the ROS special conditions.

Use within the crucial antelope habitat (figure 3-11) will be limited during the fawning season (May 15 to June 30 annually). During this period no activities may take place which require a continued human presence (over 12 hours) within the area; involve sudden loud noises (such as detonation of a surface charge) or sustained noise (such as a chain saw or diesel generator); or require the use of low-flying aircraft.

Deer Winter Range (197,550 acres)

Part of the deer crucial winter range areas fall in ROS class SPNM. The special conditions given below are in addition to the ROS special conditions, which take precedence.

Use within the crucial deer winter habitat areas (figure 3-12) will be limited during periods of critical winter use (December 15 to April 30 annually). During this period no surface disturbing activities that would remove deer forage and browse plants may take place in these areas. During this period no activities may take place which require a continued human presence (over 12 hours) within the area; involve sudden noises (such as detonation of a surface charge) or sustained noise (such as a chain saw or diesel generator); or require the use of low-flying aircraft.

Hunting during a recognized hunting season established by UDWR will be allowed.

Identified Mesa Tops, Bighorn Sheep (56,740 acres)

Five mesa tops within the crucial bighorn sheep habitat (figure 3-11) have been identified as areas of potential conflict. Conflict could occur between bighorn and activities that cause surface disturbance resulting in removal of critical forage species.

Parts of the identified mesa tops fall in ROS classes SPNM; the special conditions given below are in addition to the ROS special conditions, which take precedence.

Onsite mitigation will be required for projects that disturb or remove forage and browse species used by desert bighorn; the purpose of the mitigation is to replace the food lost.

In addition to standard reclamation practices, revegetation of disturbed areas must be accomplished using native plant species palatable to bighorn, and must be successful within 5 years.

No surface disturbance from minerals prospecting, exploration, or development will be allowed, to the extent possible without curtailing valid rights. No other type of surface use or motorized access will be allowed.

Grazing uses will not be allowed. This includes range development projects and land treatments.

In addition to standard reclamation practices, revegetation of disturbed areas must be accomplished using native plant species palatable to bighorn, and must be successful within 5 years.

Crucial Deer Winter Range, Sagebrush Areas (9,800 acres)

Certain sagebrush parks within crucial deer winter range areas (figure 3-12) have been identified as providing a concentrated food source for wintering deer. Large-scale removal could cause a significant loss of winter forage for the deer. The areas fall within various ROS

classes; the special conditions given here are in addition and take precedence.

No land treatments will be allowed.

Upper Indian Creek Riparian Area (40 acres)

The riparian area identified for special management is the trout habitat in Indian Creek between the Manti-LaSal National Forest and Newspaper Rock State Park (see figure 3-12).

The protected area includes about 2 miles of stream, or about 40 acres of riparian/aquatic area in a corridor about 150 feet wide. None of the area falls in ROS class P or SPNM; the ROS special conditions given do not apply.

Under alternative E, the area would be managed in accordance with the special conditions given above for floodplains and riparian/aquatic areas; the special conditions given here are in addition and take precedence.

Livestock use will be excluded; range projects or land treatments will not be allowed.

Cajon Pond ACEC (40 acres)

The Cajon Pond ACEC, shown in figure 2-6, provides important riparian habitat for waterfowl. Under alternative E, it would be managed in accordance with the special conditions given above for floodplains and riparian/aquatic areas. The special conditions given here are in addition and take precedence. None of the ACEC falls in ROS class P or SPNM; the ROS special conditions given do not apply.

No surface occupancy or surface disturbance will be allowed within the Cajon Pond ACEC during the shorebird and waterfowl courtship and nesting season (March 1 through June 30 annually).

Livestock will be allowed to graze only the unfenced portion of the Cajon Pond ACEC (about 20 acres).

No private or commercial harvest of woodland products will be allowed, except limited onsite collection of dead fuelwood for campfires only in the unfenced area. In fenced areas, no use of woodland products will be allowed.

Vehicular access will be allowed only on designated roads and trails.

CULTURAL RESOURCES

Alkali Ridge and Shay Canyon ACECs (37,660 acres)

The Alkali Ridge and Shay Canyon ACECs are shown in figure 2-6. Under alternative E, they would be managed to protect cultural resources. The Alkali Ridge ACEC (35,890 acres) would be managed so as to provide maximum opportunity for potential scientific and management uses, and the Shay Canyon ACEC (1,770 acres) for conservation for future use and public (recreational) use of cultural resources (see Glossary). Neither ACEC falls in ROS class P or SPNM. The ROS special conditions do not apply. Riparian areas overlap part of the Alkali Ridge ACEC and the Shay Canyon ACEC; the special conditions for floodplains and riparian/aquatic areas take precedence.

Surface disturbance will be minimized so as to provide maximum opportunity to manage cultural resources for the uses specified above. Both direct and indirect impacts to cultural resources will be avoided. If avoidance is not possible, impacts will be mitigated through limited or complete excavation.

Surface disturbance must be successfully reclaimed within 5 years. Vehicular access will be allowed only on existing roads and trails.

Grazing will be allowed at existing levels. New land treatments will be allowed if only chemical treatment or fire is used. Construction of range improvements will not be allowed. Maintenance of existing range improvements will be allowed using methods that cause only minimal impacts.

Only small-scale wildlife habitat improvements will be implemented; cultural sites will be avoided by at least 250 feet.

Grand Gulch ACEC (49,130 acres)

The Grand Gulch ACEC is shown in figure 2-6 and includes the existing primitive area with an

11,320-acre extension in the vicinity of Slickhorn Canyon. Under alternative E, it would be managed for natural values associated with primitive recreation, and for cultural resources. It would be managed to provide the maximum opportunity for potential scientific use and public (recreational) use of cultural resources (see Glossary). The majority of the ACEC is in ROS class P and SPNM. The special conditions given below are in addition to the ROS special conditions and take precedence. The ACEC would be segregated from mineral entry.

The area will be protected from surface disturbance to the maximum extent possible. Both direct and indirect damage to cultural resources will be avoided. Where avoidance is not possible, damage will be mitigated through limited or complete excavation.

No surface disturbance from minerals prospecting, exploration, or development will be allowed, to the extent possible without curtailing valid rights. No other type of surface use or motorized access or development will be allowed. Outside of the ROS class P area, vehicular use will be allowed only on designated roads and trails.

Surface disturbance will be limited to that which can be successfully reclaimed within 1 year to visually match the initial conditions. All revegetation must be with native species which naturally occur in the vicinity.

The area will be managed as VRM class I. All surface disturbance will be subject to class I objectives.

Grazing will be allowed at present levels; the existing grazing exclusion (11,200 acres) will be maintained. Range projects or land treatments will not be allowed.

No private or commercial harvest of woodland products will be allowed, except limited onsite collection of dead fuelwood for campfires.

No new wildlife habitat improvement projects will be implemented.

Recreational use restrictions will be imposed if cultural resources are being damaged.

RECREATION

ROS Classes

These special conditions are necessary to ensure that certain specific ROS classes are maintained or protected. These special conditions are intended to maintain most P class areas in SJRA and SPM class areas in the San Juan River SRMA, and to protect most SPNM class areas where possible. ROS classes are shown in figure 3-16.

Primitive (P) Class (196,040 acres)

Under alternative E, the ROS P class area would be managed to be essentially free of evidence of human use and to maintain an environment of isolation (not more than 10 group encounters per day). Levels of management and use would be aimed at maintaining natural ecosystems. These special conditions would apply to all P class areas except those at Squaw and Cross Canyons near the Colorado state line.

Surface disturbance will be limited to that which can be reclaimed within 1 year to visually match pre-existing conditions. All surface disturbance will be subject to VRM class I objectives.

No surface disturbance from minerals prospecting, exploration, or development will be allowed, to the extent possible without curtailing valid rights. No other type of surface use or motorized access or development will be allowed.

Grazing will be maintained at past 5 years average licensed use (1979-1984), pending completion of monitoring studies. New land treatments will not be allowed.

No private or commercial harvest of woodland products will be allowed, except limited onsite collection of dead fuelwood for campfires.

Cultural resources will be allowed to remain subject to natural forces.

Only native plant and wildlife species will be introduced.

Fires will be allowed to burn unless they threaten life or property; nonmotorized suppression methods will be utilized where possible.

Semiprimitive Nonmotorized (SPNM) Class (505,700 acres)

Under alternative E, the ROS SPNM class area would be managed to provide a predominantly natural environment, with limited evidence of human use and restrictions and, where possible, to provide an environment of isolation (not more than 20 group encounters per day). Reclamation of surface disturbing activities would be required to achieve a natural appearance within 5 years after project completion. Levels of management and use would be aimed at protecting natural ecosystems where feasible.

These special conditions would apply to all SPNM class areas, except those at Squaw and Cross Canyons near the Colorado state line.

Surface disturbance from minerals prospecting, exploration, or development will be reclaimed to achieve a natural appearance within 5 years after project completion, to the extent possible without curtailing valid rights.

Access routes will be completely rehabilitated after project completion; however, certain routes may be left for continued access at the request of BLM.

Construction of development projects will be allowed only so long as they are made to blend with the natural character of the land; surface disturbance will be reclaimed to achieve a natural appearance within 5 years of project completion.

Grazing will be maintained at the past 5 years average licensed use (1979-1984), pending completion of monitoring studies. Facilities and land treatments necessary to maintain adequate distribution, seasons of use, and grazing systems, will be allowed only so long as

they are made to blend with the natural character of the land.

Vehicular access will be allowed only on existing roads and trails.

No private or commercial harvest of woodland products will be allowed, except limited onsite collection of dead fuelwood for campfires.

Only those cultural resources management activities that blend with the natural character of the land will be allowed.

Natural fires will be allowed to burn unless they threaten life or property; other fires and all fires in riparian areas will be suppressed; nonmotorized suppression methods will be utilized where possible.

Semiprimitive Motorized (SPM) Class Within the San Juan River SRMA (9,380 acres)

Under alternative E, the SPM class area within the San Juan River SRMA would be managed under the special conditions given above for P class areas, except that motorized boat use on the San Juan River would be allowed. This area, shown in figure 3-17, would be managed to maintain an environment of isolation insofar as allowed by the river permit and patrol system. Levels of management and use would be aimed at maintaining safety and the riverine ecosystem.

The special conditions given below are in addition to, and take precedence over, those for P class areas.

The area will be segregated from mineral entry, and surface disturbance from mining activities on existing claims will be limited to the extent possible without curtailing valid existing rights. In an area closed to ORV use, a plan of operations is required for annual assessment work, as well as for mining.

No vehicular access will be allowed, but motorized boat use on the San Juan River will be allowed.

Dark Canyon ACEC (62,040 acres)

The Dark Canyon ACEC is shown in figure 2-6 and includes the existing primitive area. Under alternative E, it would be managed for natural values associated with primitive recreation.

The entire ACEC is in ROS class P or SPNM. The special conditions given below are in addition to the ROS special conditions and take precedence. The ACEC would remain segregated from mineral entry.

No surface disturbance from minerals prospecting, exploration, or development will be allowed, to the extent possible without curtailing valid rights. No other type of surface use or motorized access or development will be allowed. Outside of the ROS class P area, vehicular use will be allowed only on designated roads and trails.

Surface disturbance will be limited to that which can be successfully reclaimed within 1 year to visually match the initial conditions. All revegetation must be with native species which naturally occur in the vicinity.

No private or commercial harvest of woodland products will be allowed, except limited onsite collection (in the unfenced area) of dead fuelwood for campfires. In fenced areas, no use of woodland products will be allowed.

The area will be managed as VRM class I. All surface disturbance will be subject to class I objectives.

Grazing will be allowed at present levels; although grazing is not excluded, the majority of the ACEC is not grazed. No range projects or land treatments will be allowed.

No new wildlife projects will be implemented.

Recreational use restrictions will be imposed if cultural resources are being damaged.

Pearson Canyon SRMA (1,920 acres)

The Pearson Canyon SRMA is shown in figure 2-6. Under alternative E, it would be managed for

intensive recreational use. The SRMA is not in ROS class P or SPNM; the ROS special conditions given above do not apply. The SRMA would be segregated from mineral entry.

No surface disturbance from minerals prospecting, exploration, or development will be allowed, to the extent possible without curtailing valid rights. No other type of surface use, motorized access, or development will be allowed. Vehicular access will be allowed only on designated roads and trails.

Livestock grazing will be excluded (the SRMA is not now grazed), and range improvements, including land treatments, will not be allowed.

Recreational use restrictions will be imposed if natural values are being damaged.

Developed Recreation Sites (250 acres)

Developed recreation sites are listed in table 3-13 and shown in figure 3-17. Special conditions given are those necessary to protect the Federal Government's investment in capital improvements and facilities.

The developed recreation sites will not be used for minerals exploration, development, or production, or for grazing purposes, range improvements, or watering of livestock.

No private or commercial harvest of woodland products will be allowed, except limited onsite collection of dead fuelwood for campfires.

Vehicle use will be allowed only on designated roads and trails.

LANDS

Existing special land use leases carry conditions to ensure that the public lands remain suitable for the purpose for which the lease was issued. Special conditions would be applied to other land use activities consistent with these prior lease rights. Mineral leases issued under this alternative would carry special conditions as indicated in table S-1. Existing rights-of-way would remain in effect with stipulations in place when issued.

Special conditions that would be applied to protect existing special land use leases under alternative E are as follows.

Bluff Airport Lease (400 acres)

Uses of the lands now covered by the Bluff Airport lease will be allowed only when consistent with the use of the leased land for airport purposes. Use of the land for extraction or production of natural resources, including grazing, will be allowed only with the consent of the airport. The party wishing to use the land must file with the FAA and will be bound by FAA regulations, Part 77, "Objects Affecting Navigable Airspace."

Recapture Lake R&PP Lease (20 acres)

There will be no surface occupancy in the developed area. In the remainder of the R&PP lease, development or exploration activities will be allowed from November 1 to March 31. The seasonal restriction does not apply to maintenance or operation of a facility or grazing operation.

Blanding Education Center R&PP Lease (120 acres)

There will be no surface occupancy except as authorized in the R&PP lease.

Material Site Rights-of-Way (900 acres)

Material site rights-of-way (shown in figures 3-5 and 3-6) are segregated from mineral entry

as long as the right-of-way is in effect. When relinquished by the grantee, the lands will be reopened to mineral entry.

CULTURAL RESOURCES

National Register Cultural Properties and Archaeologic Districts (372,010 acres)

National Register cultural properties and archaeologic districts and eligible properties and districts are listed in table 2-2 and shown in figure 3-15. Some are in ROS class P or SPNM. For these areas, the special conditions given are in addition to the ROS special conditions, and the ROS special conditions take precedence.

Both direct and indirect damage to National Register cultural properties and archaeologic districts and eligible properties and districts will be avoided to the extent possible without curtailing valid rights. If avoidance is not possible, impacts will be mitigated through limited or complete excavation.

Surface disturbance occurring within 250 feet of National Register cultural properties or archaeologic districts, or eligible properties or districts, must be reclaimed as directed by the BLM.

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APPENDIX B — RMP MONITORING PLAN

OVERVIEW

An implementation and monitoring plan will be part of the resource management plan (RMP) as adopted. The plan cannot be finalized until the RMP is finalized.

The purpose of this appendix is to describe the monitoring procedures to be followed and outline implementation schedules and other information that will be a part of the implementation and monitoring plan. Implementation of the RMP is expected to be complete within 10 years after adoption, except for certain grazing decisions.

Monitoring and evaluation is the last step in the planning process. The planning process is cyclic, however, and monitoring and evaluation can lead back to the beginning of the process.

USING THE RESOURCE MANAGEMENT PLAN

The following steps are involved in actually using the RMP:

- adopting the RMP and making the plan decisions;
- implementing the plan decisions;
- monitoring both the implementation and the decisions themselves to ensure that the plan remains current, and evaluating the results; and
- modifying the RMP in response to the monitoring process or specific proposals through maintenance, plan amendment, or plan revision.

ADOPTING THE PLAN

The RMP will go into effect when adopted by the State Director. Alternative plans, including a preferred alternative, are suggested in the draft environmental impact statement (EIS). The final EIS will include a proposed RMP. The record of decision for the EIS will document the adoption of the final RMP.

Some plan decisions go into effect immediately when the RMP is adopted. Examples are oil and gas category leasing allocations and special management designations such as areas of critical environmental concern (ACECs) or research natural areas (RNAs). Other decisions, such as off-road vehicle (ORV) use designations, go into effect after a stated time period. Some plan decisions authorize preparation of site-specific activity plans, such as allotment management plans (AMPs), habitat management plans (HMPs), or cultural resource management plans (CRMPs). Many require preparation of site-specific National Environmental Policy Act (NEPA) documentation before they can go into effect.

IMPLEMENTING THE PLAN DECISIONS

Implementation translates the plan decisions (management actions, activity plans, land allocations, etc.) into on-the-ground action. It includes such diverse items as

- providing personnel and equipment to make physical changes (such as constructing facilities for a developed recreation site);
- changing land status plats to reflect land allocation decisions, and issuing leases and permits accordingly;

- taking actions to inform the public, such as printing maps of ORV use designations; and
- tailoring the Bureau of Land Management's (BLMs) budget and staff requirements to ensure that plan decisions can be put into action.

Implementation also means establishing priorities and schedules. Some actions have established schedules that must be met. For example, range monitoring must take place for 5 years before grazing allocations can be adjusted on the basis of forage condition. Other decisions take effect immediately when the RMP is adopted, or provide for ongoing action in response to specific project requests.

The RMP provides the BLM with a systematic way to prioritize funding and personnel management. The decisions in the RMP shape the BLM's goals and objectives for management of public lands and resources; the primary goals of the management plan should be given priority in allocating work months and project funding. Besides informing the public of the BLM's priorities, the RMP serves as a "contract" among different levels of management within the agency to ensure that the BLM's financial planning process supports the plan goals and objectives.

MONITORING AND EVALUATION

Monitoring the RMP includes monitoring both on-the-ground resource indicators and the land use decisions themselves. The monitoring process should provide ongoing answers to the following questions:

- Are the management decisions given in the RMP being implemented in a timely manner?
- Are plan decisions being carried out through site-specific activity plans?
- Were the impacts to the human environment (beneficial or adverse) projected accurately in the EIS, and are prescribed mitigation measures effective in decreasing adverse impacts?

- Are the projects or prescriptions, as implemented, successful in achieving the desired result of resource protection or resource production?
- Are the planning decisions, as implemented, successful in meeting the goals and objectives of the RMP selected?
- Are the goals and objectives of the RMP valid and appropriate to meet public needs for use of public lands and resources?

Plan monitoring is important to ensure that the RMP is a useful management tool. It points out both successful measures and inadequacies in the RMP and is used to keep the plan current. Monitoring provides the manager with feedback (evaluation) to ensure that laws, regulations, and policies are being met, and that management programs are proceeding in the desired direction. Monitoring assures the land manager that BLM management is adequately resolving both the resource conflicts and administrative problems identified in the RMP process.

MODIFYING THE PLAN

The RMP can be modified through plan maintenance, plan amendment, or plan revision. All must be documented.

Plan maintenance involves minor changes to the RMP to refine or further document the plan decisions. They may be in response to minor data changes; for example, refinement of acreages or mapped data. Plan maintenance does not require formal public involvement, interagency coordination, or consistency review. Documentation consists of making revision sheets available to the public at the BLM's Utah State Office public room, the Moab District Office, and the San Juan Resource Area (SJRA).

An RMP amendment would be initiated in response to a proposed action that could change the scope of resource uses covered by the plan decisions. An amendment would be required in order to proceed with a project that was documented as not being in conformance with the plan. The planning steps would be applied, and an

environmental assessment (EA) or EIS prepared with full public involvement, interagency coordination, and Governor's consistency review.

A plan revision would be a major overhaul of the RMP made in response to formal monitoring. A revision could be triggered by the need to consider monitoring findings, new data, new or revised policy, a major change in circumstances, or a change in the terms, conditions, decisions, goals, or objectives of the approved RMP. A plan revision would require an EA, EIS, or supplemental EIS with full public involvement, interagency coordination, and Governor's consistency review.

ANTICIPATED IMPLEMENTATION AND MONITORING NEEDS

Table AB-1 lists, by program, the anticipated implementation, scheduling, and monitoring needs for the RMP. This general table is intended to give a framework for the types of implementation actions, general schedules, and broad objectives of monitoring for the management actions given under each alternative in chapter 2 (table 2-7).

For some programs, implementation depends upon further agency action and cannot be anticipated. Coal implementation depends on an unsuitability analysis, wilderness implementation on Congressional action, and hazardous waste management on formulation of agency policy. For some programs, management actions are shown that would not occur under all of the alternatives. A more detailed monitoring plan for grazing management is found in appendix J. The range monitoring plan is required by the agreement stemming from the court-ordered grazing studies (see Purpose and Need, chapter 1).

A complete implementation and monitoring plan, schedule, and priority listing will be developed for the proposed RMP and final EIS. If the final RMP reflects changes from the proposed RMP, the implementation and monitoring plan may be revised accordingly.

TABLE AB-1

**Anticipated Implementation and Monitoring of Resource Management
Plan Decisions, by Management Program**

Program	Implementation	Schedule	Monitoring Objectives
4111 Oil and Gas Management	Issue leases with proper stipulations and special conditions (by Utah State Office (USO)).	Immediate upon approval of RMP.	Ensure that plats are correct and leases are issued with proper conditions.
	Apply RMP stipulations and special conditions to applications for permit to drill (APDs) and geophysical and other projects through NEPA documentation.	Ongoing.	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
4113 Geothermal Management	Amend RMP to develop lease stipulations and special conditions, if geothermal leases are issued.	Undetermined.	If leased, ensure that plats are correct and and leases issued with proper conditions; field check for presence or absence of geothermal resources.
4121 Coal Management	Reserved. ^b	Reserved.	Reserved.
4122 Tar Sand Management	Issue leases with proper stipulations and special conditions (by USO).	Immediate upon approval of RMP.	Ensure that plats are correct and leases issued with proper conditions.
4131 Mineral Materials Management	Apply RMP stipulations and special conditions to applications for disposal through NEPA documentation.	Ongoing.	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
4132 Mining Law Administration	Make segregations (by Secretarial Order); show on plats.	Within 2 years after approval of RMP.	Ensure that plats are correct.
	Apply RMP stipulations and special conditions to plans of operation through NEPA documentation.	Ongoing.	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.

TABLE AB-1 (Continued)

Program	Implementation	Schedule	Monitoring Objectives	
4132	Mining Law Administration (concluded)	Review notices of intent.	Ongoing.	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
4133	Other Nonenergy Leasables	Issue leases with proper stipulations and special conditions (by USO).	Immediate upon approval of RMP.	Ensure that plats are correct and leases issued with proper conditions.
		Apply RMP stipulations and special conditions to exploration permits and exploration and mining operations.	Ongoing.	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
4211	Rights-of-Way	Apply RMP stipulations and special conditions to right-of-way grants.	Ongoing.	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
4212	Lands	Apply RMP stipulations and special conditions to lands and realty applications, permits, sales, and leases through NEPA documentation.	Ongoing.	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
		Use RMP objectives to determine whether land disposals are in the national interest.	Ongoing.	Watch for cumulative impacts; see if RMP objectives are met; determine if RMP objectives are valid.
		Resolve unauthorized land uses to meet RMP goals and objectives.	Ongoing.	Watch for cumulative impacts; see if RMP objectives are met; determine if RMP objectives are valid.
4220	Withdrawal Processing and Review	Use RMP objectives to determine whether existing and proposed withdrawals are in the national interest.	Ongoing.	Watch for cumulative impacts; see if RMP objectives are met; determine if RMP objectives are valid.

TABLE AB-1 (Continued)

Program	Implementation	Schedule	Monitoring Objectives
4311 Forest Management	Designate sites for private harvest of dead fuelwood products through NEPA documentation.	Within 1 year after approval of RMP.	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
	Designate sites for private and commercial harvest of other wood and products through NEPA documentation.	Within 2 years after approval of RMP for juniper posts and Christmas trees; ongoing for other sites.	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
4312 Forest Development	Provide forest development projects in keeping with RMP stipulations and special conditions through NEPA documentation.	Ongoing	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
4322 Grazing Management	License grazing use and exclude livestock from certain areas to meet RMP objectives.	Within 2 years after approval of RMP.	See appendix RNG-MON.
	Change season of use on certain allotments to meet RMP objectives.	Within 2 years after approval of RMP.	See appendix RNG-MON.
	Modify or prepare AMPs; apply RMP stipulations and special conditions through NEPA documentation.	Ongoing.	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
	Maintain existing land treatments and provide new land treatments; apply RMP stipulations and special conditions through NEPA documentation.	Ongoing (over a 15-year period).	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
	Designate areas for special uses. ^c	Immediate upon approval of RMP.	Ensure that plats are correct.

TABLE AB-1 (Continued)

Program	Implementation	Schedule	Monitoring Objectives	
4322	Grazing Management (concluded)	Prepare management plans for special designation areas; incorporate RMP objectives through NEPA documentation.	Within 1 year after approval of RMP.	Ensure compliance with management plans; watch for cumulative impacts; determine if special values are properly protected; determine if designation remains valid.
4331	Natural History/Cultural Resources Management	Apply legal requirements and use RMP objectives to determine which uses of cultural resources are in the national interest.	Ongoing.	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
		Designate properties to the National Register of Historic Places.	Ongoing - one nomination per fiscal year.	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
		Prepare CRMPs; apply RMP stipulations and special conditions through NEPA documentation.	Ongoing - one CRMP per 3 fiscal years.	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
		Designate areas for special uses. ^c	Immediate upon approval of RMP.	Ensure that plats are correct.
		Prepare management plans for special designation areas; incorporate RMP objectives through NEPA documentation.	Within 1 year after approval of RMP.	Ensure compliance with management plan; watch for cumulative impacts; determine if special values are properly protected; determine if designation remains valid.
4332	Wilderness Management	Reserved. ^b	Reserved.	Reserved.
4333	Recreation/Visual Resources Management	Designate special recreation management areas (SRMAS). ^c	Immediate upon approval of RMP.	Prepare maps of SRMAS.

TABLE AB-1 (Continued)

Program	Implementation	Schedule	Monitoring Objectives
4333 Recreation/ Visual Resources Management (concluded)	Prepare management plans for SRMAs; incorporate RMP objectives through NEPA documentation.	Ongoing - one SRMA per fiscal year.	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
	Modify or construct facilities at developed recreation sites; incorporate RMP objectives through NEPA documentation.	Ongoing.	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
	Apply ORV designations; document through implementation plan; apply RMP objectives through NEPA documentation.	Within 1 year after approval of RMP.	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
	Designate areas for special uses. ^c	Immediate upon approval of RMP.	Ensure that plats are correct.
	Prepare management plans for special designation areas; incorporate RMP objectives through NEPA documentation.	Within 1 year after approval of RMP.	Ensure compliance with management plans; watch for cumulative impacts; determine if special values are properly protected; determine if designation remains valid.
	Apply visual resources management classes in designated areas.	Immediate upon approval of RMP.	Watch for cumulative impacts; see if RMP objectives are met; determine if objectives are valid.
4341 Soil, Water, and Air Management	Apply RMP stipulations and special conditions to watershed control and air quality related projects through NEPA documentation.	Ongoing.	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
4342 Hazardous Waste Management	Reserved. ^b	Reserved.	Reserved.

TABLE AB-1 (Concluded)

Program	Implementation	Schedule	Monitoring Objectives
4351 Habitat Management	Apply RMP stipulations and special conditions to habitat management projects.	Ongoing.	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
	Implement HMPs; modify as necessary to meet RMP objectives; apply RMP stipulations and special conditions through NEPA documentation.	Ongoing	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
	Designate areas for special uses. ^c	Immediate upon approval of RMP.	Ensure that plats are correct.
	Prepare management plans for special designation areas; incorporate RMP objectives through NEPA documentation.	Within 1 year after approval of RMP.	Ensure compliance with management plans; watch for cumulative impacts; determine if special values are properly protected; determine if designation remains valid.
4352 Endangered Species Management	Apply legal requirements; apply RMP stipulations and special conditions through NEPA documentation.	Ongoing.	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.
4360 Fire Management	Prepare fire management plan to meet RMP objectives; apply RMP stipulations and special conditions through NEPA documentation.	Within 1 year after approval of RMP.	Ensure compliance with NEPA; ^a determine if RMP objectives are valid.

^aCompliance with NEPA requires compliance with EA, EIS, or categorical exclusion stipulations; watching for cumulative impacts; mitigation of projected impacts; determining whether RMP stipulations and special conditions are necessary to meet objectives; analyzing impacts to operators; and assessing the resource condition.

^bImplementation and monitoring depends on planning documentation that would be prepared independently of the RMP and cannot be anticipated at this time.

^cDesignation of special use areas under this management program depends on the alternative selected and may not apply to the final RMP.

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APPENDIX C — LIST OF APPLICABLE LAWS

OVERVIEW

This appendix lists the federal laws that either are referenced in this document or apply to management of public lands and resources in the San Juan Resource Area. The laws are arranged in table AC-1 by subject, as codified in the titles of the United States Code (U.S.C.) of 1982. The U.S.C. section referenced is that believed to be most applicable, but may not

include all sections of the statute. Common names of laws are given in parentheses. This list is provided for the convenience of the reader, and is not meant to include all laws pertaining to management of public lands and resources, or to imply that laws or amendments not listed are not relevant to public lands management.

TABLE AC-1

Laws Applicable to Management of Public Lands and Resources

<u>Name</u>	<u>Codification</u>	<u>Statute</u>	<u>Public Law</u>
<u>Title 16 - Conservation</u>			
The Act of August 25, 1916 (The National Park Service Organic Act)	16 U.S.C. 1 et seq.	39 Stat. 535	Aug. 25, 1916, P.L. 235, ch. 408
An Act to Establish Canyonlands National Park (September 12, 1964)	16 U.S.C. 271	78 Stat. 937	P.L. 88-590
The Act of June 8, 1906 (Antiquities Act of 1906)	16 U.S.C. 431 et seq.	34 Stat. 225	June 8, 1906, P.L. 209, ch. 3060
The Land and Water Conservation Fund Act of 1965 (Sept. 3, 1964)	16 U.S.C. 4601-4 et seq.	78 Stat. 897	P.L. 88-578
An Act to Establish the Glen Canyon National Recreation Area in the States of Arizona and Utah (Oct. 27, 1972)	16 U.S.C. 460 dd	86 Stat. 1311	P.L. 92-593
The Federal Water Projects Recreation Act (July 9, 1965)	16 U.S.C. 4601-12 et seq.	79 Stat. 213	P.L. 89-72
The Water Resources Development Act of 1974 (March 7, 1974)	16 U.S.C. 4601-13 et seq.	88 Stat. 16	P.L. 93-251
The Act of Aug. 21, 1935 (Historic Sites, Buildings, and Antiquities Act)	16 U.S.C. 461 et seq.	49 Stat. 666	Aug. 21, 1935, P.L. 292 ch. 593
The Reservoir Salvage Act of 1960	16 U.S.C. 469 et seq.	74 Stat. 220	P.L. 86-523
The Reservoir Salvage Act Amendment of May 24, 1974 (Archaeological and Historic Preservation Act of 1974)	16 U.S.C. 469 et seq.	88 Stat. 174	P.L. 93-291
The National Historic Preservation Act (October 15, 1966), as amended	16 U.S.C. 470 et seq.	80 Stat. 915	P.L. 89-665
The Archaeological Resources Protection Act of 1979 (Oct. 31, 1979)	16 U.S.C. 470aa et seq.	93 Stat. 721	P.L. 96-95
The Multiple-Use Sustained-Yield Act of 1960 (June 12, 1960) (National Forest lands)	16 U.S.C. 528 et seq.	74 Stat. 215	P.L. 86-517
The Soil Conservation and Domestic Allotment Act of 1935, as amended	16 U.S.C. 590a et seq.	49 Stat 164	April 27, 1935, P.L. 46, ch. 85
The Act of September 28, 1962	16 U.S.C. 611	76 Stat. 652	P.L. 87-713

The Fish and Wildlife Coordination Act (March 10, 1934), as amended	16 U.S.C. 661 et seq.	48 Stat. 401	March 10, 1934, P.L. 121, ch. 55
The Fish and Wildlife Coordination Act Amendment of Aug. 12, 1958	16 U.S.C. 661 et seq.	72 Stat. 563	P.L. 85-624
The Act of June 8, 1940 (Bald Eagle Protection Act), as amended	16 U.S.C. 668 et seq.	54 Stat. 250	June 8, 1940, P.L. 567, ch. 278
The Act of September 15, 1960 (The Sikes Act), as amended	16 U.S.C. 670a	74 Stat. 1052	P.L. 86-797
The Migratory Bird Treaty Act (July 3, 1918), as amended	16 U.S.C. 703	40 Stat. 756	July 3, 1918, P.L. 186, ch. 128
The Migratory Bird Treaty Act Amendments of June 20, 1936	16 U.S.C. 703 et seq.	49 Stat. 1556	June 20, 1936, P.L. 728, ch. 634
The Watershed Protection and Flood Prevention Act (Aug. 4, 1954), as amended	16 U.S.C. 1001 et seq.	68 Stat. 666	Aug. 4, 1954, P.L. 566, ch. 656
The Wilderness Act (Sept. 3, 1964)	16 U.S.C. 1131 et seq.	78 Stat 890	P.L. 88-577
The National Trails System Act (Oct. 2, 1968), as amended	16 U.S.C. 1241 et seq.	82 Stat. 919	P.L. 90-543
The Wild and Scenic Rivers Act (Oct. 2, 1968), as amended	16 U.S.C. 1271 et seq.	82 Stat. 906	P.L. 90-542
The Wild and Scenic Rivers Act Amendment of Jan. 3, 1975	16 U.S.C. 1276	88 Stat 2094	P.L. 93-621
The Act of Dec. 15, 1971 (The Wild Free-Roaming Horses and Burros Act)	16 U.S.C. 1331 et seq.	85 Stat. 649	P.L. 92-195
The Endangered Species Act of 1973 (Dec. 28, 1973), as amended	16 U.S.C. 1531 et seq.	87 Stat. 884	P.L. 93-205
The Endangered Species Act Amendment of Dec. 28, 1979	16 U.S.C. 1531 et seq.	93 Stat 1225	P.L. 96-159
The Soil and Water Resources Conservation Act of 1977 (Nov. 18, 1977)	16 U.S.C. 2001 et seq.	91 Stat. 1407 et seq.	P.L. 95-192
<u>Title 25 - Indians</u>			
The Act of Feb. 8, 1887 (General Allotment Act), as amended	25 U.S.C. 331 et seq.	24 Stat. 388	Feb. 8, 1887, ch. 119
The Indian Mineral Development Act (December 22, 1982)	25 U.S.C. 2101 et seq.	96 Stat. 1938	P.L. 97-382
The Act of Sept. 2, 1958 (provides for the exchange of mineral and other rights between the U.S. and the Navajo Indian tribe)	(not codified in U.S.C.)	72 Stat. 1686	

TABLE AC-1 (Continued)

<u>Name</u>	<u>Codification</u>	<u>Statute</u>	<u>Public Law</u>
<u>Title 29 - Labor</u>			
The Act of Jan. 12, 1983 (Federal Oil and Gas Royalty Management Act of 1982)	29 U.S.C. 1701 et seq.	96 Stat. 2447	P.L. 97-451
<u>Title 30 - Mineral Lands and Mining</u>			
The Act of May 10, 1872 (The General Mining Law of 1872)	30 U.S.C. 22 et seq.	R.S. 2319 et seq.	May 10, 1872, ch. 152
The Act of Feb. 25, 1920 (The Mineral Lands Leasing Act), as amended	30 U.S.C. 181	41 Stat. 437	Feb. 25, 1920, P.L. 146, ch. 85
The Act of Aug. 4, 1976 (Federal Coal Leasing Amendment Act)	30 U.S.C. 201	90 Stat 1083	P.L. 94-377
The Combined Hydrocarbon Leasing Act of 1981, as amended (Nov. 16, 1981)	30 U.S.C. 226; 241	95 Stat. 1070	P.L. 97-78
The Act of Feb. 7, 1927 (The Potash Leasing Act)	30 U.S.C. 281 et seq.	44 Stat. 1057	Feb. 7, 1927, P.L. 579, ch. 66
The Mineral Leasing Act for Acquired Lands of 1947, as amended	30 U.S.C. 351 et seq.	61 Stat. 913	Aug. 7, 1947, P.L. 382, ch. 513
The Act of July 31, 1947 (The Material Sale Act)	30 U.S.C. 601 et seq.	61 Stat. 681	July 31, 1947, P.L. 291, ch. 406
The Act of July 23, 1955 (The Multiple Surface Use Act of 1955)	30 U.S.C. 601 et seq.	69 Stat. 367	July 23, 1955, P.L. 167, ch. 375
The Act of Aug. 11, 1955 (The Mining Claims Rights Restoration Act of 1955)	30 U.S.C. 621	69 Stat. 681	Aug. 11, 1955, P.L. 359, ch. 797
The Geothermal Steam Act of 1970	30 U.S.C. 1001 et seq.	84 Stat. 1566	P.L. 91-581
The Act of Aug. 3, 1977 (Surface Mining Control and Reclamation Act of 1977)	30 U.S.C. 1201 et seq.	91 Stat. 447	P.L. 95-87

Title 31 - Money and Finance

The Act of June 30, 1932 (The Economy Act of 1932) (substantially restated in P.L. 97-258, Sept. 13, 1982, 96 Stat. 933) 31 U.S.C. 1535 (formerly 31 U.S.C. 686) 44 Stat. 417 P.L. 72-211

Federal Grant and Cooperative Agreement Act of 1977 (Feb. 3, 1978) 31 U.S.C. 6301 et seq. 92 Stat. 3 P.L. 95-224

Title 33 - Navigation and Navigable Waters

The Federal Water Pollution Control Act Amendments of Oct. 18, 1972 33 U.S.C. 1151 et seq. 86 Stat. 816 P.L. 92-500

The Federal Water Pollution Control Act (Clean Water Act) (June 30, 1948), as amended 33 U.S.C. 1251 et seq. 86 Stat. 896 (62 Stat. 1155) (P.L. 92-500) June 30, 1948, P.L. 845, ch. 758

The Clean Water Act of 1977 (Dec. 27, 1977), as amended 33 U.S.C. 1251 et seq. 91 Stat. 1566 P.L. 95-217

Title 42 - The Public Health and Welfare

The Safe Drinking Water Act (Dec. 16, 1974), as amended 42 U.S.C. 300f et seq. 88 Stat. 1660 P.L. 93-523

The Safe Drinking Water Act Amendments of 1977 (Nov. 16, 1977) 42 U.S.C. 300f et seq. 91 Stat. 1397 P.L. 95-190

The Water Resources Research Act of 1964 (July 17, 1964) 42 U.S.C. 1961 et seq. 78 Stat. 329 P.L. 88-379

The Water Resources Planning Act (July 22, 1965) 42 U.S.C. 1961 et seq. 79 Stat. 244 P.L. 89-80

The Water Resources Development Act of 1974 (Mar. 16, 1974) 42 U.S.C. 1961 et seq. 88 Stat. 49 P.L. 93-251

The Water Resources Development Act of 1976 (Oct. 22, 1976) 42 U.S.C. 1962d-5d et seq. 90 Stat. 2917 P.L. 94-587

The American Indian Religious Freedom Act of 1978 (Aug. 11, 1978) 42 U.S.C. 1996 et seq. 92 Stat. 469 P.L. 95-341

The National Environmental Policy Act of 1969 (Jan. 1, 1970), as amended 42 U.S.C. 4321 et seq. 83 Stat. 852 P.L. 91-190

The Noise Control Act of 1972 (Oct. 27, 1972), as amended 42 U.S.C. 4901 et seq. 86 Stat. 1234 P.L. 92-574

The Solid Waste Disposal Act (Oct. 20, 1965), as amended 42 U.S.C. 6901 et seq. 79 Stat. 997 P.L. 89-272 (formerly 42 U.S.C. 3251 et seq.)

TABLE AC-1 (Concluded)

<u>Name</u>	<u>Codification</u>	<u>Statute</u>	<u>Public Law</u>
<u>Title 42 - The Public Health and Welfare (Concluded)</u>			
The Clean Air Act (July 14, 1955)	42 U.S.C. 7401 et seq.	77 Stat. 392	July 14, 1955, P.L. 159, ch. 360 (P.L. 88-206)
The Clean Air Act Amendments of Dec. 17, 1963	42 U.S.C. 7401 et seq.	77 Stat. 392	P.L. 88-206
The Clean Air Act Amendments of 1970 (Dec. 31, 1970)	42 U.S.C. 7401 et seq.	84 Stat. 1676	P.L. 91-604
The Clean Air Act Amendments of Aug. 7, 1977	42 U.S.C. 7401 et seq.	91 Stat. 685	P.L. 95-95
The Nuclear Waste Policy Act of 1972 (Jan. 7, 1983)	42 U.S.C. 10101 et seq.	96 Stat 2201	P.L. 97-425
<u>Title 43 - Public Lands</u>			
The Taylor Grazing Act	43 U.S.C. 315 et seq.	48 Stat. 1269	June 28, 1934, P.L. 482, ch. 865
The Act of Mar. 3, 1877 (The Desert Land Entry Act), as amended	43 U.S.C. 321 et seq.	19 Stat. 377	Mar. 3, 1877, ch. 107
The Act of June 17, 1902 (The Reclamation Act), as amended	43 U.S.C. 371 et seq.	32 Stat. 388	June 17, 1902, P.L. 161, ch. 1093
The Upper Colorado River Basin Compact	43 U.S.C. 6171	63 Stat. 31	Apr. 6, 1949, P.L. 37, ch. 48
The Act of April 11, 1956 (Colorado River Storage Project Act)	43 U.S.C. 620 et seq.	70 Stat. 105	Apr. 11, 1956, P.L. 485, ch. 203
The Appropriations Act of 1952, McCarran Amendment	43 U.S.C. 666	66 Stat. 560	July 10, 1952, P.L. 495, ch. 651
The Act of June 1, 1938 (Small Tract Act of 1938), as amended	43 U.S.C. 682a	52 Stat. 609	June 1, 1938, P.L. 577, ch. 317
The Act of June 14, 1926 (Recreation and Public Purposes Act), as amended	43 U.S.C. 869 et seq.	44 Stat. 741	June 14, 1926, P.L. 386, ch. 578
The Act of July 26, 1866	43 U.S.C. 932	R.S. 2477	July 26, 1866, ch. 262
The Act of March 4, 1911 (repealed Oct. 21, 1976 by FLPMA, 43 U.S.C. 1701, 90 Stat. 2793, P.L. 94-579)	43 U.S.C. 961	36 Stat 1253	March 4, 1911, P.L. 478, ch. 238
The Classification and Multiple Use Act of Sept. 19, 1964 (terminated)	43 U.S.C. 1411 et seq.	78 Stat. 986	P.L. 88-607

The Act of June 24, 1974 (Colorado River Basin Salinity Control Act)	43 U.S.C. 1571 et seq.	88 Stat. 266	P.L. 93-320
The Federal Land Policy and Management Act (Oct. 21, 1976)	43 U.S.C. 1701 et seq.	90 Stat. 2743	P.L. 94-579
The Public Rangelands Improvement Act of 1978 (Oct. 25, 1978)	43 U.S.C. 1901 et seq.	92 Stat. 1803	P.L. 95-514
<u>Title 49 - Transportation</u>			
The Department of Transportation Act of 1966 (October 15, 1966), as amended (substantially repealed by P.L. 97-449, January 12, 1983, 90 Stat. 2413)	49 U.S.C. 1653	80 Stat. 931	P.L. 89-670
The Act of May 24, 1928 (as amended) (The Airport Leasing Act)	49 U.S.C. App. 211 et seq.	45 Stat. 728	May 24, 1928 P.L. 499

EXHIBIT A-1

Item	Description	Quantity	Unit Price	Total
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APPENDIX D — GRAZING ALLOTMENT CATEGORY CRITERIA

OVERVIEW

This appendix presents the criteria used in determining grazing allotment categories. It should be noted that an allotment may or may not meet all the criteria in the category to which it is assigned.

MAINTAIN (M) CATEGORY CRITERIA

- Present range condition is satisfactory.
- Resource production potential is moderate to high, and present production is near potential.
- No serious resource use conflicts exist.
- Opportunities may exist for positive economic return from public investments.
- Present management appears satisfactory.

IMPROVE (I) CATEGORY CRITERIA

- Present range condition is unsatisfactory.
- Resource production potential is moderate to high, and present production is at low to moderate levels.

- Serious resource use conflicts exist.
- Opportunities exist for positive economic return from public investments.
- Present management appears unsatisfactory.

CUSTODIAL (C) CATEGORY CRITERIA

- Present range condition is not a factor.
- Resource production potential is low, and present production is near potential.
- Limited resource use conflicts may exist.
- Opportunities for positive economic return on public investment do not exist or are constrained by technological or economic factors.
- Present management appears satisfactory or is the only logical practice under existing resource conditions.

APPENDIX D - GRADING ALLOTMENT CATEGORY CRITERIA

CRITERIA	POINTS
<ul style="list-style-type: none"> - [Illegible text] - [Illegible text] 	<ul style="list-style-type: none"> - [Illegible text] - [Illegible text]
<u>CRITERIA 11: HISTORY OF DATA</u>	<u>CRITERIA 11: HISTORY OF DATA</u>
<ul style="list-style-type: none"> - [Illegible text] - [Illegible text] 	<ul style="list-style-type: none"> - [Illegible text] - [Illegible text]
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<u>CRITERIA 12: CURRENT DATA</u>	<u>CRITERIA 12: CURRENT DATA</u>
<ul style="list-style-type: none"> - [Illegible text] - [Illegible text] 	<ul style="list-style-type: none"> - [Illegible text] - [Illegible text]
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APPENDIX E — CONDITIONS AND IMPLEMENTATION FOR ORV USE CATEGORIES

OVERVIEW

The purpose of this appendix is to provide information about Bureau of Land Management (BLM) policy and procedures for off-road vehicle (ORV) designations. Excerpts from the BLM 8341 and 8342 manuals explain ORV designations, procedures, implementation plans, designation orders, public involvement, and emergency closures. The BLM manuals give a more complete discussion.

OBJECTIVES

All public lands must be designated as open, limited, or closed to ORV use to meet public demand or needs, to protect resources and the safety of public land users, and to minimize conflicts among the various public land users. Additionally, existing ORV designations are evaluated and revised, if necessary, whenever existing management framework plans (MFPs) are amended or when resource management plans (RMPs) are prepared, revised, or amended.

POLICY

ORV designations are completed as an integral part of the normal BLM planning system unless problems or conflicts preclude adhering to the planning schedules.

Notices of ORV designations are published in the Federal Register within 1 year after completion of decisions allocating ORV use.

Designations apply to all ORVs as defined by 43 CFR 8340.0-5(a) regardless of how the vehicles are being used. Only those vehicles excluded from that definition are allowed in closed areas or limited areas where ORV use is prohibited by

designation order. Necessary nonemergency use associated with BLM licenses, leases, permits, or sales may be authorized as an exclusion from that definition [see 43 CFR 8340.0-5(a)(3)] only if feasible alternatives have been exhausted and the use is compatible with established resource management objectives. Reasonable restrictions on the types of vehicles, time of use, routes, or amount of use may be required in the authorization. Requests for mineral exploration or development access under the 1872 mining law are allowed but are subject to 43 CFR 3802 and 3809.

Open designations are used for intensive ORV use areas where there are no special restrictions or areas where no compelling resource protection needs, user conflicts, or public safety issues warrant limiting cross-country travel.

Areas or trails are designated closed if closure to all vehicular use is necessary to protect resources, promote visitor safety, or reduce use conflicts.

The limited designation is used where ORV use must be restricted to meet specific resource management objectives. Examples of limitations include: number or types of vehicles; time or season of use; permitted or licensed use only; use limited to existing roads and trails; use limited to designated roads and trails; or other limitations necessary to meet resource management objectives (including certain competitive or intensive use areas which have special limitations).

Brochures (with maps) and other public educational tools (such as news releases, articles, talks to groups, environmental education, etc.) inform users of ORV opportunities and restrictions; signs are used to supplement these

tools. Signs should be restricted to marking specific problem areas and major entry points. Not all closed areas need to be signed, only those areas where specific problems can be solved through the use of signing.

DESIGNATION METHODS

Table AE-1 lists the steps in making ORV designations through the BLM planning system. The necessary resource disciplines must be represented to provide an interdisciplinary approach to ORV allocations (see 43 CFR 1601.3).

IMPLEMENTATION PLAN GUIDELINES

The implementation plan is an internal BLM document providing guidance to district and resource area managers on how to implement designation decisions. It defines and documents a specific course of action necessary to reach ORV designation decisions.

By definition, the implementation plan is brief and more concise than an activity plan. It identifies only those actions that are essential to implement the ORV designation decisions. As activity plans are developed, the information from implementation plans is incorporated into them. However, the ORV implementation plans remain as separate entities to provide continuity for management programming, budgeting, etc.

A copy is maintained at the district and resource area offices. Machine copies may be made as necessary to support program and budget requests, etc., and to respond to public requests.

The plan should contain the following information:

a map and narrative clearly showing the area's designations, the reasons for the designations, and any additional information needed to ensure public knowledge and understanding of the reasons for the designations; (Design, scale, and format of maps are optional, but the 1:100,000 scale base

map series should be utilized wherever possible.)

the brochures and maps needed to notify the public of the ORV designations. (The need for brochures and maps should be identified at the inventory data and information collection step in the standard process and at the problem identification step in the interim process, so that appropriate actions can be taken to have the basic brochure and map materials developed by this point in the process.)

the strategy for boundary, general information, and directional signing and the number, type, and location of signs; (Signs must be provided at intersections and access points as needed.)

the number, type, and location of physical constraints, such as barriers, fences, gates, ditches, etc.;

public notices needed to inform the public about details of designations; (Such announcements may include news releases, spot announcements on radio or television, newsletters, letters to key interest groups, and public meetings.)

an installation schedule for signs and physical constraints;

methods and schedules for supervising ORV use, such as field patrols, aerial reconnaissance, volunteer monitoring, or cooperative agreements;

the resources, methods, and schedules for conducting environmental monitoring;

field procedures and arrangements needed to enforce compliance with ORV designation decisions including cooperative agreements, user group assistance, trespass notices, citations, arrests, or other actions;

maintenance standards for signs and physical constraints; and

Off-Road Vehicle Use Designations

Planning Step	Action
Identification of Issues	Define the nature and extent of problems relating to ORV use.
Development of Planning Criteria	Where ORV use is an issue, the planning criteria must refer to the protection, user, safety, and conflict resolution requirements.
Inventory Data and Information Collection	Assemble data necessary to determine protection, user, safety, and conflict resolution requirements. New inventory data are collected only when existing data are insufficient to resolve significant issues.
Analysis of the Management Situation	Utilizing the designation criteria for (1) resource protection (cultural and natural resources, wildlife, endangered species, and wilderness), (2) user access requirements (operational needs, state and private land), and (3) public safety (hazards and safety factors), analyze the capability of the public land resources to sustain ORV use.
Formulation of Alternatives	Develop proposed ORV allocation and include in alternative RMPs.
Selection of Preferred Alternative	ORV allocations are addressed as part of the draft RMP/EIS.
Selection of Resource Management Plan	Decide on the resource allocation for ORV use.
Implementation Plan	Develop an implementation plan to define and document a specific course of action needed to implement the ORV allocation decision.
Predesignation Actions	Publish brochures and maps and prepare press release and other informational materials.
Designation	Complete the designation order and publish in the <u>Federal Register</u> .
Post Designation	Distribute brochures and maps. Phase in other implementation actions as defined in the implementation plan if these are within funding and workforce capability.

estimates of all costs, work months, and personnel needed to meet implementation requirements.

DESIGNATION ORDERS

All designations must be published in the Federal Register as final notices, except where extreme public controversy is anticipated.

Normally all public review must be completed prior to publishing the designation order in the Federal Register. However, if extreme public controversy is anticipated, the designation order may be published as a proposed notice, allowing for a formal public review period.

APPEALS

Standard BLM procedures for administrative appeals apply to designation decisions (see 43 CFR Part 4). The procedure for appeals should be described in each designation order. There is a 30-day appeal period beginning the day the order is published when appeals can be filed on designations that have been published as final decisions. The designations become final at the end of the 30-day period if no appeals have been filed.

EMERGENCY LIMITATIONS OR CLOSURES

Limitations of use or closure of areas and trails on public lands to ORV use under the authority of 43 CFR 8341.2 are not ORV designations.

Whenever the authorized officer determines that ORV use will cause or is causing considerable adverse effects on resources (soil, vegetation, wildlife, wildlife habitat, cultural, historic, scenic, recreation, or other resources), the area must be immediately closed to the type of use causing the adverse effects (see 43 CFR 8341.2). Emergency limitations or closures are not used if there is sufficient time to complete standard or interim designations. They must remain in force only until one of those designations can be made or until the adverse effects are eliminated and measures to prevent their recurrence have been implemented (whichever occurs first). The steps in emergency closure are listed in table AE-2.

TABLE AE-2

Steps in the Emergency Closure Process

Step	Action	Responsibility
Problem Identification	Identify and briefly document the problem that is causing considerable adverse effect.	As assigned.
Analysis	Briefly document the adverse effects.	As assigned.
Decision	Complete and publish the emergency order in the <u>Federal Register</u> .	District Manager
Implementation	Post the affected area and notify the affected publics at the earliest date possible, using the most effective means available.	As assigned

NOTE: The actions noted above should be completed in a very short time frame, a matter of hours, if necessary.

A record of the problem identification, analysis, closure order, and action taken to inform the public is maintained in the district office and is available for public review. The closure or limitation is entered in the District Designation Order register.

APPENDIX F — RECREATION OPPORTUNITY SPECTRUM CLASSES

OVERVIEW

The purpose of this appendix is to describe the opportunities available in each of the six recreation opportunity spectrum (ROS) classes.

Table AF-1 describes each ROS class in terms of experience opportunities, setting opportunities, and activity opportunities. These overview statements do not describe each class in detail,

but rather provide a point of departure from which the planner or manager can develop more precise prescriptions for each class based on specific situations encountered in field operations. The listing of activity opportunities is provided for illustration only and is not meant to include every activity possible in the area.

TABLE AF-1

Recreation Opportunity Spectrum Class Descriptions

Opportunity Class	Experience Opportunity	Setting Opportunity	Activity Opportunity
Primitive	<p>Opportunity for isolation from the sights and sounds of man, to feel a part of the natural environment, to have a high degree of challenge and risk, and to use outdoor skills.</p>	<p>Area is characterized by essentially unmodified natural environment of fairly large size. Concentration of users is very low and evidence of other users is minimal. The area is managed to be essentially free from evidence of man-induced restrictions and controls. Only facilities essential for resource protection are used. No facilities for comfort or convenience of the user are provided. Spacing of groups is informal and dispersed to minimize contacts between groups. Motorized use within the area is not permitted.</p>	<p>Camping, hiking, climbing, enjoying scenery or natural features, nature study, photography, spelunking, hunting (big game, small game, upland birds, waterfowl) ski touring and snowshoeing, swimming, diving (skin and scuba), fishing, canoeing, sailing, and river running (non-motorized craft).</p>
Semiprimitive Nonmotorized	<p>Some opportunity for isolation from the sights and sounds of man, but not as important as for primitive opportunities. Opportunity to have high degree of interaction with the natural environment, to have moderate challenge and risk, and to use outdoor skills.</p>	<p>Area is characterized by a predominantly unmodified natural environment of moderate to large size. Concentration of users is low, but there is often evidence of other area users. Onsite controls and restrictions may be present, but are subtle. Facilities are provided for the protection of resource values and the safety of users only. Spacing of groups may be formalized to disperse use and limit contacts between groups. Motorized use is not permitted.</p>	<p>Camping, hiking, climbing, enjoying scenery or natural features, nature study, photography, spelunking, hunting (big game, small game, upland birds, waterfowl), ski touring and snowshoeing, swimming, diving (skin and scuba), fishing, canoeing, sailing, and river running (nonmotorized craft).</p>

Semiprimitive Motorized	Some opportunity for isolation from the sights and sounds of man, but not as important as for primitive opportunities. Opportunity to have high degree of interaction with the natural environment, to have moderate challenge and risk, and to use outdoor skills. Explicit opportunity to use motorized equipment while in the area.	Same as above, except that motorized use is permitted.	Same as the above, plus the following: ORV use (4-wheel drive, dune buggy, dirt bike, snowmobile), power boating.
Roaded Natural	About equal opportunities for affiliation with other user groups and for isolation from sights and sounds of man. Opportunity to have a high degree of interaction with the natural environment. Challenge and risk opportunities are not very important, except in specific challenging activities. Practice of outdoor skills may be important. Opportunities for both motorized and nonmotorized recreation are present.	Area is characterized by a generally natural environment with moderate evidence of the sights and sounds of man. Resource modification and utilization practices are evident, but harmonize with the natural environment. Concentration of users is low to moderate with facilities sometimes provided for group activities. Onsite controls and restrictions offer a sense of security. Rustic facilities are provided for user convenience, as well as for safety and resource protection. Conventional motorized use is provided for in construction standards and design of facilities.	All activities listed previously, plus the following: picnicking, rock collecting, wood gathering, auto touring, downhill skiing, snowplay, ice skating, water skiing and other water sports, hang gliding, interpretive use, rustic resorts, and organized camps.
Rural	Opportunities to experience affiliation with individuals and groups are prevalent, as is the convenience of sites and opportunities. These factors are generally more important than the natural setting. Opportunities for wildland challenges, risk taking, and testing of outdoor skills are unimportant, except in those activities involving challenge and risk.	Area is characterized by substantially modified natural environment. Resource modification and utilization practices are obvious. Sights and sounds of man are readily evident, and the concentration of users is often moderate to high. A considerable number of facilities are designed for use by a large number of people. Facilities are often provided for specific activities. Developed sites, roads and trails, are designed for moderate to high use. Moderate densities are provided far away from developed sites. Facilities for intensive motorized use are available.	All activities listed previously, plus the following: competitive games, spectator sports, bicycling, jogging, outdoor concerts, and modern resorts.

TABLE AF-1 (Continued)

Opportunity Class	Experience Opportunity	Setting Opportunity	Activity Opportunity
Modern Urban	<p>Opportunities to experience affiliation with individuals and groups are prevalent, as is the convenience of sites and opportunities. Experiencing the natural environment and the use of outdoor skills are largely unimportant.</p>	<p>Area is characterized by a highly modified environment, although the background may have natural elements. Vegetation is often exotic and manicured. Soil may be protected by surfacing. Sights and sounds of man, onsite, predominate. Large numbers of users can be expected. Modern facilities are provided for the use and convenience of large numbers of people. Controls and restrictions are obvious and numerous. Facilities for high intensity motor use and parking are present, with forms of mass transit often available.</p>	<p>All activities listed previously.</p>

APPENDIX G — VISUAL RESOURCE MANAGEMENT CLASSES

OVERVIEW

The purpose of this appendix is to describe the process by which visual resources are classified and the visual impacts of proposed projects are assessed. The lands within the San Juan Resource Area (SJRA) have been inventoried and placed into visual resource management (VRM) classes. This appendix also describes how the classes are assigned.

ESTABLISHING VISUAL RESOURCE MANAGEMENT CLASSES

The VRM classification process includes (1) outlining and numerical evaluation of scenic quality; (2) outlining of visual sensitivity levels; (3) delineating distance zones; and (4) assigning VRM classes.

SCENIC QUALITY

The first step is accomplished by outlining similar scenery on a topographic map. Numerical values are then given to the area's key factors (landform, color, water, vegetation, uniqueness, and intrusions). The total of these values determines whether the area is a class A, B, or C scenery unit.

Class A scenery combines the most outstanding characteristics of each rating factor. Class B scenery combines some outstanding features and some that are fairly common to the physiographic region. Class C scenery combines features that are fairly common to the physiographic region.

VISUAL SENSITIVITY LEVELS

Sensitivity levels indicate the relative degree of user interest in visual resources and concern for changes in the existing landscape character. This section is designed to bring input

from area and district management to the weighing of the two sensitivity criteria: (1) vehicular and pedestrian use volume and (2) expressed user attitudes toward change. These criteria are evaluated from a matrix, and a final sensitivity rating of high, medium, or low is given. The sensitivity rating will figure into the final VRM classification.

DISTANCE ZONES

Three distance zones are outlined on topographic maps: foreground/ middleground, background, and seldom seen. The foreground/middleground zone is a distance of from zero to 3 to 5 miles away, where activities can be viewed in detail. The background is the remaining area up to 15 miles distant, and seldom seen is that area beyond 15 miles or not seen at all from any corridor of travel.

VRM CLASSES

After classification as to scenic quality, visual sensitivity, and distance zones, areas are assigned to one of five management classes. These management classes, designed to maintain or enhance visual quality, describe the allowable degrees of change to the basic landscape elements.

ANALYZING VISUAL IMPACTS

For activities proposed on public lands, impacts are evaluated with the visual resource contrast rating system. This system is a method of evaluating the visual contrast of a proposed activity to the existing landscape character.

The landscape is separated into its major features (land and water surface, vegetation, and structures), and the degree of change that

would occur in contrast of form, line, color and texture of each feature is predicted. This assessment indicates the amount of contrast that would result from a proposed activity (the severity of impact) and serves as a guide in determining what would be required to reduce the contrast to the point where it will meet the VRM class's requirements for the area. Objectives for the VRM classes are listed below:

- I One element should not exceed a weak degree of contrast (1), and the total for any feature may not exceed 10.
- II The degree of contrast for any one element should not exceed a moderate value (2), and the total contrast rating for any feature may not exceed 10.

III The degree of contrast for any one element should not exceed a moderate value (2), and the total contrast rating for any feature may not exceed 16.

IV The total contrast rating for any feature should not exceed 20.

V This is an interim classification for rehabilitation or enhancement.

VRM classes established for the SJRA were shown in figure 3-18, and their approximate acreages in table 3-14.

APPENDIX H — PRELIMINARY AND POTENTIAL SPECIAL MANAGEMENT DESIGNATIONS

OVERVIEW

The potential for designating areas of critical environmental concern (ACECs) was evaluated under each management program in the management situation analysis (MSA), as part of the resource capability analysis. Areas identified as preliminary potential ACECs are listed by management program in table AH-1. Those accepted by the District Manager have been carried forward into this resource management plan/environmental impact statement (RMP/EIS), and are analyzed in at least one alternative, in accordance with Bureau of Land Management (BLM) Manual 1617.82. The purpose of this appendix is to explain why the preliminary potential ACECs identified in the MSA either were or were not carried forward.

Two additional ACECs, not identified in the MSA, are analyzed in the RMP/EIS: an area of 2,000 acres adjacent to Hovenweep National Monument (NM), nominated by the National Park Service (NPS) for ACEC designation; and 40 acres at Cajon Pond, identified by BLM management as an area that could require special protection.

Both the potential ACECs analyzed in the RMP/EIS and the preliminary potential ACECs identified in the MSA but not carried forward are discussed below by management program.

4322 GRAZING MANAGEMENT

BRIDGER JACK MESA (5,290 acres)

The Nature Conservancy and the BLM have identified Bridger Jack Mesa as having potential for designation as an ACEC, an outstanding natural area (ONA), or a research natural area (RNA). The Nature Conservancy suggested alternative areas of 5,290 acres (the entire

mesa top, figure 2-4) and 1,760 acres (the southern end of the mesa top, figure 2-3).

In the early 1970s the mesa top was identified as having potential for designation as an ONA, but it was never designated. The mesa top (figure 1-1) was designated in 1980 as the Bridger Jack Wilderness Study Area (WSA) (UT-060-167).

The mesa top is believed to meet the criteria for special management designation because of its isolated, near-relict plant community. It is relevant because it offers the opportunity to study the recovery of pinyon-juniper woodland and sagebrush-grass communities from livestock grazing. These vegetative communities are important for livestock use and wildlife habitat throughout the Colorado Plateau.

The entire mesa top is public land except for approximately 420 acres of state land. The cliffs surrounding the mesa top form a natural boundary. The partial area designation would include only the lands southwest of the state section.

In this RMP/EIS, the area is considered for special management in four of the alternatives. In alternative B, the smaller proposal (1,760 acres) is analyzed as an RNA. The entire mesa top is analyzed as an ACEC in alternative C, and as an RNA in alternatives D and E. It is overlapped by the North Abajo potential ACEC discussed under Cultural Resources Management, below. The area also overlaps a preliminary potential ACEC identified in the MSA to protect hazardous watershed conditions, but not carried forward into the EIS as a potential ACEC. It is discussed under Soil, Water and Air, below.

TABLE AH-1

Preliminary Potential ACECs Identified in the MSA

Resource Management Program	Preliminary Potential ACEC			Considered as ACEC in RMP/EIS
	Name	Acres	Resource Protected	
4322 Grazing Management	Bridger Jack Mesa	1,760	Near-relict plant community	No
		5,290	Near-relict plant community	Yes
4331 Cultural Resources Management	Lavender Mesa	640	Relict plant community	Yes
	Alkali Ridge	170,320	Archaeological values	Yes
	North Abajo	65,450	Archaeological values	Yes
	Grand Gulch	4,240	Archaeologic District	Yes
	Hovenweep ^a	2,000	Archaeological values	Yes
	(See other resource programs)			
4332 Wilderness Management	Dark Canyon	62,040	Primitive Area - natural values associated with primitive recreation	Yes
4333 Recreation/Visual Resources Management	Grand Gulch	55,000	Primitive Area and adjacent ROS P class area - natural values associated with primitive recreation	Yes
	Lockhart Basin	56,660	Scenic values	Yes
4340 Soil, Water and Air	Recapture Dam Drainage Basin	7,000	Municipal watershed	No
	Montezuma Creek Drainage	165,000	Hazardous watershed conditions	No

	Indian Creek Drainage	25,000	Hazardous watershed conditions	No
	Comb Wash	6,240	Sensitive/hazardous soils	No
	Butler/Cottonwood/Recapture Creeks	41,050	Sensitive/hazardous soils	No
4340	Montezuma/Alkali Canyons	87,450	Sensitive/hazardous soils	No
	Soil, Water and Air (Concluded)			
	Dark Canyon	62,040	Primitive Area - air quality related values	No
	Grand Gulch	37,810	Primitive Area - air quality related values	No
4350	Desert Bighorn Sheep Habitat Area	329,750	Crucial wildlife habitat - rutting and lambing	No
	Dry Valley Antelope Habitat Area	34,000	Wildlife habitat	No
	Deer Winter Range	197,550	Crucial wildlife habitat - winter range	No
	Riparian/Aquatic Areas	38,400	Wildlife habitat - 0.125-mile-wide corridor	No
	Cajon Pond ^a	40	Wildlife habitat - waterfowl riparian area	Yes

^aThese potential ACECs were not identified in the MSA but are analyzed in the RMP/EIS.

LAVENDER MESA (640 acres)

The BLM has identified Lavender Mesa (figure 2-3) as having potential for ACEC or RNA designation.

The mesa top is believed to meet the criteria for special management designation because it contains an isolated relict plant community. It is relevant because it offers the opportunity to study pinyon-juniper woodland and sagebrush-grass communities that have never been subject to livestock grazing. These vegetative communities are important for livestock use and wildlife habitat throughout the Colorado Plateau.

The entire mesa top is public land. The cliffs surrounding the mesa top form a natural boundary.

In the RMP/EIS, the area is analyzed as an RNA in alternatives B, D, and E, and as an ACEC in alternative C. It is overlapped by the North Abajo potential ACEC, discussed under Cultural Resources Management, below.

4331 CULTURAL RESOURCES MANAGEMENT

ALKALI RIDGE (170,320 acres)

The Alkali Ridge area has potential for ACEC management to recognize and protect archaeological resources present. The area identified in the MSA contains 170,320 acres. A partial area of 35,890 acres is also identified and analyzed for ACEC potential in the RMP/EIS. The Alkali Ridge National Historic Landmark (NHL), containing 2,030 acres, falls within both potential ACECs; 80 acres of the NHL have been classified and segregated from mineral and agricultural entry. The Alkali Ridge NHL was shown in figure 3-15, the larger potential ACEC in figure 2-4, and the smaller potential ACEC in figure 2-6.

Cultural resources in this area are regionally and nationally important because of the Basket-maker and Pueblo village sites, often reaching densities of 200 sites per square mile. Protection of the cultural resources found here is relevant because they are irreplaceable and extremely vulnerable. Oil and gas exploration

and development, vandalism ("pot hunting"), road construction and maintenance, and vegetation manipulation projects for range improvement have threatened cultural resources in the past.

Within the potential ACEC, 170,320 acres are public lands, 21,040 acres are state lands, and 23,000 acres are privately owned. The Navajo Indian reservation forms the southern boundary, and U.S. Highway 191 and county roads form the western boundary. The northern and eastern boundaries, drawn along township lines, approximate the limits of the area having high site densities.

The partial area (containing 35,890 acres of public land, 4,400 acres state land and 1,320 acres private land) is believed to represent the heart of the larger area. It is bounded on the east and west by Montezuma Creek and Alkali Creek Canyons.

In this RMP/EIS, the larger area is analyzed as an ACEC under alternatives C and D, and the partial area as an ACEC under alternative E. Both overlap areas that were considered in the MSA as preliminary potential ACECs. The Montezuma Creek drainage was considered as a hazardous drainage basin and also as part of the sensitive soils areas discussed under Soil, Water and Air, below. The Montezuma-Alkali Point crucial deer winter range, and the Montezuma Canyon and Recapture Creek riparian areas are discussed under Wildlife, below. None of these areas were carried into the RMP/EIS as potential ACECs.

NORTH ABAJO (65,450 acres)

The North Abajo area (figure 2-4) has potential for ACEC management to recognize and protect archaeological resources present. The area identified in the MSA contains 65,450 acres. A partial area of 1,770 acres is also identified in the RMP/EIS as the Shay Canyon potential ACEC (figure 2-6).

Cultural resources in this area are regionally and nationally important because of the unique and sensitive rock art sites. The area represents the transition zone between the Anasazi culture to the south and the Fremont culture to the north. The area also contains at

least one archaeoastronomy site. The area is used for recreation, particularly adjacent to Canyonlands National Park (NP) and Newspaper Rock State Park. Protection of the cultural resources found here is relevant because they are irreplaceable and extremely vulnerable.

Within the potential ACEC, 65,450 acres are public lands, 7,120 acres are state lands, and 4,880 acres are privately owned. Canyonlands NP forms the western boundary, and the Manti-LaSal National Forest (NF) forms the southern boundary. State Highway 211 forms part of the northern boundary, and the cliffs of Harts Point (the boundary of the SJRA) form the northeast boundary.

The partial area, called the Shay Canyon potential ACEC, contains 1,770 acres public land, 40 acres state land and 200 acres private land. It lies at the bottom of Shay Canyon and is believed to represent the heart of the larger area.

In this RMP/EIS, the larger area is analyzed as an ACEC under alternatives C and D, and the partial area as an ACEC under alternative E. The larger potential ACEC overlies both the Bridger Jack Mesa and Lavender Mesa potential ACECs (discussed under Grazing Management, above) and the Indian Creek riparian area (identified in the MSA as a preliminary potential ACEC, discussed under Wildlife, below). Both the larger and smaller potential ACECs overlap the Indian Creek drainage basin, identified in the MSA as a preliminary potential ACEC and discussed under Soil, Water and Air, below.

GRAND GULCH (4,240 acres)

Grand Gulch has potential for ACEC management to recognize and protect archaeological resources present in the Grand Gulch Archaeologic District (figure 3-15), which is listed in the National Register of Historic Places. The area falls within the Grand Gulch Primitive Area.

Cultural resources in this area are regionally and nationally important because of the Pueblo cliff dwellings. Preservation of Basketmaker and Pueblo sites is excellent. The area is used

heavily for recreation. Protection of the cultural resources found here is relevant because they are irreplaceable and extremely vulnerable.

The walls of the Grand Gulch canyon form natural boundaries for the archaeological district, which extends from Collins Canyon north to Kane Canyon, from canyon rim to canyon rim. It also includes the lower three miles of Bullet Canyon. The area is all public land; it has been withdrawn from mineral and agricultural entry and closed to leasing.

In this RMP/EIS, the Grand Gulch Archaeologic District is analyzed as an ACEC under alternatives C and D. The potential ACEC lies within a larger area nominated as a potential ACEC under Recreation, below, and analyzed under alternative E. The potential ACEC also lies within a larger area analyzed as an ONA under alternative C, discussed under Recreation, below.

HOVENWEEP (2,000 acres)

The NPS has suggested that BLM designate an area of 2,000 acres (figure 2-6) surrounding the Square Tower Unit of Hovenweep NM as an ACEC to protect cultural and scenic values. This is part of a larger NPS nominated area (5,214 acres) in Utah and Colorado. The adjacent area in Colorado is included in the Anasazi Culture Multiple Use Area ACEC (156,000 acres) designated by BLM's Montrose District in 1985 [BLM, 1984b].

The area adjacent to the NM is relevant because it contains other cultural resources to those within the NM. It is important because it would add cohesiveness to NPS management of the NM.

Some private land and part of a state section fall within the area nominated by the NPS. A total of 620 acres of state land and 620 acres of private land are within the boundaries drawn by the NPS. The public land within the area totals 2,000 acres, in two tracts.

In this RMP/EIS, the area around Hovenweep NM is analyzed as an ACEC under alternative D. The potential ACEC overlies a smaller area nominated as a potential ACEC under Wildlife, below, and

analyzed under alternative E as the Cajon Pond ACEC.

4332 WILDERNESS MANAGEMENT

Special management designations are analyzed in this RMP/EIS for several of the instant study areas (ISAs) and WSAs in SJRA. Five ISAs or WSAs are included in potential ACECs: Dark Canyon ISA; Grand Gulch ISA and part of the adjoining Slickhorn Canyon WSA (UT-060-197/198); Indian Creek WSA (UT-060-164); and Bridger Jack Mesa WSA (UT-060-167).

Eight of the potential ONAs analyzed under alternatives C and D include parts of ten ISAs or WSAs: Dark Canyon ISA and the adjoining Middle Point WSA (UT-060-175); Grand Gulch ISA and part or all of the adjoining Pine Canyon WSA (UT-060-188), Bullet Canyon WSA (UT-060-196), Slickhorn Canyon WSA (UT-060-197/198), and Shieks Flat WSA (UT-060-224); part of the Road Canyon WSA (UT-060-201); part of the Fish Creek WSA (UT-060-204); and the Mule Canyon WSA (UT-060-205B). The potential ACECs and ONAs are discussed in this appendix under Grazing Management, Cultural Resources Management, and Recreation Management/Visual Resources Management (VRM).

4333 RECREATION MANAGEMENT/ VISUAL RESOURCES MANAGEMENT

DARK CANYON (62,040 acres)

The Dark Canyon Primitive Area (62,040 acres, figure 2-2) coincides with the Dark Canyon Special Recreation Management Area (SRMA) and the Dark Canyon ISA. The BLM identified the primitive area for potential designation as an ACEC (figure 2-6) or ONA (figure 2-4) because of natural and scenic values that led to its designation as a primitive area and contribute to its popularity for primitive recreation.

The Dark Canyon Primitive Area is relevant because it provides comparatively rare primitive recreational values in a relatively pristine setting. The values are thought to be of very high quality. The area has experienced increasing visitation from both private and

commercial groups and is regionally and nationally important.

The primitive area is entirely public lands or reacquired state lands. It consists of two tracts; the canyon systems connect with the Colorado River Canyon within Glen Canyon National Recreation Area (NRA). It includes Dark Canyon, Gypsum Canyon, Fable Valley, and several smaller canyons. The canyon rims form a natural boundary around most of the primitive area. The area has been withdrawn from mineral and agricultural entry and closed to leasing. Most of it has not been grazed because of the rugged topography. It is adjacent to the Dark Canyon Wilderness Area in Manti-La Sal NF to the east, the Needles proposed wilderness in Canyonlands NP to the north, and the Dark Canyon proposed wilderness in Glen Canyon NRA to the west.

In this RMP/EIS, the primitive area is analyzed as a potential ONA under alternatives C and D, and as a potential ACEC under alternative E. The potential ACEC includes only the primitive area (62,040 acres), and the potential ONA includes the adjacent Middle Point WSA (68,100 acres total).

Both the potential ACEC and ONA overlap preliminary potential ACECs identified in the MSA for wildlife values (crucial bighorn sheep habitat and riparian habitat). The preliminary potential ACECs are discussed under Wildlife, below, but are not analyzed in the EIS as potential ACECs. The primitive area also coincides with a preliminary potential ACEC for air quality related values, discussed under Soil, Water and Air, below.

GRAND GULCH (49,130 acres)

The Grand Gulch Primitive Area (figure 2-2) falls within the Grand Gulch Plateau SRMA and coincides with the Grand Gulch ISA. BLM has proposed the primitive area (37,810 acres) and adjacent areas as a potential ACEC (figure 2-6) or ONA (figure 2-4) because of natural and scenic values that led to its designation as a primitive area and contribute to its popularity for primitive recreation.

The Grand Gulch Primitive Area is relevant because it provides comparatively rare primitive recreational opportunities in a setting of significant natural and cultural values. The primitive area has an extremely high visitation rate from both private and commercial groups and is regionally and nationally important.

The area also contains appreciable archaeological values. Part of the primitive area (4,240 acres) is listed on the National Register as an archaeological district (figure 3-15). It was proposed as a potential ACEC to protect cultural values, discussed under Cultural Resources, above.

In this RMP/EIS, BLM proposes the primitive area (37,810 acres) and an adjacent area around Slickhorn Canyon as a potential ACEC (49,130 acres total). The proposed ACEC is analyzed under alternative E. It falls within the Grand Gulch ISA Complex, in the Grand Gulch ISA and the Slickhorn Canyon WSA.

The areas immediately west and east of the primitive area have been designated through the recreation opportunity spectrum (ROS) inventory as primitive (P) class. Both tracts were identified in the MSA as having potential to be included with the preliminary potential ACEC. The P class area to the west, about 5,000 acres, covers a portion of Steer Gulch and Grand Flat. It was not carried forward into the EIS because the natural values were not believed to be of the same quality as those found within the primitive area. This area is not within the Grand Gulch ISA Complex identified through the wilderness inventory. The P class area to the east of the primitive area, about 11,320 acres of public land, has been carried into the EIS as part of the Grand Gulch Potential ACEC. It includes a part of Slickhorn Canyon and Polly's Mesa, and does fall within the ISA Complex. This eastern area is believed to contribute to the relevant and important natural values of the primitive area.

The primitive area is entirely public lands or reacquired state lands. The canyon rims provide a natural boundary. The area has been withdrawn from mineral and agricultural entry and closed to leasing. Grazing has been excluded from

11,200 acres; most of the rest of the canyon has not been grazed because of the rugged topography. The adjacent P class area contains 2,240 acres of inheld state land. The potential ACEC and potential ONAs are adjacent to the San Juan proposed wilderness in Glen Canyon NRA to the south.

The archaeological district within the primitive area is analyzed under alternatives C and D as a potential ACEC, as discussed under Cultural Resources, above.

A potential ONA of 69,500 acres has been identified for the Grand Gulch Primitive Area and adjoining rim areas; a possible addition on the west side of the area (about 26,000 acres) was identified in the MSA but not analyzed in the RMP/EIS because the natural values present were not believed to be of the same quality as those found within the ISA Complex. Two other potential ONAs overlap the potential ACEC. The Slickhorn potential ONA, 25,800 acres, and the John's Canyon potential ONA (17,500 acres) both fall within the Slickhorn WSA. The combined area of the three potential ONAs in the vicinity of Grand Gulch, analyzed under alternatives C and D, totals 111,400 acres.

The potential ACEC and ONA cover a preliminary potential ACEC identified in the MSA for wildlife values (riparian habitat). The preliminary potential ACEC is discussed under Wildlife, below, but was not carried forward into the EIS as a potential ACEC. The primitive area also coincides with a preliminary potential ACEC for air quality related values, discussed under Soil, Water and Air, below.

LOCKHART BASIN (56,660 acres)

BLM has identified a potential ACEC (figure 2-4) in Lockhart Basin to protect scenic values as viewed from the Needles and Canyonlands Overlooks on Hatch Point in the Grand Resource Area. The area was inventoried under the VRM system [Shiozawa and Larson, 1980] and found to be scenic quality A and unique or very rare within its physiographic province.

Protection of the scenic values as an ACEC is relevant because they would require special

management to be preserved. The area is used for grazing and recreation, and has been used for exploration for oil and gas and hardrock minerals in the past. It is popular for recreational ORV use and receives some primitive hiking use, primarily along the edge of Canyonlands NP. It is important because it is viewed by regional and national tourists.

Within the potential ACEC, 56,660 acres are public lands and 5,760 acres are state lands. The area is bounded on the north by the Colorado River, on the east by the cliffs of Hatch Point (the SJRA boundary), and on the west by Canyonlands NP. The southern boundary lies about 1 to 2 miles north of State Highway 211. The potential ACEC overlies the Indian Creek WSA (UT-060-164).

In this RMP/EIS, the area is analyzed as an ACEC under alternatives C and D.

SLICKHORN CANYON

The area around Slickhorn Canyon (figure 2-4) was identified in the MSA as a potential ONA because of its natural and scenic values, which led to its designation as the Slickhorn Canyon WSA (part of the Grand Gulch ISA Complex). The area provides primitive recreational values in a relatively natural setting.

The potential ONA contains about 25,800 acres of public lands. It includes part or all of six state sections (about 3,000 acres) and adjoins the Grand Gulch potential ONA on the north and west and the Johns Canyon potential ONA on the east. The southern boundary is Glen Canyon NRA.

In this RMP/EIS, the area is analyzed as a potential ONA under alternatives C and D. It overlaps the Grand Gulch potential ACEC analyzed under alternative E, discussed above in this section, which was identified for natural values associated with primitive recreation.

JOHNS CANYON

The area around Johns Canyon (figure 2-4) was identified in the MSA as a potential ONA because of its natural and scenic values, which led to

its designation as part of the Slickhorn Canyon WSA, included in the Grand Gulch ISA Complex. The area provides primitive recreational values in a relatively natural setting.

The potential ONA contains about 17,500 acres of public lands. It includes part or all of three state sections (about 1,300 acres). The ONA adjoins the Slickhorn Canyon potential ONA on the west and Glen Canyon NRA on the south; the canyon rims form the eastern boundary.

In this RMP/EIS, the area is analyzed as a potential ONA under alternatives C and D. It overlaps the Grand Gulch potential ACEC analyzed under alternative E, discussed above in this section, which was identified for natural values associated with primitive recreation.

FISH AND OWL CANYONS

The area around Fish and Owl Canyons was identified in the MSA as a potential ONA because of its natural and scenic values, which led to the designation of the area as the Fish Creek WSA. The area provides primitive recreational values in a relatively natural setting. The potential ONA, the heart of the Fish Creek WSA, is shown in figure 2-4.

The potential ONA contains about 40,300 acres of public lands. It includes part or all of six state sections (about 3,200 acres). The northeastern boundary of the ONA is the north rim of Fish Creek Canyon, the southwestern boundary is the Hole-in-the-Rock Trail or the south rim of Owl Canyon, and the extreme western boundary is State Highway 261.

In this RMP/EIS, the area is analyzed as a potential ONA under alternatives C and D. It overlaps a preliminary potential ACEC identified in the MSA for wildlife values (riparian habitat). The preliminary potential ACEC is discussed under Wildlife, below, but was not carried forward into the EIS as a potential ACEC.

LIME CANYON

The area around Lime Canyon was identified in the MSA as a potential ONA because of its

natural and scenic values, which led to its designation as part of the Road Canyon WSA. The area provides primitive recreational values in a relatively natural setting. The potential ONA consists of the southern canyon system of the Road Canyon WSA, and was shown in figure 2-4.

The potential ONA contains about 25,300 acres of public lands. It includes all or part of four state sections (about 2,250 acres). The northern boundary is the road between Lime Canyon and Road Canyon, the eastern boundary is the slope into Comb Wash, the southern boundary is the cliff line above Valley of the Gods, and the western boundary is State Highway 261.

In this RMP/EIS, the area is analyzed as a potential ONA under alternatives C and D.

ROAD CANYON

The area around Road Canyon was identified in the MSA as a potential ONA (figure 2-4) because of natural and scenic values that led to its designation as part of the Road Canyon WSA. The area provides primitive recreational values in a relatively natural setting. The potential ONA consists of the northern canyon system of the Road Canyon WSA.

The potential ONA contains about 24,500 acres of public lands. It includes two state sections (about 1,280 acres). The northern boundary of the ONA is the Hole-in-the-Rock Trail, the eastern boundary is the lower end of Road Canyon, the southern boundary is the road between Lime Canyon and Road Canyon, and the western boundary follows a drainage divide.

In this RMP/EIS, the area is analyzed as a potential ONA under alternatives C and D. It overlaps a preliminary potential ACEC identified for wildlife values (riparian habitat). The preliminary potential ACEC is discussed under Wildlife, below, but was not carried forward into the EIS as a potential ACEC.

MULE CANYON

Mule Canyon was identified in the MSA as a potential ONA (figure 2-4) because of natural and scenic values that led to its designation as

part of the Mule Canyon WSA. The area provides primitive recreational values in a relatively natural setting.

The potential ONA contains about 6,000 acres, all public lands. It is bounded by the rim of Mule Canyon and by the Manti-LaSal NF.

In this RMP/EIS, the area is analyzed as a potential ONA under alternatives C and D.

ARCH CANYON

Arch Canyon (figure 2-5) was identified in the MSA as a potential ONA on the basis of its natural and scenic values; it provides primitive recreational values in a relatively natural setting.

The potential ONA contains about 4,200 acres, all public lands; it is bounded by the rim of Arch Canyon and by the Manti-LaSal NF.

In this RMP/EIS, the area is analyzed as a potential ONA under alternative D. It overlaps a preliminary potential ACEC identified in the MSA for wildlife values (riparian habitat). The preliminary potential ACEC is discussed under Wildlife, below, but was not carried forward into the EIS as a potential ACEC.

4341 SOIL, WATER AND AIR

RECAPTURE DAM DRAINAGE BASIN (7,000 acres)

The drainage basin for Recapture Lake at Recapture Dam was identified in the MSA as a preliminary potential ACEC based on its potential for use as a municipal watershed by Blanding or the San Juan Water Conservancy District. The area contains about 7,000 acres of public land. It is shown in the MSA.

After the MSA was prepared, the San Juan Water Conservancy District informed the BLM that no municipal watershed would be designated in the area; therefore, the area was not carried forward as a potential ACEC.

MONTEZUMA CREEK DRAINAGE BASIN (165,000 acres)

The drainage basin of Montezuma Creek was identified in the MSA as a preliminary potential ACEC based on the natural hazard that could result from erosion. The area contains about 165,000 acres of public land. It is shown in the MSA.

Significant downcutting within the floodplain presents a natural hazard that could be a significant source of sediment to the Colorado River drainage basin. Sedimentation within the Colorado River drainage basin is of national concern because of its adverse effects on downstream water users. Surface disturbance within the drainage basin can substantially increase erosion rates and thereby increase the Colorado River system's sediment load. Erosion rates could remain high for several years, until vegetation is re-established or the surface stabilized with rock fragments or other debris.

The Montezuma Creek area contains important cultural resources. Sites have reportedly been lost due to the downcutting within the floodplain, which also affects existing structures near the stream channel.

The downcutting is believed to be caused by increased runoff from agricultural lands. Other surface disturbance in the area has been caused by minerals exploration and development, but is not extensive.

The Montezuma Creek drainage area is not proposed in the RMP/EIS as a potential ACEC. Although the area does have the potential for a natural hazard, existing management practices would be sufficient to protect the floodplain through mitigation measures applied to specific projects. The need to recognize the potential hazard has been carried into the RMP/EIS, however. The EIS has been used to develop special conditions to protect both sensitive soils and floodplains, and these would be applied to any land use activity. The floodplain special conditions would be applied under alternatives B, C, D, and E. The sensitive soils special conditions, which would apply to about 50 percent of the area, would be

applied under alternatives C, D, and E. The special conditions are given in appendix A.

The preliminary potential ACEC area overlaps the Alkali Ridge potential ACEC, discussed above under Cultural Resources. It also overlaps the Montezuma Creek/Alkali Canyon sensitive soils area, discussed in this section below, and areas identified as preliminary potential ACECs under Wildlife, below, which were not carried into the RMP/EIS.

INDIAN CREEK DRAINAGE BASIN (25,000 acres)

The Indian Creek drainage basin area was identified as a preliminary potential ACEC based on hazardous downcutting characteristics as described above for the Montezuma Creek drainage basin area. It was not carried forward into the RMP/EIS for the same reasons. It is shown in the MSA.

The Indian Creek drainage is important because it provides one of the few trout stream habitats in the region. Significant downcutting in a portion of the creek has already affected riparian and aquatic habitat areas. Most of the area is public land used for grazing and recreation, with scattered tracts of state and private land. It is adjacent to the Manti-LaSal NF and to Newspaper Rock State Park.

The drainage would be covered by special conditions in the RMP/EIS developed to protect floodplains and riparian/aquatic areas in alternatives B, C, D, and E; and the Upper Indian Creek riparian area in alternative E. The special conditions are given in appendix A.

The preliminary potential ACEC is next to the Bridger Jack potential ACEC, discussed above under Grazing Management. It also falls within the North Abajo potential ACEC, and overlaps the Shay Canyon potential ACEC, both discussed above under Cultural Resources. It includes the portion of the Indian Creek riparian area identified as a preliminary potential ACEC under Wildlife, below, which was not carried into the RMP/EIS.

COMB WASH SENSITIVE SOILS AREA (6,240 acres)

An area of sensitive soils around Comb Wash was identified in the MSA as a preliminary potential ACEC based on the natural hazard that could result from erosion. The area contains about 6,240 acres of public land (figure 3-9).

Badland and gypsumland soils in this area are intermixed with stable soils. About 23 percent of the soils in the area would be classified as sensitive; they are natural sources of relatively high levels of sediments and salts. Salinity and sedimentation within the Colorado River drainage basin are of national concern because of the adverse effects on downstream water users. Disturbance of these sensitive soils can increase erosion rates substantially and thereby increase the Colorado River system's salt and sediment load. Erosion rates can remain high for several years, until vegetation is re-established or the surface stabilized with rock fragments or other debris.

The area around Comb Wash contains about 1,000 acres of state lands in addition to the 6,240 acres of public lands. It falls along the eastern edge of the Fish Creek Canyon and Road Canyon WSAs and is used for grazing and mineral exploration.

The area is not proposed in the RMP/EIS as a potential ACEC. Although the area does have the potential for a natural hazard, existing management practices would be sufficient to protect the sensitive soils through mitigation measures applied to specific projects. The need to recognize the potential hazard has been carried into the RMP/EIS, however. Special conditions were developed to protect sensitive soils, and these would be applied to any land use activity under alternatives C, D, and E. The special conditions are given in appendix A.

BUTLER/COTTONWOOD/RECAPTURE CREEKS SENSITIVE SOILS AREA (41,050 acres)

The Butler, Cottonwood, and Recapture Creeks sensitive soils area (figure 3-9) was identified as a preliminary potential ACEC based on sensitive soils characteristics as described

above for Comb Wash. It was not carried forward into the RMP/EIS for the same reasons.

The area follows the drainages of Butler Wash, Cottonwood Creek, and Recapture Creek and contains several tracts of state and private lands in addition to the 41,050 acres of public lands. It is used for grazing, minerals exploration, and agriculture.

MONTEZUMA CREEK/ALKALI CANYON SENSITIVE SOILS AREA (87,450 acres)

The Montezuma Creek and Alkali Canyon sensitive soils area (figure 3-9) was identified as a preliminary potential ACEC based on the same sensitive soils characteristics described above for Comb Wash. It was not carried forward into the RMP/EIS for the same reasons.

It lies in two separate tracts, the first of which covers the drainage of Alkali Creek. The second covers Montezuma Canyon and its tributaries, Monument Canyon, Nancy Patterson Canyon and Squaw Canyon. It contains several tracts of state and private lands in addition to the 87,450 acres of public lands. The area is used for grazing, minerals exploration, and agriculture.

DARK CANYON PRIMITIVE AREA (62,040 acres)

The Dark Canyon Primitive Area (figure 2-2) was identified as a preliminary potential ACEC on the basis of air quality related values, which are important to maintaining visibility and pristine air quality within the primitive area.

The area is not threatened by development. The primitive area is segregated from mineral and agricultural entry and closed to leasing; it is not used for grazing.

The primitive area is identified as a potential ACEC or ONA under Recreation, above. It is not carried forward under this program, because management under the recreation potential ACEC or ONA would serve to protect air quality related values and other natural values.

GRAND GULCH PRIMITIVE AREA (37,810 acres)

The Grand Gulch Primitive Area (figure 2-2) was identified as a preliminary potential ACEC on the basis of air quality related values, as discussed for the Dark Canyon Primitive Area in this section. Air quality related values and the need for protection are as discussed for that area.

The archaeological district within the primitive area was identified as a potential ACEC under Cultural Resources, and the primitive area under Recreation, both discussed above. It is not carried forward under this program, because management under the recreation potential ACEC or ONA would serve to protect air quality related values and other natural values.

4351 WILDLIFE HABITAT MANAGEMENT

DESERT BIGHORN SHEEP HABITAT AREA (329,750 acres)

The crucial habitat area for desert bighorn sheep was identified in the MSA as a preliminary potential ACEC based on the need to protect the animals during rutting and lambing seasons. The area contains about 329,750 acres of public land, split into two areas. The northern portion includes the Dark Canyon Primitive Area and contains about 63,000 acres; the southern portion about 266,750 acres (figure 3-11).

The habitat area is relevant because it is used by the largest population of desert bighorn sheep in Utah. Bighorn sheep are nationally recognized as an important species of wildlife. The animals could be disturbed by development activities or grazing pressure.

The crucial habitat area extends into Glen Canyon NRA to the west and Canyonlands NP to the northwest. Within the area on public lands are several tracts of state land, totaling about 26,000 acres.

The area is not carried forward in the RMP/EIS as a potential ACEC. Although it does provide crucial habitat used by the bighorn, existing management practices would be sufficient to protect the habitat through mitigation measures

applied to specific projects. The need to recognize the wildlife values has been carried into the RMP/EIS, however. Under alternative A, seasonal stipulations would be applied to oil and gas lease activities, while other parts of the habitat area would be closed to lease or have no surface occupancy stipulations applied.

Seasonal special conditions were developed in the EIS to protect the crucial habitat areas; these would be applied to any land use activity under alternatives C and E. Additional special conditions would be applied to grazing uses on five mesa tops within the crucial habitat area, and would exclude parts of the crucial habitat area from land treatments under alternatives C and E. Under alternative D, most of the crucial habitat area would fall within a natural process area; most activities would be managed in such a way that the habitat would be protected from human activities. The special conditions are given in appendix A.

DRY VALLEY ANTELOPE HABITAT (34,000 acres)

The habitat area for pronghorn antelope was identified in the MSA as a preliminary potential ACEC based on the need to protect the animals, particularly during the fawning season. The area contains about 34,000 acres of public land within the SJRA. Approximately 12,960 acres of public lands are considered crucial fawning habitat (figure 3-11).

The habitat area is relevant because it is used by the only population of antelope in SJRA. Pronghorn antelope are nationally recognized as an important species of wildlife. The animals could be disturbed by development activities or grazing pressure.

Within the area on public lands are tracts of state land totaling about 2,560 acres and private land totaling about 960 acres; a large block of nonfederal land is adjacent. The habitat area extends into Grand Resource Area to the north.

The area was not proposed in the RMP/EIS as a potential ACEC because existing management practices would be sufficient to protect the habitat through mitigation measures applied to

specific projects. The need to recognize the wildlife values on the crucial habitat area has been carried into the RMP/EIS, however. Seasonal special conditions to protect the crucial habitat area would be applied to any land use activity under alternatives C and E. The special conditions are given in appendix A.

DEER WINTER RANGE (197,550 acres)

The crucial winter range for mule deer was identified in the MSA as a preliminary potential ACEC based on the need to protect the animals during the winter. The area contains about 197,550 acres of public land in seven areas (figure 3-12).

The habitat areas are relevant because they are used by concentrated populations of deer during the winter. Mule deer are nationally recognized as an important species of wildlife. The animals could be disturbed by development activities or grazing competition on winter range.

Some of the crucial habitat areas are near Manti-LaSal NF, Canyonlands NP, Natural Bridges NM, or the Navajo reservation. Adjacent public lands are used for mineral exploration and development, particularly for oil and gas, and for grazing and recreation. Within the area on public lands are several tracts of state land totaling about 19,000 acres and private land totaling about 8,000 acres; large blocks of nonfederal land are adjacent to all three of the areas.

The area was not proposed in the RMP/EIS as a potential ACEC because existing management practices would probably be sufficient to protect the crucial habitat through mitigation measures applied to specific projects. The need to recognize the wildlife values has been carried into the RMP/EIS, however. Under alternative A, stipulations to protect winter range would be applied to oil and gas lease activities on 216,190 acres. Seasonal special conditions to protect the crucial habitat areas would be applied to any land use activity under alternatives C and E. Additional special conditions would exclude land treatments on 9,800 acres of sagebrush within the crucial habitat area under alternatives C and E. Under alter-

native D, some of the crucial habitat area would fall within a natural process area. The special conditions are given in appendix A.

Some of the crucial habitat areas fall within areas proposed for special designations under other programs. The habitat area near the Dark Canyon Primitive Area overlaps the Dark Canyon ONA, analyzed in alternatives C and D, and is very near the Dark Canyon potential ACEC analyzed under alternative E. The habitat area near Salt Creek is adjacent to Bridger Jack Mesa, analyzed as a potential ACEC in alternative C and as an RNA in alternatives B, D and E. The Montezuma-Alkali Point habitat area overlaps the Alkali Ridge potential ACEC analyzed in alternatives C, D, and E. This area was also identified as a preliminary potential ACEC to protect sensitive soils or hazardous floodplains, discussed under Soil, Water and Air, above. Four of the habitat areas overlap riparian/aquatic habitat areas, identified in the MSA as preliminary potential ACECs, discussed below in this section.

RIPARIAN/AQUATIC HABITAT (38,400 acres)

The riparian/aquatic habitat areas in SJRA were identified in the MSA as a preliminary potential ACEC based on the need to protect these habitat zones from surface disturbance, in accordance with Executive Orders 11988 and 11990. The areas also serve as habitat for threatened or endangered (T/E) species (bald eagle and fish species). The area identified in the MSA is a corridor 660 feet wide along 16 of the creeks shown in table 3-6 (all except Cottonwood Creek and Red Canyon drainages). The areas contain a total of about 38,400 acres of public land within the SJRA (figure 3-12).

The habitat areas are relevant because they provide a variety of vegetation for food and cover, as well as a permanent or semipermanent source of water. They are inhabited by a variety of game and nongame wildlife species. They are also attractive to livestock, and for recreation uses. They represent less than 1 percent of the total acreage in SJRA.

Some of the riparian habitat areas extend into the Navajo reservation to the south, Glen Canyon

NRA to the south and west, or Grand Resource Area to the north. The riparian areas are interspersed with tracts of state and private lands.

The areas were not proposed in the RMP/EIS as a potential ACEC because existing management practices would be sufficient to protect the habitat through mitigation measures applied to specific projects. The need to recognize the wildlife values in the riparian areas has been carried into the RMP/EIS, however. Special conditions to protect wildlife habitat would be applied under alternatives B, C, D, and E to any land use activity within a corridor 25 feet wide along all floodplain or riparian/aquatic habitat areas shown in table 3-6. The special conditions are given in appendix A.

Some of the riparian/aquatic areas fall within areas proposed for special designations under other programs. The riparian area in the Montezuma Canyon and Recapture Creek drainages overlaps the Alkali Ridge potential ACEC (discussed under Cultural Resources, above); the Gypsum Canyon and Dark Canyon drainages overlap the Dark Canyon potential ACEC or potential ONA (discussed under Recreation/Visual Resources, above); the Indian Creek drainage overlaps the North Abajo potential ACEC (discussed under Cultural Resources, above); the Lockhart Canyon drainage overlaps the Lockhart Basin potential ACEC (discussed under Recreation/Visual Resources, above); the Grand Gulch drainage overlaps the Grand Gulch potential ACEC or potential ONA (discussed under Cultural Resources and Recreation/Visual Resources, above); and the branches of the Comb Wash drainage overlap the Arch Canyon, Fish and Owl Creeks, and Road Canyon potential ONAs (discussed under Recreation/Visual Resources, above). Some of these areas have also been identified as preliminary potential ACECs to protect sensitive soils or hazardous floodplains, discussed under Soil, Water and Air, above; or the habitat areas for bighorn sheep or deer, identified in the MSA as preliminary potential ACECs, discussed above in this section.

CAJON POND

BLM managers nominated the area around Cajon Pond (figure 2-6) as having potential for ACEC designation. It was not identified in the MSA.

The Cajon Pond, a constructed reservoir covering about 10 acres, is relevant because it provides habitat for migrating waterfowl in an area with very little surface water. A riparian area with cattails and sedges provides cover and a food source. Some waterfowl inhabit the area year-round. The potential ACEC boundaries have been drawn on section subdivision lines and include 40 acres (all public lands). The area is important because it is used by migrating waterfowl.

In this RMP/EIS, Cajon Pond is analyzed as a potential ACEC under alternative E. It falls within the Hovenweep potential ACEC analyzed under alternative D, discussed under Cultural Resources, above.

APPENDIX I — MANAGEMENT PRESCRIPTIONS FOR SPECIAL DESIGNATION AREAS

OVERVIEW

This appendix describes management prescriptions for the various potential areas of critical environmental concern (ACECs), research natural areas (RNAs), and outstanding natural areas (ONAs) analyzed in the resource management plan/environmental impact statement (RMP/EIS). Management prescriptions explain what would or would not be allowed to occur within an area under special management designation. The prescriptions developed are believed to be the least restrictive possible, consistent with the objectives for designation of the area. More specific management guidance would be provided in activity plans developed after adoption of the RMP.

The objectives for special management designations vary among alternatives; the management prescriptions would vary accordingly. Management prescriptions under all alternatives are presented for comparison. Other stipulations or special conditions given in appendix A, such as the special conditions to protect riparian areas, may also apply to a special management designation area.

The special conditions or stipulations (appendix A) for special management designation areas are based on the management prescriptions, which are arranged in the following sections by management program and then by area.

In an ACEC or an area closed to ORV use, a plan of operations would be required for any surface disturbance, including annual assessment work on mining claims.

The management prescriptions in some cases indicate that land treatments would be allowed or would be excluded. This is intended for

general guidance only. Land treatments that would be done under each alternative are shown in figures 2-12 through 2-15.

All areas would be subject to limited suppression of wildfires; motorized access for fire-fighting would depend on the area's off-road vehicle (ORV) use designation.

4322 GRAZING MANAGEMENT

BRIDGER JACK AND LAVENDER MESAS

Alternative A

No special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

Alternative B

The southern end of the Bridger Jack Mesa (1,760 acres) and the top of Lavender Mesa (640 acres) would each be designated as an RNA (figure 2-3). The areas total 2,400 acres of public lands and do not have any state or private lands in held.

The RNAs would be managed under the requirements of 43 CFR 2071.1 and used for research and experiments to provide a baseline for rangeland studies. The Bridger Jack Mesa RNA would be used for comparative studies of ecological sites, to study the recovery of near-relict plant communities from the effects of grazing. The Lavender Mesa RNA would be used for similar comparative ecological studies of a relict (never grazed) plant community.

Activities within the RNAs would be approved only with special conditions to protect the

relict or near-relict plant communities. Surface disturbance would be limited to that which could be revegetated (with native species naturally occurring in the vicinity) to visually match pre-existing conditions within 1 year.

The RNAs would be:

- open for minerals leasing with stipulations to prevent surface occupancy of the mesa top;
- available for geophysical work subject to the special conditions;
- closed to disposal of mineral materials;
- open to mineral entry with an approved plan of operations, subject to stipulations precluding surface use of the mesa top insofar as possible;
- retained in public ownership, and not classified, segregated, or withdrawn from entry;
- excluded from private or commercial use of woodland products, except for limited onsite collection of dead wood for campfires;
- excluded from livestock use, including grazing by pack animals used for access;
- excluded from land treatments or livestock improvements, except for test plots and facilities necessary for study of the relict and near-relict plant communities;
- excluded from development of watershed control structures;
- designated as closed to ORV use; and
- managed as visual resource management (VRM) class I.

Alternative C

The top of Bridger Jack Mesa (5,290 acres) and Lavender Mesa (640 acres) would each be designated as an ACEC (figure 2-4) under the authority of 43 CFR 1610.7-2. The areas total

5,930 acres of public lands and do not have any state or private lands inheld.

The ACECs would be used for research and experiments to provide a baseline for rangeland studies, and to allow for primitive recreation. The Bridger Jack Mesa ACEC would be used for comparative studies of ecological sites to study the recovery of near-relict plant communities from the effects of grazing. The Lavender Mesa ACEC would be used for similar comparative ecological studies of a relict (never grazed) plant community.

Activities within the ACECs would be approved only with special conditions to protect the relict or near-relict plant communities. Surface disturbance would be limited to that which could be revegetated (with native species naturally occurring in the vicinity) to visually match pre-existing conditions within 5 years.

The ACECs would be:

- open for minerals leasing with stipulations to prevent surface occupancy of the mesa top;
- available for geophysical work subject to the special conditions;
- closed to disposal of mineral materials;
- open to mineral entry with an approved plan of operations, subject to stipulations precluding surface use of the mesa top insofar as possible;
- retained in public ownership and not classified, segregated, or withdrawn from entry;
- excluded from private or commercial use of woodland products, except for limited onsite collection of dead wood for campfires;
- excluded from livestock use, including grazing by pack animals used for access;
- excluded from land treatments or livestock improvements, except for test plots and facilities necessary for study of the relict and near-relict plant communities;

- excluded from development of watershed control structures;
- designated as closed to ORV use; and
- managed as VRM class I.

Alternative D

The top of Bridger Jack Mesa (5,290 acres) and Lavender Mesa (640 acres) would each be designated as an RNA (figure 2-5). The areas total 5,930 acres of public lands and do not have any state or private lands inheld. The RNAs fall within a natural succession area.

The RNAs would be managed under the requirements of 43 CFR 2071.1 and would be used for research and experiments to provide a baseline for rangeland studies. The Bridger Jack Mesa RNA would be used for comparative studies of ecological sites to study the recovery of near-relict plant communities from the effects of grazing. The Lavender Mesa RNA would be used for similar comparative ecological studies of a relict (never grazed) plant community.

Activities within the RNAs would be approved only with special conditions to protect the relict or near-relict plant communities. Surface disturbance would be limited to that which could be revegetated (with native species naturally occurring in the vicinity) to meet pre-existing conditions within 5 years.

The RNAs would be:

- closed to minerals leasing;
- available for geophysical work subject to the special conditions;
- closed to disposal of mineral materials;
- retained in public ownership and classified as segregated from entry (a Secretarial withdrawal would be requested);
- excluded from private or commercial use of woodland products, except for limited onsite collection of dead wood for campfires;

- excluded from livestock use, including grazing by pack animals used for access;
- excluded from land treatments or livestock improvements, except for test plots and facilities necessary for study of the relict and near-relict plant communities;
- excluded from development of watershed control structures;
- designated as closed to ORV use; and
- managed as VRM class I, with only those projects that meet class I objectives allowed.

Alternative E

The top of Bridger Jack Mesa (5,290 acres) and Lavender Mesa (640 acres) would each be designated as an RNA (figure 2-6). The areas total 5,920 acres of public lands and do not have any state or private lands inheld.

The RNAs would be managed under the requirements of 43 CFR 2071.1 and used for research and experiments to provide a baseline for rangeland studies. The Bridger Jack Mesa RNA would be used for comparative studies of ecological sites to study the recovery of near-relict plant communities from the effects of grazing. The Lavender Mesa RNA would be used for similar comparative ecological studies of a relict (never grazed) plant community.

Activities within the RNAs would be approved only with special conditions to protect the relict or near-relict plant communities. Surface disturbance would be limited to that which could be revegetated (with native species naturally occurring in the vicinity) to visually match pre-existing conditions within 5 years.

The RNAs would be:

- open for minerals leasing with stipulations to prevent surface occupancy of the mesa top;
- available for geophysical work subject to the special conditions;

- closed to disposal of mineral materials;
- open to mineral entry with an approved plan of operations, subject to stipulations precluding surface use of the mesa top insofar as possible;
- retained in public ownership and not classified, segregated, or withdrawn from entry;
- excluded from private or commercial use of woodland products, except for limited onsite collection of dead wood for campfires;
- excluded from livestock use, including grazing by pack animals used for access;
- excluded from land treatments or livestock improvements, except for test plots and facilities necessary for study of the relict and near-relict plant communities;
- excluded from development of watershed control structures;
- designated as closed to ORV use; and
- managed as VRM class I.

4331 CULTURAL RESOURCES MANAGEMENT

ALKALI RIDGE AND HOVENWEEP

Alternatives A and B

No special management prescriptions have been developed; however, under alternative A, an 880-acre parcel adjacent to Hovenweep National Monument (NM) would be stipulated no surface occupancy for oil and gas leases, to protect cultural resources present. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts. The Alkali Ridge National Historic Landmark (NHL) (2,340 acres) would be managed as required by law to protect cultural resources.

Alternative C

The area around Alkali Ridge (170,320 acres), including the Alkali Ridge NHL (2,340 acres),

would be designated as an ACEC (figure 2-4) under the authority of 43 CFR 1610.7-2.

The Alkali Ridge ACEC would be managed for potential scientific use and management use of cultural resources. The area around Hovenweep NM would not receive special management designation and would be treated as under alternative A.

Activities within the ACEC would be approved only with special conditions to protect the cultural resources. Surface disturbance would be limited to provide maximum opportunity for the stated cultural resource uses, and to avoid both direct and indirect damage to cultural resources. Where damage cannot be avoided, impacts would be mitigated through limited or complete excavation. Any surface disturbance would be required to be successfully revegetated within 5 years.

The ACEC would be:

- open for minerals leasing and geophysical work subject to the special conditions;
- available for disposal of mineral materials, subject to the special conditions;
- open to mineral entry with an approved plan of operations, subject to the special conditions insofar as possible;
- retained in public ownership and not classified, segregated, or withdrawn from entry;
- available for private and commercial use of woodland products, subject to the special conditions;
- available for livestock use;
- available for land treatments or other range improvements, subject to the special conditions, only so long as cultural resources are avoided by at least 250 feet;
- available for wildlife habitat improvements of less than 1 acre, subject to special conditions, only so long as cultural

resource sites are avoided by at least 250 feet;

- designated as limited to ORV use, with use limited to existing roads and trails; and
- managed as VRM class I.

Alternative D

The Alkali Ridge area (170,320 acres), including the Alkali Ridge NHL (2,340 acres), and the area around Hovenweep NM (2,000 acres) would each be designated as an ACEC (figure 2-5) under the authority of 43 CFR 1610.7-2. The areas total 172,320 acres of public lands.

The Alkali Ridge and Hovenweep ACECs would be managed for potential scientific use and management use of cultural resources.

Activities within the ACECs would be approved only with special conditions to protect the cultural resources. Surface disturbance would be limited to provide maximum opportunity for the stated cultural resource uses, and to avoid both direct and indirect damage to cultural resources. Where damage cannot be avoided, impacts would be mitigated through limited or complete excavation. Any surface disturbance would be required to be successfully revegetated within 5 years.

The ACECs would be:

- open for minerals leasing with stipulations to prevent surface occupancy;
- available for geophysical work subject to the special conditions, and where reclamation would be successful within 5 years;
- closed to disposal of mineral materials;
- open to mineral entry with an approved plan of operations, subject to the special conditions insofar as possible;
- retained in public ownership and not classified, segregated, or withdrawn from entry;

- excluded from private and commercial use of woodland products, except for limited onsite collection of dead wood for campfires;
- available for livestock use and range improvements, subject to the special conditions;
- excluded from land treatments;
- excluded from wildlife habitat improvements;
- designated as limited to ORV use, with use limited to designated roads and trails; and
- managed as VRM class I, with only those projects that meet class I objectives allowed.

Alternative E

A smaller area around Alkali Ridge (35,890 acres), including the Alkali Ridge NHL (2,340 acres), would be designated as an ACEC (figure 2-6) under the authority of 43 CFR 1610.7-2.

The Alkali Ridge ACEC would be managed for potential scientific use and management use of cultural resources.

The area around Hovenweep NM would not receive special management designation, but would be managed to protect cultural resources. An area of 880 acres adjacent to the NM would be managed with no surface occupancy allowed, to the extent possible without curtailing valid rights. No grazing improvements or land treatments would be allowed in this area. The remainder of the area around Hovenweep NM would be managed as under alternative A.

Activities within the Alkali Ridge ACEC would be approved only with special conditions to protect the cultural resources. Surface disturbance would be limited to provide maximum opportunity for the stated cultural resource uses, and to avoid both direct and indirect damage to cultural resources. Where damage cannot be avoided, impacts would be mitigated through limited or complete excavation. Any surface disturbance

would be required to be successfully revegetated within 5 years.

The ACEC would be subject to the management prescriptions given under alternative C, except that land treatments could be done only by chemical means or burning.

NORTH ABAJO

Alternatives A and B

No special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

Alternative C

The North Abajo area (65,450 acres) would be designated as an ACEC (figure 2-4) under the authority of 43 CFR 1610.7-2. It would be managed for conservation for future use and public use of cultural resources.

Activities within the ACEC would be approved only with special conditions to protect the cultural resources. Surface disturbance would be limited to provide maximum opportunity for the stated cultural resource uses, and to avoid both direct and indirect damage to cultural resources. Where damage cannot be avoided, impacts would be mitigated through limited or complete excavation. Any surface disturbance would be required to be successfully revegetated within 5 years.

The ACEC would be:

- open for minerals leasing and geophysical work with special conditions;
- available for disposal of mineral materials, subject to the special conditions;
- open to mineral entry with an approved plan of operations, subject to the special conditions insofar as possible;
- retained in public ownership and not classified, segregated, or withdrawn from entry;

- available for private and commercial use of woodland products, subject to the special conditions;
- available for livestock use;
- available for land treatments or other range improvements, subject to the special conditions, only so long as cultural resources are avoided by at least 250 feet;
- available for wildlife habitat improvements of less than 1 acre, subject to special conditions, only so long as cultural resource sites are avoided by at least 250 feet;
- designated as limited to ORV use, with use limited to existing roads and trails; and
- managed as VRM class I.

Alternative D

The North Abajo area (65,450 acres) would be designated as an ACEC (figure 2-5) under the authority of 43 CFR 1610.7-2. The ACEC lies entirely within a natural succession area. It would be managed for conservation for future use and public use of cultural resources.

Activities within the ACEC would be approved only with special conditions to protect the cultural resources. Surface disturbance would be limited to provide maximum opportunity for the stated cultural resource uses, and to avoid both direct and indirect damage to cultural resources. Where damage cannot be avoided, impacts would be mitigated through limited or complete excavation. Any surface disturbance would be required to be successfully revegetated (with native species naturally occurring in the vicinity) to match pre-existing conditions within 5 years.

The ACEC would be:

- closed to minerals leasing;
- available for geophysical work subject to the special conditions;

- closed to disposal of mineral materials;
- retained in public ownership and classified as segregated from entry (a Secretarial withdrawal would be requested);
- excluded from private and commercial use of woodland products, except for limited onsite collection of dead wood for campfires;
- available for livestock use or range improvements, subject to the special conditions;
- excluded from land treatments;
- excluded from wildlife habitat improvements;
- designated as closed to ORV use; and
- managed as VRM class I, with only those projects that meet class I objectives allowed.

Alternative E

The main canyon within the North Abajo area, Shay Canyon (1,770 acres), would be designated as an ACEC (figure 2-6) under the authority of 43 CFR 1610.7-2. It would be managed for conservation for future use and public use of cultural resources.

Activities within the ACEC would be approved only with special conditions to protect the cultural resources. Surface disturbance would be limited to provide maximum opportunity for the stated cultural resource uses, and to avoid both direct and indirect damage to cultural resources. Where damage cannot be avoided, impacts would be mitigated through limited or complete excavation. Any surface disturbance would be required to be successfully revegetated within 5 years.

The ACEC would be subject to the management prescriptions described for the North Abajo ACEC under alternative C, except that land treatments could be done only by chemical means or burning.

GRAND GULCH

Alternative A

The Grand Gulch Primitive Area (figure 2-2) would be managed under the provisions of 43 CFR 8352 until such time as the primitive area designation was rescinded. The Grand Gulch Archaeologic District, listed in the National Register of Historic Places (4,240 acres), would be managed as required by law to protect cultural resources.

No special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

The primitive area would remain closed to minerals leasing and segregated from mineral entry, and grazing would remain excluded from 11,200 acres.

Alternative B

The archaeological district (4,240 acres) would be managed as required by law to protect cultural resources.

No special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

The area would be open to minerals leasing, mineral entry, and grazing.

Alternative C

The archaeological district (4,240 acres) would be designated as an ACEC (figure 2-4) under the authority of 43 CFR 1610.7-2.

The ACEC would be managed for potential scientific use and public use of cultural resources. The ACEC would fall within an ONA (69,500 acres), also shown in figure 2-4, which would be managed to maintain primitive (P) and semiprimitive nonmotorized (SPNM) recreation opportunity spectrum (ROS) classes (appendix A).

Surface use would be limited to provide the opportunity for the stated cultural resources uses. Both direct and indirect damage to cultural resources would be avoided. Where damage cannot be avoided, impacts would be mitigated through limited or complete excavation. Any surface disturbance would be required to be successfully revegetated to visually match pre-existing conditions within 1 year.

The ACEC would be:

- open for minerals leasing with stipulations to prevent surface occupancy;
- available for geophysical work subject to the special conditions;
- closed to disposal of mineral materials;
- retained in public ownership and classified as segregated from entry (a Secretarial withdrawal would be requested);
- excluded from private and commercial use of woodland products, except for limited onsite collection of dead wood for campfires;
- excluded from livestock use, range improvements, or land treatments;
- excluded from wildlife habitat improvements;
- designated as closed to ORV use; and
- managed as VRM class I.

Alternative D

The archaeological district (4,240 acres) would be designated as an ACEC (figure 2-5) under the authority of 43 CFR 1610.7-2. The ACEC lies entirely within a natural succession area.

The ACEC would be managed for potential scientific use and public use of cultural resources. The ACEC would fall within an ONA (69,500 acres), also shown in figure 2-5, which would be managed under the special conditions for natural succession areas (appendix A).

Surface use would be limited to provide the opportunity for the stated cultural resource uses. Both direct and indirect damage to cultural resources would be avoided. Where damage cannot be avoided, impacts would be mitigated through limited or complete excavation. Any surface disturbance would be required to be successfully revegetated (with native species naturally occurring in the vicinity) to match pre-existing conditions within 1 year.

The ACEC would be:

- closed to minerals leasing;
- available for geophysical work subject to the special conditions;
- closed to disposal of mineral materials;
- retained in public ownership and classified as segregated from entry (a Secretarial withdrawal would be requested);
- excluded from private and commercial use of woodland products, except for limited onsite collection of dead wood for campfires;
- available for livestock use and range improvements, subject to the special conditions;
- excluded from land treatments;
- excluded from wildlife habitat improvements;
- designated as closed to ORV use; and
- managed as VRM class I with only projects that meet class I objectives allowed.

Alternative E

The Grand Gulch Primitive Area and an adjacent area in the vicinity of Slickhorn Canyon (49,130 acres), including the archaeological district (4,240 acres), would be designated as an ACEC (figure 2-6) under the authority of 43 CFR 1610.7-2.

The ACEC would be designated jointly under program 4331 to protect cultural resources and program 4333 to protect the natural values associated with primitive recreation. Cultural resources would be managed for potential scientific use and public use.

Activities within the ACEC would be approved only with special conditions to protect the cultural resources and the primitive recreation opportunities. Areas within the P ROS class would be managed to maintain that class (appendix A). Surface disturbance would be limited to provide maximum opportunity for the stated cultural resource uses, and to avoid both direct and indirect damage to cultural resources. Where damage cannot be avoided, impacts would be mitigated through limited or complete excavation. Any surface disturbance would be required to be successfully revegetated to visually match pre-existing conditions within 1 year.

The ACEC would be:

- open for minerals leasing with stipulations to prevent surface occupancy;
- available for geophysical work subject to the special conditions;
- closed to disposal of mineral materials;
- retained in public ownership and classified as segregated from entry (a Secretarial withdrawal would be requested);
- excluded from private and commercial use of woodland products, except for limited onsite collection of dead wood for campfires;
- partially excluded from livestock use (11,200 acres);
- excluded from livestock improvements or land treatments;
- excluded from wildlife habitat improvements;
- designated as limited to ORV use, with use limited to designated roads and trails;

- managed to limit recreational use if cultural resources are being damaged; and
- managed as VRM class I.

4333 RECREATION/VISUAL RESOURCES MANAGEMENT

DARK CANYON

Alternative A

The Dark Canyon Primitive Area (62,040 acres) (figure 2-2) would be managed under the provisions of 43 CFR 8352 until such time as the primitive area designation was rescinded.

No special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

The primitive area would remain closed to minerals leasing and segregated from mineral entry.

The area is open to grazing but is not now grazed.

Alternative B

No special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

The area would be open to minerals leasing, mineral entry, and grazing.

Alternative C

The primitive area would fall within an ONA (68,100 acres, figure 2-4) which would be managed to maintain P and SPNM ROS classes (appendix A). The ONA includes the Dark Canyon ISA and the Middle Point WSA.

The primitive area would be managed as under alternative A, and would remain segregated from mineral entry.

Alternative D

The primitive area would fall within an ONA (68,100 acres, figure 2-5) which would be managed under the special conditions for natural succession areas (appendix A). The ONA includes the Dark Canyon ISA and the Middle Point WSA.

The area would remain segregated from mineral entry.

Alternative E

The Dark Canyon Primitive Area (62,040 acres) would be designated as an ACEC (figure 2-6) under the authority of 43 CFR 1610.7-2, to protect the natural values associated with primitive recreation.

Activities within the ACEC would be approved only with special conditions to protect the primitive recreation opportunities. Areas within the P ROS class would be managed to maintain that class (appendix A). Any surface disturbance would be required to be successfully revegetated to visually match pre-existing conditions within 1 year.

The ACEC would be:

- open for minerals leasing with stipulations to prevent surface occupancy;
- available for geophysical work subject to the special conditions;
- closed to disposal of mineral materials;
- retained in public ownership and classified as segregated from entry;
- excluded from private and commercial use of woodland products, except for limited onsite collection of dead wood for campfires;
- excluded from livestock use, range improvements or land treatments;
- excluded from wildlife habitat improvements;

- designated as closed to ORV use; and

- managed as VRM class I.

SLICKHORN CANYON

Alternatives A and B

No special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

Alternative C

Slickhorn Canyon and the surrounding area would be designated as an ONA (25,800 acres, figure 2-4) and managed under the provisions of 43 CFR 8352. The ONA would be managed to maintain P and SPNM ROS classes (appendix A). The ONA includes part of the Slickhorn Canyon WSA.

Alternative D

Slickhorn Canyon and the surrounding area would be designated as an ONA (25,800 acres, figure 2-4) and would be managed under the provisions of 43 CFR 8352. The ONA would be managed under the special conditions for natural succession areas (appendix A). The ONA includes part of the Slickhorn Canyon WSA.

Alternative E

The southern part of the area falls within the Grand Gulch ACEC (49,130 acres), described above under Cultural Resources. For the remainder of the area, no special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

JOHNS CANYON

Alternatives A and B

No special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

Alternative C

Johns Canyon and the surrounding area (17,500 acres) would be designated as an ONA (figure 2-4) and managed under 43 CFR 8352. The ONA, which includes part of the Slickhorn Canyon WSA, would be managed to maintain P and SPNM ROS classes (appendix A).

Alternative D

Johns Canyon and the surrounding area (17,500 acres) would be designated as an ONA (figure 2-5) and managed under 43 CFR 8352. The ONA, which includes part of the Slickhorn Canyon WSA, would be managed under the special conditions for natural succession areas (appendix A).

Alternative E

The southern part of the area falls within the Grand Gulch ACEC (49,130 acres), described above under Cultural Resources. For the remainder of the area, no special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

FISH AND OWL CANYONS

Alternatives A and B

No special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

Alternative C

The area surrounding Fish Creek Canyon and Owl Creek Canyon (40,300 acres) would be designated as an ONA (figure 2-4) and managed under 43 CFR 8352. The ONA, which includes part of the Fish Creek Canyon WSA, would be managed to maintain P and SPNM ROS classes (appendix A).

Alternative D

The area surrounding Fish Creek Canyon and Owl Creek Canyon (40,300 acres) would be designated as an ONA (figure 2-5) and managed under 43 CFR 8352. The ONA, which includes part of the Fish

Creek Canyon WSA, would be managed under the special conditions for natural succession areas (appendix A).

Alternative E

No special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

ROAD CANYON

Alternatives A and B

No special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

Alternative C

Road Canyon and the surrounding area (24,500 acres) would be designated as an ONA (figure 2-4) and managed under 43 CFR 8352. The ONA, which includes part of the Road Canyon WSA, would be managed to maintain P and SPNM ROS classes (appendix A).

Alternative D

Road Canyon and the surrounding area (24,500 acres) would be designated as an ONA (figure 2-5) and managed under 43 CFR 8352. The ONA, which includes part of the Road Canyon WSA, would be managed under the special conditions for natural succession areas (appendix A).

Alternative E

No special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

LIME CANYON

Alternatives A and B

No special management prescriptions have been developed. Projects would be analyzed individu-

ally to provide for mitigation of adverse environmental impacts.

Alternative C

Lime Canyon and the surrounding area (25,300 acres) would be designated as an ONA (figure 2-4) and managed under 43 CFR 8352. The ONA, which includes part of the Road Canyon WSA, would be managed to maintain P and SPNM ROS classes (appendix A).

Alternative D

Lime Canyon and the surrounding area (25,300 acres) would be designated as an ONA (figure 2-5) and managed under 43 CFR 8352. The ONA, which includes part of the Road Canyon WSA, would be managed under the special conditions for natural succession areas (appendix A).

Alternative E

No special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

MULE CANYON

Alternatives A and B

No special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

Alternative C

Mule Canyon and the surrounding area (6,000 acres) would be designated as an ONA (figure 2-4) and managed under 43 CFR 8352. The ONA, which includes the Mule Canyon WSA, would be managed to maintain P and SPNM ROS classes (appendix A).

Alternative D

Mule Canyon and the surrounding area (6,000 acres) would be designated as an ONA (figure 2-5) and managed under 43 CFR 8352. The ONA, which includes the Mule Canyon WSA, would be

managed under the special conditions for natural succession areas (appendix A).

Alternative E

No special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

ARCH CANYON

Alternatives A, B, and C

No special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

Alternative D

Arch Canyon and the surrounding area (4,200 acres) would be designated as an ONA (figure 2-5) and managed under 43 CFR 8352. The ONA would be managed under the special conditions for natural succession areas (appendix A).

Alternative E

No special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

LOCKHART BASIN

Alternatives A and B

No special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

Alternative C

The Lockhart Basin area (56,660 acres) would be designated as an ACEC (figure 2-4) under the authority of 43 CFR 1610.7-2 to protect scenic values as viewed from the Needles and Hatch Point Overlooks on Hatch Point in Grand Resource Area.

Activities within the ACEC would be approved only with special conditions to protect the scenic values. Any surface disturbance would be required to be successfully revegetated within 5 years.

The ACEC would be:

- open for minerals leasing and geophysical work with special conditions;
- open to mineral entry with an approved plan of operations, subject to the special conditions insofar as possible;
- available for disposal of mineral materials, subject to the special conditions;
- retained in public ownership and not classified, segregated, or withdrawn from entry;
- available for private and commercial use of woodland products, subject to the special conditions;
- available for livestock use, land treatments or range improvements, subject to the special conditions;
- designated as limited to ORV use, with use limited to existing roads and trails; and
- managed as VRM class I.

Alternative D

The Lockhart Basin area (56,660 acres) would be designated as an ACEC under the authority of 43 CFR 1610.7-2. The ACEC, which overlaps a natural succession area, is shown in figure 2-5.

Activities within the ACEC would be approved only with special conditions to protect the scenic values. Any surface disturbance would be required to be successfully revegetated (with native species naturally occurring in the vicinity) to visually match pre-existing conditions within 5 years.

The portion of the ACEC within the natural succession area would be managed in accordance

with the requirements for those areas (appendix A).

The portion of the ACEC that is not in a natural succession area would be:

- open for minerals leasing with stipulations to prevent surface occupancy;
- available for geophysical work subject to the special conditions;
- closed to disposal of mineral materials;
- open to mineral entry with an approved plan of operations, subject to the special conditions insofar as possible;
- retained in public ownership and not classified, segregated, or withdrawn from entry;
- excluded from private and commercial use of woodland products, except for limited onsite collection of dead wood for campfires;
- available for livestock use or range improvements, subject to the special conditions;
- excluded from land treatments;
- designated as limited to ORV use, with use limited to existing roads and trails; and
- managed as VRM class I, with only those projects that meet class I objectives allowed.

Alternative E

No special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

4351 HABITAT MANAGEMENT

CAJON POND

Alternatives A, B and C

No special management prescriptions have been developed. Projects would be analyzed indi-

vidually to provide for mitigation of adverse environmental impacts.

Alternative D

No special management prescriptions have been developed. Projects would be analyzed individually to provide for mitigation of adverse environmental impacts.

The area falls within the Hovenweep ACEC. Management prescriptions for this area are described above under Cultural Resources.

Alternative E

The area around Cajon Pond (40 acres) would be designated as an ACEC (figure 2-6) under the authority of 43 CFR 1610.7-2.

Activities within the ACEC would be approved only with special conditions to protect the riparian wildlife habitat. The pond provides food and cover for waterfowl. No surface disturbance or occupancy would be allowed within the ACEC during the shore bird and waterfowl courtship and nesting season (March 1 to June 30 annually); at other times, any activities would have to be conducted in a manner that would disrupt these animals as little as possible. Any surface disturbance would be required to be successfully revegetated within 5 years.

The ACEC would be:

- open for minerals leasing and geophysical work subject to the special conditions;
- available for disposal of mineral materials, subject to the special conditions;
- open to mineral entry with an approved plan of operations, subject to stipulations precluding surface use insofar as possible;
- retained in public ownership and not classified, segregated, or withdrawn from entry;
- excluded from private and commercial use of woodland products, except for limited onsite collection of dead wood for campfires (only in the unfenced area);
- allotted for livestock use only in the unfenced area;
- closed to land treatments or range improvements; and
- designated as limited to ORV use, with use limited to designated roads and trails.

APPENDIX J — RANGE MONITORING PROCEDURES

OVERVIEW

The purpose of this appendix is to provide specific information on the procedures that will be followed prior to implementing grazing decisions.

BASIC CONSIDERATIONS

PRIORITIES

Allotments will receive studies in the following priority: (1) problem allotments or those in the Improve category (appendixes D and O); (2) allotments under allotment management plans (AMPs) or grazing systems (appendix P); (3) allotments where management actions are planned; (4) all remaining allotments.

Studies will be conducted as follows:

- (1) A complete set of studies (excluding climate) will be established on allotments.
- (2) Climate studies will be established in representative areas or areas where there are data gaps to supplement existing weather station data.
- (3) Studies will be conducted to provide data necessary to verify or adjust stocking rates for livestock and/or wildlife ungulate populations, adjust seasons of use for livestock, and evaluate progress in achieving management objectives for vegetation resources.

STUDIES

Basic studies will include actual use, utilization, trend, and climate. Phenology may be collected as necessary to support the above

studies. These studies will be considered the standard. Additional studies (water quality, browse utilization, soil erosion, etc.) may be necessary on crucial, key areas. The key area species concept will be used in all range studies.

STUDY METHODS

Study methods listed below are those recommended for Utah. Specific circumstances may warrant use of other study methods outlined in Bureau of Land Management (BLM) technical references or other modified study procedures. Alternative study procedures must be approved by the State Director prior to implementation.

ACTUAL USE STUDIES

Actual grazing use surveys from operators will be taken annually at the end of the grazing season or billing year. Livestock (and wildlife) counts can be taken at any time deemed appropriate by the range manager.

The following information will be required from the livestock operator: (1) allotment name, pastures grazed; (2) livestock numbers grazed; (3) season of use (dates); and (4) movement dates to and from specific use areas.

Procedures for actual use studies are outlined in Bureau Technical Reference 4400-2, on file in the San Juan Resource Area (SJRA) office.

UTILIZATION STUDIES

Data will be collected at the end of each grazing period as soon as possible after each kind of animal leaves an allotment or pasture. Where both livestock and wildlife ungulates use the area simultaneously, it may be necessary to

compare use on adjacent nonuse pastures or on differential exclosures.

Methodology will normally be the key forage plant method. Techniques for estimating utilization are found in Bureau Technical Reference 4400-3, on file at SJRA.

Photographs of key species can be taken showing the different levels of use in both grasses and shrubs to supplement transect information. Mapping should show utilization patterns according to the standard 20 percent class intervals. Mapping will be done in the field on topographic maps, orthophotoquads, or other suitable maps or photos, and kept in the allotment study file.

TREND STUDIES

Trend data will quantify vegetation changes in terms of plant frequency (percentage of occurrence). These data will be used to determine whether rangeland is moving toward or away from its potential and specific management objectives.

The type of study used will be the nested quadrat frequency method as outlined in Instruction Memorandum No. UT 85-193 and Bureau Technical Reference 4400-4, filed at SJRA. This consists of 100 to 200 quadrats on 5 to 10 transects running perpendicular to a 100-foot baseline. Also included is one 3x3- or 5x5-foot plot. Quadrat frame size used will be 6, 12, and 24 inches. Photos will include a closeup of the 3x3- or 5x5-foot plot and general views from the starting and ending points of the 100-foot baseline.

Data will be collected the year prior to proposed 3- and 5-year decisions following an environmental impact statement (EIS) or resource management plan (RMP) and in accordance with the frequency key for range trend thereafter.

Trend study areas will be correctly located on a topographic map or orthophotoquads and made a part of the study area's permanent file.

CLIMATE STUDIES

Climate data are needed to make a reasonable analysis of climate influences on plant growth as related to normal or average years and to differentiate between management-caused vegetation changes and natural occurrences.

Sites will be selected on the basis of the climatic classification scheme used by the Soil Conservation Service (i.e., desert, semidesert, upland, mountain, and high mountain).

Data needs include daily precipitation and daily maximum and minimum air and soil temperatures. Additional data needed to improve accuracy of calculations, especially in early phases, include (1) the date of last permanent snow cover; (2) soil moisture at beginning of growth for selected key species at representative locations, then at mid and late growing season; and (3) wind speed and duration.

Data can be gathered from a number of sources (e.g., livestock operators; BLM rain gauges; remote automatic sensing devices; other local and federal agencies; and permanent weather stations) to provide adequate coverage with limited resources.

EVALUATION

Evaluation of studies data will be in accordance with Bureau Technical Reference 4400-7, on file at SJRA, and Instruction Memorandum UT 85-193, which combines previously issued policy and guidance into one package. The memorandum directs that (1) allotment priorities be followed, (2) monitoring data be evaluated as soon as they are compiled, and (3) range users be invited to participate in the range monitoring process.

The evaluations will be used to assess progress in meeting the management objectives for each allotment and to determine whether changes in grazing management are needed in order to meet those objectives.

APPENDIX K — BUDGET COSTS OF IMPLEMENTING EACH ALTERNATIVE

OVERVIEW

The purpose of this appendix is to present information on the methods used to determine support requirements for the various alternatives.

BASELINE BUDGET

Budgets were developed for each alternative plan using the fiscal year 1985 budget as a baseline (table AK-1). Several adjustments were necessary to reflect the average cost of managing public lands in the San Juan Resource Area (SJRA) under existing management.

Budget costs include both labor and nonlabor costs. Moab District Office (MDO) labor costs are recorded by resource management program (subactivity) and resource area, but most of the nonlabor costs are not delineated by resource area. Furthermore, much of the MDO labor can be directly attributed to managing lands in each of the four resource areas. For these reasons, MDO labor cost and the entire district's nonlabor cost were allocated to the four resource areas in proportion to each's labor cost. The budget summaries therefore have three cost categories: (1) SJRA's 1985 labor cost; (2) SJRA's allocation of the MDO 1985 labor cost; and (3) SJRA's allocation of the MDO nonlabor cost.

The budget also had to be adjusted to account for the planning cycle. Most of the cost associated with the 10-year planning cycle is concentrated during the 2 years when most of the the resource management plan (RMP) work is done. Because 1985 was the first of these 2 years of concentrated planning expenditures, planning costs were adjusted to approximate an average annual cost. The remaining expenditures coded to planning were allocated to the other

area programs in proportion to each program's labor cost. New BLM projects and reimbursable program costs were excluded.

COST PROJECTIONS

District office program leaders and SJRA resource specialists estimated changes in the amount of labor needed to manage each program under each alternative. Changes in support labor and nonlabor cost were projected based on the existing ratio of support labor and nonlabor cost to direct labor cost. The alternative budgets include estimated costs for the proposed land investments.

The budgets presented are based on 1985 dollars and do not account for inflation. Activity plans with detailed site-specific management and investments were not available. The cost projections for each alternative are therefore not precise and should be used only as a means for comparing alternatives.

ALTERNATIVE BUDGETS

Projected management costs under alternative A (tables AK-2, AK-3, AK-4, AND AK-5) exceed the baseline budget (table AK-1). This increased cost is partly because investment cost was eliminated from the baseline budget, although the cost of implementing alternative A would exceed the 1985 management cost even with the 1985 investments included in the baseline budget. The reason that costs are higher under alternative A than under the 1985 baseline budget is explained by (1) the low level of investment in 1985 because the San Juan RMP was not completed; and (2) the additional management needed to fully implement existing programs.

TABLE AK-1

Baseline Budget
(1985 dollars)

Subactivity	Resource Area Labor Cost	Moab District Support Labor Cost	Moab District Resource Area Nonlabor Cost	Total Cost
4111 Oil and Gas	87,910	79,930	66,440	234,280
4121 Coal	150	130	60	340
4131 Mineral Materials	7,000	2,100	1,500	10,600
4132 Mining Law	9,220	2,120	2,400	13,740
4211 Rights-of-Way	28,550	8,710	6,110	43,370
4212 Lands	21,220	13,050	8,110	42,380
4220 Withdrawal	2,140	980	550	3,670
4311 Forest Management	5,100	760	720	6,580
4321 Wild Horse & Burro ^a	90	10	20	120
4322 Grazing	74,580	15,490	28,100	118,170
4331 Cultural	74,930	16,880	37,000	128,820
4332 Wilderness ^b	13,030	6,050	5,870	24,950
4333 Recreation	25,700	6,470	15,070	47,240
4341 Soil, Water, Air	4,650	7,280	7,780	19,710
4342 Hazardous Waste	0	450	200	650
4351 Habitat Management	8,840	3,250	10,070	22,160
4352 Endangered Species	7,250	4,510	3,340	15,100
4360 Fire Management	0	6,350	3,390	9,740
4410 Planning	14,340	27,430	9,980	51,750
4420 Data Management	0	0	160	160
4610 Presuppression	18,340	12,310	11,170	41,820
4620 Firefighting	2,930	8,630	17,110	28,670
4630 Fire Rehab.	0	200	100	300
4711 Building Maint.	4,490	2,500	40,000	10,990
4712 Recreation Maint.	7,170	9,750	35,770	52,690
4713 Transportation	1,350	5,580	43,300	49,530
4714 Engineering	0	3,060	3,010	6,070
4820 Equal Employment	0	1,270	530	1,800
4830 Support Services	6,670	31,330	17,570	55,570
8100 Range Improve.	0	0	0	0
9350 Quarters Maint	4,880	10	750	5,640
TOTALS	430,530	277,000	339,060	1,046,590

^aThis subactivity is not carried forward under any alternative because of management actions for wild horses and burros have been developed or projected.

^bThis subactivity is not carried forward under any alternative because the RMP/EIS alternatives were developed to determine what the management of wilderness review areas would be if not designated as wilderness. If an area were designated as wilderness, funding under this program would be adjusted accordingly. Expenditures to date have been on the wilderness study process; funding for this phase may continue but has little bearing on this analysis.

TABLE AK-2

Comparison of Support Requirements Under Alternative B
(in thousands of dollars)

Subactivity/Program	Alternative A				Alternative B			
	SJRA Labor Cost	MDO Labor Cost	Non- labor Cost	Total	SJRA Labor Cost	MDO Labor Cost	Non- labor Cost	Total
2300 Access	0.0	2.9	0.0	2.9	0.0	2.9	0.0	2.9
4111 Oil and Gas	87.5	79.6	66.4	233.5	92.3	83.9	69.8	246.0
4121 Coal	0.0	0.0	0.0	0.0	4.0	3.6	2.0	9.6
4122 Tar Sand	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.3
4131 Mineral Materials	7.0	2.1	1.5	10.6	7.0	2.1	1.5	10.6
4132 Mining Law	8.8	2.0	2.3	13.1	8.8	2.0	2.3	13.1
4211 Rights-of-Way	23.4	7.1	5.0	35.5	25.7	7.9	5.5	39.1
4212 Lands	30.6	18.8	11.7	61.1	23.0	14.1	8.8	45.9
4220 Withdrawals	2.1	1.0	0.5	3.6	4.4	2.0	1.1	7.5
4311 Forest Management	9.6	1.4	7.4	18.4	9.6	1.4	7.4	18.4
4322 Grazing	87.4	37.1	39.5	164.0	118.8	72.9	101.2	292.9
4331 Cultural	93.7	21.1	71.2	186.0	78.4	17.7	60.6	156.7
4333 Recreation	23.9	6.8	16.8	47.5	23.9	6.8	16.4	47.1
4341 Soil, Water, Air	7.2	16.1	15.6	38.9	7.2	16.1	15.6	38.9
4342 Hazardous Waste	0.0	0.4	0.2	0.6	0.0	0.4	0.2	0.6
4351 Habitat Management	13.3	8.2	55.1	76.6	13.3	8.2	55.1	76.6
4352 Endangered Species	7.3	4.5	3.3	15.1	7.3	4.5	3.3	15.1
4360 Fire Management	0.0	6.3	3.4	9.7	0.0	6.3	3.4	9.7
4410 Planning	15.1	27.7	10.2	53.0	15.8	27.9	10.4	54.1
4420 Data Management	0.0	0.0	0.2	0.2	0.0	0.0	0.2	0.2
4610 Presuppression	18.3	12.3	11.2	41.8	18.3	12.3	11.2	41.8
4620 Firefighting	2.9	8.6	17.1	28.6	2.5	7.3	14.5	24.3
4630 Fire Rehab.	0.0	0.2	0.1	0.3	0.0	0.2	0.1	0.3
4711 Building Maint.	4.6	2.6	41.2	48.4	4.7	2.6	41.7	49.0
4712 Recreation Maint.	6.0	8.1	29.8	43.9	6.0	8.1	29.8	43.9
4713 Transportation	1.4	6.0	43.3	50.7	1.4	6.0	43.3	50.7
4714 Engineering	0.0	3.0	3.0	6.0	0.0	3.2	3.0	6.2
4820 Equal Employment	0.0	1.3	0.5	1.8	0.0	1.3	0.5	1.8
4830 Support Services	6.9	32.1	18.0	57.0	7.0	32.9	18.4	58.3
8100 Range Improve.	0.0	27.4	25.1	52.5	0.0	192.8	176.6	369.4
9350 Quarters Maint.	4.9	0.0	0.8	5.7	4.9	0.0	0.8	5.7
TOTAL	462.0	344.8	500.5	1,307.3	484.4	547.5	704.8	1,736.7

TABLE AK-3

Comparison of Support Requirements Under Alternative C
(in thousands of dollars)

Subactivity/Program	Alternative A				Alternative C			
	SJRA Labor Cost	MDO Labor Cost	Non- labor Cost	Total	SJRA Labor Cost	MDO Labor Cost	Non- labor Cost	Total
2300 Access	0.0	2.9	0.0	2.9	0.0	2.9	0.0	2.9
4111 Oil and Gas	87.5	79.6	66.4	233.5	92.3	83.9	69.8	246.0
4121 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4122 Tar Sand	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.3
4131 Mineral Materials	7.0	2.1	1.5	10.6	7.0	2.1	1.5	10.6
4132 Mining Law	8.8	2.0	2.3	13.1	13.2	3.0	13.4	29.6
4211 Rights-of-Way	23.4	7.1	5.0	35.5	30.4	9.3	6.5	46.2
4212 Lands	30.6	18.8	11.7	61.1	23.0	14.1	8.8	45.9
4220 Withdrawals	2.1	1.0	0.5	3.6	4.4	2.0	1.1	7.5
4311 Forest Management	9.6	1.4	7.4	18.4	9.6	1.4	1.4	12.4
4322 Grazing	87.4	37.1	39.5	164.0	91.6	156.5	289.2	537.3
4331 Cultural	93.7	21.1	71.2	186.0	114.7	25.8	87.9	228.4
4333 Recreation	23.9	6.8	16.8	47.5	49.6	14.2	51.2	115.0
4341 Soil, Water, Air	7.2	16.1	15.6	38.9	7.2	16.1	15.6	38.9
4342 Hazardous Waste	0.0	0.4	0.2	0.6	0.0	0.4	0.2	0.6
4351 Habitat Management	13.3	8.2	55.1	76.6	19.9	12.3	134.6	166.8
4352 Endangered Species	7.3	4.5	3.3	15.1	7.3	4.5	3.3	15.1
4360 Fire Management	0.0	6.3	3.4	9.7	0.0	6.3	3.4	9.7
4410 Planning	15.1	27.7	10.2	53.0	17.7	28.7	11.1	57.5
4420 Data Management	0.0	0.0	0.2	0.2	0.0	0.0	0.2	0.2
4610 Presuppression	18.3	12.3	11.2	41.8	18.3	12.3	11.2	41.8
4620 Firefighting	2.9	8.6	17.1	28.6	2.5	7.3	14.5	24.3
4630 Fire Rehab.	0.0	0.2	0.1	0.3	0.0	0.2	0.1	0.3
4711 Building Maint.	4.6	2.6	41.2	48.4	5.0	2.9	45.2	53.1
4712 Recreation Maint.	6.0	8.1	29.8	43.9	17.2	23.3	77.5	118.0
4713 Transportation	1.4	6.0	43.3	50.7	1.4	6.0	43.3	50.7
4714 Engineering	0.0	3.0	3.0	6.0	0.0	3.2	3.0	6.2
4820 Equal Employment	0.0	1.3	0.5	1.8	0.0	1.4	0.6	2.0
4830 Support Services	6.9	32.1	18.0	57.0	7.4	35.3	19.7	62.4
8100 Range Improve.	0.0	27.4	25.1	52.5	0.0	837.9	405.8	1,243.7
9350 Quarters Maint.	4.9	0.0	0.8	5.7	4.9	0.0	0.8	5.7
TOTAL	462.0	344.8	500.5	1,307.3	544.7	1,313.4	1,321.0	3,179.1

TABLE AK-4

Comparison of Support Requirements Under Alternative D
(in thousands of dollars)

Subactivity/Program	Alternative A				Alternative D			
	SJRA Labor Cost	MDO Labor Cost	Non- labor Cost	Total	SJRA Labor Cost	MDO Labor Cost	Non- labor Cost	Total
2300 Access	0.0	2.9	0.0	2.9	0.0	2.9	0.0	2.9
4111 Oil and Gas	87.5	79.6	66.4	233.5	43.9	39.9	33.2	117.0
4121 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4122 Tar Sand	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.3
4131 Mineral Materials	7.0	2.1	1.5	10.6	7.0	2.1	1.5	10.6
4132 Mining Law	8.8	2.0	2.3	13.1	7.0	1.6	11.8	20.4
4211 Rights-of-Way	23.4	7.1	5.0	35.5	37.4	11.4	8.0	56.8
4212 Lands	30.6	18.8	11.7	61.1	23.0	14.1	8.8	45.9
4220 Withdrawals	2.1	1.0	0.5	3.6	8.9	4.1	2.3	15.3
4311 Forest Management	9.6	1.4	7.4	18.4	9.6	1.4	11.4	22.4
4322 Grazing	87.4	37.1	39.5	164.0	79.1	148.4	249.5	477.0
4331 Cultural	93.7	21.1	71.2	186.0	137.6	31.0	44.3	212.9
4333 Recreation	23.9	6.8	16.8	47.5	46.6	13.3	41.3	101.2
4341 Soil, Water, Air	7.2	16.1	15.6	38.9	7.2	16.1	12.1	35.4
4342 Hazardous Waste	0.0	0.4	0.2	0.6	0.0	0.4	0.2	0.6
4351 Habitat Management	13.3	8.2	55.1	76.6	17.7	11.0	120.1	148.8
4352 Endangered Species	7.3	4.5	3.3	15.1	7.3	4.5	3.3	15.1
4360 Fire Management	0.0	6.3	3.4	9.7	0.0	6.3	3.4	9.7
4410 Planning	15.1	27.7	10.2	53.0	16.1	26.9	10.3	53.3
4420 Data Management	0.0	0.0	0.2	0.2	0.0	0.0	0.2	0.2
4610 Presuppression	18.3	12.3	11.2	41.8	18.3	12.3	11.2	41.8
4620 Firefighting	2.9	8.6	17.1	28.6	2.5	7.3	14.5	24.3
4630 Fire Rehab.	0.0	0.2	0.1	0.3	0.0	0.2	0.1	0.3
4711 Building Maint.	4.6	2.6	41.2	48.4	4.8	2.4	41.2	48.4
4712 Recreation Maint.	6.0	8.1	29.8	43.9	6.0	8.1	29.8	43.9
4713 Transportation	1.4	6.0	43.3	50.7	1.4	6.0	43.3	50.7
4714 Engineering	0.0	3.0	3.0	6.0	0.0	2.9	3.0	5.9
4820 Equal Employment	0.0	1.3	0.5	1.8	0.0	1.3	0.5	1.8
4830 Support Services	6.9	32.1	18.0	57.0	7.1	29.5	16.9	53.5
8100 Range Improve.	0.0	27.4	25.1	52.5	0.0	814.7	746.6	1,561.3
9350 Quarters Maint.	4.9	0.0	0.8	5.7	4.9	0.0	0.0	4.9
TOTAL	462.0	344.8	500.5	1,307.3	493.5	1,220.2	1,468.9	3,182.6

TABLE AK-5

Comparison of Support Requirements Under Alternative E
(in thousands of dollars)

Subactivity/Program	Alternative A				Alternative E			
	SJRA Labor Cost	MDO Labor Cost	Non- labor Cost	Total	SJRA Labor Cost	MDO Labor Cost	Non- labor Cost	Total
2300 Access	0.0	2.9	0.0	2.9	0.0	2.9	0.0	2.9
4111 Oil and Gas	87.5	79.6	66.4	233.5	87.9	79.9	66.4	234.2
4121 Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4122 Tar Sand	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.3
4131 Mineral Materials	7.0	2.1	1.5	10.6	7.0	2.1	1.5	10.6
4132 Mining Law	8.8	2.0	2.3	13.1	11.0	2.5	8.9	22.4
4211 Rights-of-Way	23.4	7.1	5.0	35.5	28.1	8.6	6.0	42.7
4212 Lands	30.6	18.8	11.7	61.1	30.6	18.8	11.7	61.1
4220 Withdrawals	2.1	1.0	0.5	3.6	3.3	1.5	0.8	5.6
4311 Forest Management	9.6	1.4	7.4	18.4	9.6	1.4	7.4	18.4
4322 Grazing	87.4	37.1	39.5	164.0	91.6	34.6	51.8	178.0
4331 Cultural	93.7	21.1	71.2	186.0	114.7	25.8	87.9	228.4
4333 Recreation	23.9	6.8	16.8	47.5	48.1	13.7	50.3	112.1
4341 Soil, Water, Air	7.2	16.1	15.6	38.9	7.2	16.1	15.6	38.9
4342 Hazardous Waste	0.0	0.4	0.2	0.6	0.0	0.4	0.2	0.6
4351 Habitat Management	13.3	8.2	55.1	76.6	19.9	12.3	134.6	166.8
4352 Endangered Species	7.3	4.5	3.3	15.1	7.3	4.5	3.3	15.1
4360 Fire Management	0.0	6.3	3.4	9.7	0.0	6.3	3.4	9.7
4410 Planning	15.1	27.7	10.2	53.0	17.6	28.7	11.0	57.3
4420 Data Management	0.0	0.0	0.2	0.2	0.0	0.0	0.2	0.2
4610 Presuppression	18.3	12.3	11.2	41.8	18.3	12.3	11.2	41.8
4620 Firefighting	2.9	8.6	17.1	28.6	2.5	7.3	14.5	24.3
4630 Fire Rehab.	0.0	0.2	0.1	0.3	0.0	0.2	0.1	0.3
4711 Building Maint.	4.6	2.6	41.2	48.4	5.0	2.8	44.6	52.4
4712 Recreation Maint.	6.0	8.1	29.8	43.9	17.2	23.3	77.5	118.0
4713 Transportation	1.4	6.0	43.3	50.7	1.4	6.0	43.3	50.7
4714 Engineering	0.0	3.0	3.0	6.0	0.0	3.3	3.0	6.3
4820 Equal Employment	0.0	1.3	0.5	1.8	0.0	1.4	0.6	2.0
4830 Support Services	6.9	32.1	18.0	57.0	7.4	35.1	19.7	62.2
8100 Range Improve.	0.0	27.4	25.1	52.5	0.0	61.1	56.0	117.1
9350 Quarters Maint.	4.9	0.0	0.8	5.7	4.9	0.0	0.8	5.7
TOTAL	462.0	344.8	500.5	1,307.3	540.7	413.0	732.4	1,686.1

The projected budgets indicate that the no action alternative would be the least costly to implement, followed by alternatives E, B, C, and D, respectively. The programs responsible for most of the cost differences among alternatives are oil and gas management, mining law administration, rights-of-way, lands, withdrawal processing and review, grazing management, cultural resource management, recreation management, and habitat management.

Management costs under alternative B are projected to be 33 percent greater than under alternative A. Additional oil and gas activity management costs would more than make up for the reduced enforcement required by the fewer stipulations and special conditions. This additional activity is also projected to increase the number of rights-of-way processed. Removing existing withdrawals would increase the cost of managing that program. The higher levels of grazing and associated investments should increase grazing program management costs. Wildlife and recreation management costs are projected to change little, and cultural and lands program management costs are projected to decrease slightly.

Management costs under alternative C are projected to be 143 percent greater than under alternative A. The greater inspection and enforcement costs, necessary to implement the proposed stipulations and special conditions, would more than make up for any decrease in oil and gas and locatable mineral activity. Additional withdrawal processing would be required for the special designation areas, and rights-of-way would be needed for many types of access that had not previously required a right-of-way. Cultural resources would be more actively managed with greater levels of resource inventory, excavation, and stabilization work. Investments for livestock, recreation, and wildlife would increase, especially because of

proposed fencing of riparian areas. Slight decreases in the lands program costs are projected.

Management costs under alternative D are projected to be 143 percent greater than under alternative A. The greater inspection and enforcement costs, necessary to implement the proposed restrictions, would more than make up for any decrease in locatable mineral activity. However, the proposed stipulations and special conditions are so restrictive that both oil and gas activity and program management cost would decrease. Management costs would be increased by the need for new withdrawals for some special designation areas, additional rights-of-way for access through these areas, more active management of recreation and wildlife, and inventory, excavation, and stabilization of cultural sites. Increased investments for livestock, recreation, and wildlife are also proposed, with one of the major investments being riparian fencing. Slight decreases in the lands program costs are projected.

Management costs under alternative E are projected to be 29 percent greater than under alternative A. The slightly increased level of inspection and enforcement required under the proposed stipulations and special conditions would increase costs slightly. Additional withdrawal processing would be required for the special designation areas, and rights-of-way would be needed for many types of access that did not previously require a right-of-way. Cultural resources would be more actively managed with greater levels of resource inventory, excavation, and stabilization work. Higher levels of investment are also proposed for recreation and wildlife. Investments for livestock would change little.

APPENDIX L — OIL AND GAS LEASING CATEGORIES

OVERVIEW

The purpose of this appendix is to explain the Bureau of Land Management's (BLM's) system for categorizing lands for oil and gas leasing and to provide general background information regarding the categories currently in effect and the revised system that has been proposed.

Under both systems, lands are studied in detail to assess all resource values present on the surface, as well as the potential for oil and gas resources. Lands are then placed in a given leasing category, based on the need to resolve surface resource conflicts.

CURRENT CATEGORIES

In 1975, the BLM in Utah established four leasing categories to determine which areas would be leased and under what conditions. Lands placed into category 1 are open to leasing with standard lease stipulations; category 2 lands are open to leasing with special stipulations to mitigate potential impacts to other resources from exploration and development of the lease; category 3 lands are open to leasing, but have a no surface occupancy stipulation, meaning that any development must be done without surface disturbance, usually by directional drilling from offlease areas; and category 4 lands are closed to leasing due to congressional or administrative withdrawal to protect nationally significant resource values on the surface.

Existing categories will be re-evaluated under the resource management plan/environmental impact statement (RMP/EIS) to see if all concerns and conflicts are still valid. Guidance for determining oil and gas leasing categories is addressed specifically in

instruction memorandums 84-254, 84-415, and 85-260. Further planning guidance to the field is established in instruction memorandums UT 82-259 and UT 83-70.

REVISED CATEGORIES

The BLM is in the process of changing the four-category system. This system has not yet (January 1985) been finalized, but it appears that three leasing categories will be used. Category 1 areas will include those lands where impacts to surface resources can be mitigated with standard lease conditions and special lease conditions where required. This is essentially a combination of the old categories 1 and 2. Category 2 areas will be leased, but will contain a no surface occupancy stipulation. Category 3 lands will be closed to leasing.

Information Bulletin 84-261 proposes the revised category system in a draft form and indicates that lands in category 1 are those areas where adequate surface protection and multiple use management should be possible through enforcement of standard lease terms, regulations, and formal operating orders. Lands in this category may also require enforcement of certain temporary or seasonal operating constraints to protect critical wildlife areas; areas of steep slopes or sensitive soils; buffer zones along streams, roads, springs or ponds; archaeological sites; or special use areas, which are of limited size. Such special conditions should allow the lease holder to explore, develop, and produce the lease without greatly increased costs or time delays.

Category 2 lands would include areas where surface resources are so sensitive that the development of oil and gas resources is essentially incompatible with surface resource

management. In these areas, the basic right that would otherwise be granted under the standard oil and gas lease, to conduct surface operations on a leasehold for exploration, development, and production, would be severely constrained. The lands could be developed only at a substantially increased cost to the developer, as a result of the no surface

occupancy stipulation, which would necessitate directional drilling from offlease lands.

Category 3 leasing would apply to lands where leasing is not permitted under law, regulation, or Secretarial policy; where lands are formally withdrawn; or where withdrawal is being considered.

APPENDIX M — VEGETATION ZONES AND ASSOCIATIONS

OVERVIEW

This appendix provides specific information regarding the acreages and percentages of the resource area that are covered by the various

vegetation associations. This information, along with vegetation zones and species common to each association, will be found in table AM-1.

TABLE AM-1

Vegetation Zones and Associations

<u>Zone</u>	<u>Vegetation Association</u>	<u>Habitat Type (Common Species)</u>	<u>Acres</u>	<u>Percent of Resource Area</u>
Saltbush	Desert shrub	shadscale, Mormon tea, blackbrush	47,700	2
Saltbush	Desert shrub - grassland	Indian ricegrass, curlygrass, shadscale fourwing saltbush	143,090	6
Saltbush	Desert shrub - pinyon-juniper	shadscale, Mormon tea, blackbrush, pinyon pine, Utah juniper	95,390	4
Sagebrush	Semidesert shrub - grassland	fourwing saltbush, Mormon tea, blue gramma, Indian ricegrass, curlygrass	71,540	3
Sagebrush	Semidesert shrub - grassland	fourwing saltbush, blue gramma, Indian ricegrass, curlygrass, Wyoming sagebrush	23,850	1
Sagebrush	Sagebrush - pinyon-juniper	big sagebrush, curlygrass, needle-and-thread grass, Indian ricegrass, pinyon pine, Utah juniper	143,090	6
Pinyon-juniper	Pinyon-juniper - desert shrub	pinyon pine, Utah juniper, blackbrush, curlygrass	5,270	(less than 1)
Pinyon-juniper	Pinyon-juniper - saltbush	pinyon pine, Utah juniper, Nuttall saltbush, curlygrass, Indian ricegrass	166,940	7
Pinyon-juniper	Pinyon-juniper - sagebrush	pinyon pine, Utah juniper, Wyoming sagebrush	214,630	9
Pinyon-juniper	Pinyon-juniper - shrub	pinyon pine, Utah juniper, service-berry	429,260	18

Pinyon-juniper	Pinyon-juniper - sagebrush - shrub	pinyon pine, Utah juniper, mountain sagebrush, Gambel oak	23,850	1
Blackbrush	Pinyon-juniper - blackbrush	pinyon pine, Utah juniper, black-brush	23,850	1
Blackbrush	Desert shrub - blackbrush	shadscale, Mormon tea, blackbrush	524,660	22
Blackbrush	Semidesert shrub - black-brush	fourwing saltbush, Mormon tea	476,960	20
Total			<u>2,390,080</u>	<u>100</u>

NOTE: Acreages and percentages include state lands and some private lands.

APPENDIX N — HABITAT MANAGEMENT PLAN STATUS

OVERVIEW

This appendix provides specific information on the three habitat management plans (HMPs) that have been prepared for the San Juan Resource Area (SJRA).

HATCH POINT

ASPECTS OF THE PLAN

The Hatch Point HMP, completed in 1976, covers 150,400 acres. Of this total, 37,300 acres are in SJRA and the remaining 113,100 acres are in Grand Resource Area.

The objectives of the HMP are to: protect critical wildlife areas, antelope fawning grounds, and raptor nesting sites; maintain sagebrush association and increase forbs; establish and protect riparian areas; change class of livestock from sheep to cattle; develop grazing management systems; develop an interpretive display; and maintain present land treatments.

The actions planned to meet the stated objectives include: maintaining reservoirs, constructing wildlife water catchments, constructing fences to eliminate grazing around water projects, developing wells for livestock and wildlife; providing wildlife escape ramps in all livestock watering troughs; improving big sage through fire and seeding; restricting oil and gas exploration and development activities on fawning areas; and removing livestock from fawning areas prior to plant green-out.

The HMP calls for the following studies: fecal studies, plant phenology studies, vegetation trend and frequency, climate, key species

utilization, actual use, monitoring of fawning grounds, and monitoring of catchment use.

IMPLEMENTATION

As of December 1985, the following have been completed: four catchments, five wells/pipelines and troughs, maintenance of four reservoirs, fencing of four reservoirs, and installation of 25 wildlife escape ramps. Most are in Grand Resource Area; two water developments are in SJRA (figures 3-11 and 3-12).

PROJECTS AND SUPPORT ACTIONS STILL NEEDED

Support action is needed to protect fawning habitat from oil and gas activities, and to remove cattle by May 1 of each year.

Eighteen additional water developments are still needed on critical antelope fawning areas, along with burning/seeding on 2,240 acres of sagebrush, development of grazing management systems, and the change in class of livestock from sheep to cattle.

CONCLUSION

This HMP needs to be revised. Planned actions are no longer meeting the HMP objectives. Additional water developments are needed on critical antelope fawning areas. The HMP should be coordinated with livestock management and oil and gas exploration and development. After the San Juan RMP/EIS is completed, there is the potential to reassess the possibility of transplanting 150 antelope.

BEEF BASIN

ASPECTS OF THE PLAN

The Beef Basin HMP, approved in 1982, covers 175,400 acres. Its primary objective is to improve the quality of winter range for mule deer and the quality of desert bighorn sheep habitat. Components of this objective include an increase in sagebrush cover, maintenance of present range condition on 20,000 acres of bighorn sheep habitat, minimizing disturbances to bighorn, expanding bighorn summer range in Bull Valley and Imperial Valley, and evaluation of the feasibility of reseeding sagebrush and other browse species for deer winter range.

Management actions planned to meet the stated objectives include: development of the Ruin Park water catchment for livestock grazing management; development of a water source for bighorn in Bull Valley; and seeding a 20-acre test plot in North Cottonwood Wash.

The HMP calls for monitoring of the following: effect of the Ruin Park catchment (photo trend studies); deer days use per acre; sagebrush utilization; livestock and bighorn sheep use of Bull Valley; recreational activities and disturbance to bighorn sheep; and the response of North Cottonwood Wash to browse reseeding in the 20-acre study plot.

IMPLEMENTATION

As of December 1985, the management actions implemented include the 20-acre reseeding in North Cottonwood Wash, the Ruin Park water catchment, and 7 miles of pipeline with 7 troughs.

PROJECTS AND SUPPORT ACTIONS STILL NEEDED

The Bull Valley water catchment for bighorn sheep remains to be installed.

CONCLUSION

This plan needs to be revised because planned actions do not meet objectives. The following actions are recommended:

Develop and implement a grazing system that will improve browse (sagebrush) for wintering deer. A grazing system or allotment management plan (AMP) should be incorporated into this HMP.

Develop monitoring studies to evaluate the effectiveness of livestock grazing as a tool for decreasing cool and warm season grasses and increasing sagebrush for deer. Monitoring studies should focus on the water system.

Evaluate the extent of bighorn sheep use within the Beef Basin HMP area. This could be accomplished in coordination with the Utah Division of Wildlife Resources (UDWR).

WHITE CANYON-RED CANYON

ASPECTS OF THE PLAN

The White Canyon-Red Canyon HMP, approved in 1969 and revised in 1982, covers 655,000 acres. Its objectives include management of crucial bighorn sheep lambing and rutting areas; maintenance of existing waters and development of additional water facilities; provision of adequate forage (coordination with livestock grazing management); provision of adequate space; and determination of population status on Mancos Mesa and in the Goosenecks.

Actions planned to achieve these objectives include continuation of monitoring bighorn use and livestock grazing in crucial habitat areas; use of the mining regulations and cooperation from the mining community to help protect crucial habitat; use of protective stipulations to regulate oil and gas leasing in crucial areas; maintenance of 15 existing developed water sources; development of four new water sources; minimizing the competition for forage between bighorn sheep and livestock in Red Canyon, Blue Notch Canyon, Long Canyon, and Gravel Canyon; and increasing forage by chaining and seeding 500 acres on Wingate Mesa.

The HMP calls for the following studies: fecal studies; vegetation photo trend studies; aerial surveys and field observation within crucial

areas; water project maintenance schedule; and evaluation of the Mossback (state section) chaining to learn whether bighorn occupy the area and whether competition is increased.

IMPLEMENTATION

As of December 1985, 60,456 acres of habitat are protected; 15 spring developments and one guzzler have been completed.

PROJECTS AND SUPPORT ACTIONS STILL NEEDED

Two guzzlers and the grazing management system remain to be completed.

CONCLUSION

Planned actions and objectives need to be revised in light of new data from a bighorn sheep study completed in 1984. It is recommended that the Wingate Mesa chaining project be dropped because removal of pinyon-juniper from the mesa tops would not benefit bighorn sheep. It is also recommended that livestock use not be allowed to expand from presently occupied areas, such as the valley floors and lower slopes below the talus slopes.

APPENDIX O — GRAZING ALLOTMENT SUMMARY

OVERVIEW

The purpose of this appendix is to summarize baseline conditions and use information by grazing allotment. Wildlife use, as well as livestock use, is shown in table A0-1.

ALLOTMENT SUMMARY

Table A0-1 shows the current condition and use on each grazing allotment in San Juan Resource Area. The allotments are listed in alphabetical order, and the current management category (M = maintain; I = improve; C = custodial management) is shown for each (appendix D).

The acreage of each allotment is broken out into critical and noncritical. Critical acreage denotes riparian areas (Aq/Rip), deer winter range (dw), desert bighorn sheep lambing and rutting areas (dbs), and antelope fawning areas (af).

Ecological condition is shown by the percentage of each allotment in relation to climax; it does not denote wildlife habitat condition. The ecological condition classes are rock outcrop/badlands (RO/BD), early seral, mid-seral, late seral, and climax (see Glossary).

The number and class of livestock and wildlife species are also shown, along with their seasons of use. Livestock numbers were calculated by dividing preference animal unit months (AUMs) by the season of use (number of months) and by the percent of public land in the allotment. Wildlife numbers were adjusted from prior stable population estimates (or the long-term herd management goals) of the Utah Division of Wildlife Resources (UDWR) in cooperation with UDWR.

The average use figure includes years of partial nonuse within the past 5 years, but does not include years of total nonuse. These are shown in the last column.

TABLE AO-1

Current Ecological Condition and Use, by Allotment

Allotment	Category	Allotment Acreage ^a		Ecological Condition ^c by Percentage of Allotment					Number and Class of Livestock and Wildlife Species ^e	Season of Use												Active Preference (AUMs) ^f	5-Year (3/79-2/84) Average Use (AUMs) ^g	Total Nonuse Past 5 Yrs (Years)
		Noncritical	Critical ^b	RO/BD ^d	Early Seral	Mid Seral	Late Seral	Clmax		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
6801 Alkali Canyon	I	10,510	13,400 dw Aq/Rip 1 mile	9	30	26	30	5	325 Cattle 12 Horses 393 Ooer 1 Ooer	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2,362	1,349	0
6802 Alkali Point	I	6,785	900 dw	6	62	13	10	9	279 Cattle 6 Horses 75 Ooer	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	340	282	0
4830 Bear Trap	C	1,540	---	--	--	100	--	--	58 Cattle 12 Ooer	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	130 (50% public lands)	102	1
4826 Big Indian	I	12,065	---	29	24	47	--	--	223 Cattle 85 Cattle 42 Ooer	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	810	750	0
6804 Black Steer	C	4,300	---	15	15	61	9	--	540 Sheep 2 Ooer	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	537	314	2
6835 Blue Mountain	C	320	---	--	--	77	23	--	10 Cattle 1 Ooer 7 Ooer	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	30	20	2

6803 Bluff Bench	C	320	---	21	--	16	--	63	63 Cattle 1 Deer									64 (30% public lands)	33	0
6805 Brown Canyon	I	900	---	20	50	30	--	--	15 Cattle 2 Deer									60	61	0
6846 Bug- Squaw	I	18,130	2,220 dw	7	21	56	4	--	314 Cattle 100 Deer									1,305 (Utah only)	991 (Utah only)	0
6806 Bulldog	C	7,210	Aq/Rip 5 miles	6	2	86	2	4	62 Cattle 40 Cattle 7 Deer									368	316	0
6808 Cave Canyon	C	15,035	14,370 dw Aq/Rip 1 mile	11	26	24	39	--	490 Cattle 10 Horses 250 Deer 3 Deer									3,249	1,895	0
4827 Church Rock	I	160	---	36	--	64	--	--	10 Cattle 5 Deer 4 Antelope									60	34	0
6836 Comb Wash	I	65,610	Aq/Rip 56 miles	17	15	45	20	3	527 Cattle 76 Deer 1 Deer									3,961	2,870	0

TABLE A0-1 (Continued)

Allotment	Category	Allotment Acreage ^a		RO/BD ^d	Ecological Condition ^c by Percentage of Allotment				Number and Class of Livestock and Wildlife Species ^e	Season of Use												5-Year (3/79-2/84) Average Use (AUMs) ^g	Active Preference (AUMs) ^f	Total Nonuse Past 5 Yrs (Years)				
		Noncritical	Critical ^b		Early Serai	Mid Serai	Late Serai	Climax		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec							
6838 Corral	C	200	---	--	--	77	23	--	8 Cattle																16		3	
6811 Cross Canyon	I	24,830	400 dw Aq/Rip 7 miles	8	29	57	6	--	514 Cattle 56 Deer 3 Deer																	3,600		0
6812 Devils Canyon	M	9,560	---	6	66	28	--	--	53 Cattle 30 Deer																	212		0
6813 Dodge Canyon	C	1,520	---	5	--	35	60	--	20 Cattle 21 Deer																	110		4
6814 Dodge Point	I	200	---	7	41	19	33	--	6 Cattle 1 Deer																	30		0
4804 Dry Farm	C	640	---	--	--	93	7	--	81 Cattle 3 Deer																	27		0

4820 Dry Valley- Deer Neck	M	2,660	970 af	4	54	42	--	--	330 Cattle 31 Deer 2 Antelope					1,286 (73% public lands)	1,008	0
4814 East Canyon	I	4,770	--- Aq/Rip 8 miles	4	44	52	--	--	265 Cattle 44 Deer					1,191	1,045	0
6815 East League	M	16,090	--- Aq/Rip 9 miles	12	6	12	36	34	352 Cattle 1 Deer 6 Deer					2,463	1,800	0
4810 East Summit	C	200	---	--	--	95	--	5	73 Cattle 1 Deer					33 (5% public lands)	32	D
4811 Hart Draw	I	64,610	15,840 dw dbs Aq/Rip 41 miles	30	4	48	16	2	308 Cattle 1,088 Deer 1 Antelope 5 Elk 50 Bighorn					2,460	2,359	0
4825 Hart Point	I	3,385	17,140 dw	34	--	66	--	--	360 Cattle 314 Deer					1,080	478	0
6816 Horse- head Canyon	I	3,435	1,560 dw	6	14	32	47	1	26 Cattle 57 Deer					144	83	2

TABLE A0-1 (Continued)

Allotment	Category	Allotment Acreage ^a		Ecological Condition ^c by Percentage of Allotment					Number and Class of Livestock and Wildlife Species ^e	Season of Use												Active Preference (AUMs) ^f	5-Year Average Use (AUMs) ^g	Total Nonuse Past 5 Yrs (Years)				
		Noncritical	Critical ^b	R0/BD	Early Seral	Mid Seral	Late Seral	Climax		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec							
4813 Hurrah Pass	I	14,075	---	30	6	38	18	8	47 Cattle 10 Horses 3 Deer 10 Bighorn																262	746	0	
4815 Indian Creek	I	157,850	32,500 dw 44,300db Aq/Rip 64 miles	24	20	39	12	5	1,065 Cattle 1,600 Deer 8 Deer 6 Deer 5 Elk 530 Bighorn																	8,518	5,171	0
4822 Indian Rock	I	2,730	---	31	49	18	2	--	149 Cattle 10 Deer																	895	217	0
6818 Johnson Creek	C	870	---	5	--	95	--	--	21 Cattle 1 Deer																	90	91	0
6839 Laws	C	200	---	20	51	29	--	--	30 Cattle 1 Deer																	5 (2% public lands)	5	0
6833 Lake Canyon	I	441,640	10,530 dw 158,630db Aq/Rip 50 miles	38	7	20	24	11	600 Cattle 12 Horses 120 Deer 30 Deer 250 Bighorn																	4,895	4,777	0

6819 Little Boulder	M	3,920	2,620 dw	7	6	60	21	6	48 Cattle 75 Deer										280 (73% public lands)	New Allotment lands)	0
4801 Lone Cedar	I	16,590	1,400 dw af Aq/Rip 1 mile	33	--	67	--	--	296 Cattle 236 Deer 2 Antelope										1,483	1,108	0
6820 Long Canyon	C	2,230	---	7	39	21	33	--	28 Cattle 31 Deer										140	116	1
6821 Lyman	C	300	---	16	62	--	22	--	50 Cattle 6 Deer										6 (1% public lands)	6	0
4819 Mail Station	M	5,480	3,770 af	9	2	89	--	--	241 Cattle 3 Deer 23 Antelope										1,446	1,187	0
6822 McCracker	I	15,320	---	38	--	14	12	36	211 Cattle 4 Deer										950	602	2
6823 Montezuma Canyon	I	5,670	23,770 dw Aq/Rip 16 miles	11	40	24	18	7	265 Cattle 300 Deer										1,900	1,581	0

TABLE A0-1 (Continued)

Allotment	Category	Allotment Acreage ^d		Ecological Condition ^c by Percentage of Allotment					Number and Class of Livestock and Wildlife Species ^e	Season of Use												Active Preference (AUMs) ^f	5-Year (3/79-2/84) Average Use (AUMs) ^g	Total Nonuse Past 5 Yrs (Years)
		Noncritical	Critical ^b	RO/BD ^d	Early Seral	Mid Seral	Late Seral	Clmax		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
4806 Monticello Cowboy	M	4,020	---	8	11	81	--	--	148 Cattle 15 Deer	Jan											814	613	0	
6825 Monument	I	24,110	9,410 dw Aq/Rip 27 miles	7	16	50	24	3	196 Cattle 200 Deer	Jan											1,150	434	0	
6824 Owens Dugout	C	2,160	---	25	--	55	20	--	47 Cattle 1 Deer	Jan											275	265	0	
6845 Pearson Point	M	830	1,580	6	9	55	30	--	25 Cattle 20 Deer	Jan											125 (50% public lands)	100 2-year avg. Allotment established by split from another allotment 3/1/82.	0	
6827 Perkins Brothers	I	108,960	Aq/Rip 58 miles	7	1	22	53	17	1,076 Cattle 16 Horses 30 Horses 24 Deer 4 Deer 20 Bighorn	Jan											7,579	3,411	0	
4807 Peters Canyon	C	600	---	--	--	100	--	--	45 Cattle 30 Deer 3 Elk	Jan											90 (33% public lands)	50	0	

4805 Peters Point	I	4,000	---	Aq/Rip 1 mile	--	60	10	15	15	30 Cattle 124 Deer 3 Elk	180	135	0
6841 Piute Knoll	C	160	---	---	--	--	50	50	--	120 Cattle 1 Deer	30 (4% public lands)	25	0
6842 Rogers	C	40	--	--	10	30	60	--	--	16 Cattle 1 Deer	7 (10% public lands)	0	5
6847 Roundup Corral	C	70	--	--	--	--	77	23	--	60 Cattle	8	4	0
6724 Sage Flat	C	840	---	---	--	--	100	--	--	200 Cattle	13 (6% public lands)	13	0
6716 Sage Grouse	C	320	---	---	--	--	100	--	--	150 Cattle	7 (6% public lands)	7	0
6834 Stick- horn	I	132,810	---	Aq/Rip 29 miles	7	27	31	25	10	219 Cattle 5 Horses 128 Deer 50 Bighorn	1,795	1,716	0

TABLE AO-1 (Continued)

Allotment	Category	Allotment Acreage ^a		Ecological Condition ^c by Percentage of Allotment					Number and Class of Livestock and Wildlife Species ^e	Season of Use												Active Preference (AUMs) ^f	5-Year Average Use (AUMs) ^g	Total Nonuse Past 5 Yrs (Years)			
		Noncritical	Critical ^b	R0/BD ^d	Early Seral	Md Seral	Late Seral	Climax		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec						
4824 South Canyon	C	5,880	---	--	97	3	--	--	60 Cattle 14 Deer																117 (30% public lands)	109 (public lands)	0
4823 Spring Creek	I	1,760	---	--	92	--	8	--	29 Cattle 2 Horses 2 Deer																172	90	0
4812 Spring Creek West	I	1,360	---	--	100	--	--	--	38 Cattle 2 Deer																150	152	0
6828 Squaw Canyon	I	10,200	---	6	24	66	4	--	120 Cattle 10 Deer																789	74	3
4831 State Line	C	240	---	--	100	--	--	--	25 Cattle 1 Deer																16 (20% public lands)	16 (public lands)	0
6830 Stevens	C	520	---	10	90	--	--	--	48 Cattle 2 Horses 1 Deer																60 (10% public lands)	43 (public lands)	0

4818 Summit Canyon	C	1,120	---	--	--	100	--	--	--	20 Cattle 3 Deer					39	40	0
6831 Tank Bench- Brushy Basin	I	83,820	10,100 dw Aq/Rip 41 miles	19	10	42	19	10	--	697 Cattle 580 Deer 8 Deer					5,457	4,072	0
4802 Tank Draw	I	3,720	5,410 af	9	8	83	--	--	--	426 Cattle 20 Deer 1 Deer 18 Antelope					2,130	1,705	0
6844 Texas- Muley	I	67,730	--- Aq/Rip 2 miles	9	21	66	--	4	4	274 Cattle 4 Horses 61 Deer 2 Bighorn					1,795	1,504	0
4817 Upper East Canyon	C	680	---	--	--	100	--	--	--	20 Cattle 1 Deer					18 (15% public lands)	18	0
4803 Vega Creek	C	440	---	--	--	100	--	--	--	174 Cattle 1 Deer					80 (50% public lands)	69	3
6832 Verdure Creek	C	1,490	1,100 dw	8	3	36	53	--	--	42 Cattle 18 Cattle 54 Deer					118 (35% public lands)	103	0

TABLE A0-1 (Concluded)

Allotment	Category	Allotment Acreage ^a		Ecological Condition ^c by Percentage of Allotment					Number and Class of Livestock and Wildlife Species ^e	Season of Use												5-Year Average Use (AUMs) ^g	Total Nonuse Past 5 Yrs (Years)						
		Noncritical	Critical ^b	RO/BD ^d	Early Seral	Mid Seral	Late Seral	Climax		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec								
6037 White Canyon	I	47,500	90,210dbs	16	2	35	32	15	450 Cattle 12 Horses 56 Deer 10 Deer 190 Bighorn 10 Elk																	5,544	3,572	0	
6840 White Mesa	I	45,210	6,720 dw Aq/Rip 15 miles	11	28	38	20	3	755 Cattle 708 Deer 3 Deer																		4,531	2,741	0

^aAllotment acreages include Glen Canyon NRA acres.

^bCritical acreage denotes riparian areas (Aq/Rip), deer winter range (dw), desert bighorn sheep lambing and rutting areas (dbs), and antelope fawning areas (af).

^cEcological condition is the present state of a vegetative community in relation to climax; it does not denote wildlife habitat condition.

^dRO/BD = rock outcrop/badlands.

^eLivestock numbers were calculated by dividing preference AUMs by the season of use (number of months) and by the percent of public land in the allotment. Wildlife numbers were adjusted from prior stable population estimates in cooperation with UDMR.

^fAUM = animal unit month (the amount of forage necessary to feed one cow or five sheep for 1 month).

^gAverage use figure does not include years of total nonuse, but does include years of partial nonuse.

APPENDIX P — GRAZING ALLOTMENT MANAGEMENT PLAN STATUS

OVERVIEW

The purpose of this appendix is to provide specific information regarding the nine allotment management plans (AMPs) that have been written

and their implementation status. Table AP-1 lists the AMPs and describes the proposed system for each, along with specific information regarding implementation. Allotments with AMPs are shown in figure 3-14.

TABLE AP-1

Allotment Management Plan Status
(November 1985)

<u>AMP Name</u>	<u>Year Signed</u>	<u>Proposed System</u>	<u>Implementation Status</u>	<u>Still Needed</u>
Comb Wash	1969	2-pasture-complex deferred rotation	Implemented.	Water developments on Perkins Point, Snow Flat, and Little Baullies; re-treatment of west side of the Little Baullies seeding.
East League	1966	6-pasture rest-rotation grazing system	Implemented.	Water developments in Chimney Draw, Highway, Cow Canyon, and South Horn (latter 3 pastures are mostly State land); revision of plan to include Horse Canyon pasture.
Indian Creek	1970 1976	4 rest-rotation systems in 4 pasture-complexes; range improvements waters and fences.	Not approved because of problems with fencing along Canyon-lands National Park; lack of funding for proposed water projects; revision of grazing EIS boundaries.	Maintenance of existing seedings on Dark Canyon Plateau; water developments in lower Indian Creek area; revision of plan.
Lake Canyon	1970	5-pasture deferred rotation system	Not fully operational because range improvements have not been completed.	Water developments in many areas; chaining and seeding of 8,000 acres in Grand and Harmony Flats; chaining on Maverick Point; decision on range improvements in Glen Canyon NRA; revision of plan.

McCracken	1967	3-pasture deferred rotation grazing system	Implemented.	Additional waters to replace waters that have become too salty for stock use in Bucket Canyon and additional waters in upper McCracken Wash.
Peters Point	1970	4-pasture rest-rotation grazing system based on proposed range improvements	Proposed improvements not constructed; permittee lost control over private lands in one pasture.	More simplified grazing system, and additional water developments, and fencing; revision of plan.
Tank Bench-Brushy Basin	1971	6-pasture deferred grazing system	Not fully operational because all range improvements have not been completed.	Water development on Black Mesa; maintenance of seedings in Brushy Basin area; resolution of problem with scattered unfenced Ute lands; revision of plan to include Black Mesa pasture.
White Canyon	1969	year-round grazing on deferred rotation system	Parts were found to be unworkable (drifting cattle through Gravel Canyon to winter pastures); water developments in Gravel Canyon not allowed because of potential conflict with bighorn sheep.	Maintenance of seedings in transition and summer use areas; additional fencing and water developments on Deer Flat; reservoirs on Gravel Canyon bench; revision of plan.
White Mesa	1968	4-pasture-complex deferred rotation grazing system	Implemented.	Water development on Mustang Mesa, Mesa, Black Mesa, and Westwater seeding; maintenance of Westwater seeding; revision of plan.

Year	Month	Day	Event	Location	Notes
1964	April	15	...	...	...
1964	April	16	...	...	...
1964	April	17	...	...	...
1964	April	18	...	...	...
1964	April	19	...	...	...
1964	April	20	...	...	...
1964	April	21	...	...	...
1964	April	22	...	...	...
1964	April	23	...	...	...
1964	April	24	...	...	...
1964	April	25	...	...	...
1964	April	26	...	...	...
1964	April	27	...	...	...
1964	April	28	...	...	...
1964	April	29	...	...	...
1964	April	30	...	...	...
1964	May	1	...	...	...
1964	May	2	...	...	...
1964	May	3	...	...	...
1964	May	4	...	...	...
1964	May	5	...	...	...
1964	May	6	...	...	...
1964	May	7	...	...	...
1964	May	8	...	...	...
1964	May	9	...	...	...
1964	May	10	...	...	...
1964	May	11	...	...	...
1964	May	12	...	...	...
1964	May	13	...	...	...
1964	May	14	...	...	...
1964	May	15	...	...	...
1964	May	16	...	...	...
1964	May	17	...	...	...
1964	May	18	...	...	...
1964	May	19	...	...	...
1964	May	20	...	...	...
1964	May	21	...	...	...
1964	May	22	...	...	...
1964	May	23	...	...	...
1964	May	24	...	...	...
1964	May	25	...	...	...
1964	May	26	...	...	...
1964	May	27	...	...	...
1964	May	28	...	...	...
1964	May	29	...	...	...
1964	May	30	...	...	...
1964	May	31	...	...	...

APPENDIX Q — ISOLATED TRACTS IDENTIFIED FOR DISPOSAL

OVERVIEW

The purpose of this appendix is to provide legal descriptions for parcels of lands that would be suitable for sale under the various alternatives described in chapter 2. These are isolated tracts that have been examined and found to meet the sales criteria of Sec. 203 of the Federal Land Policy and Management Act (FLPMA). Sale of individual parcels may be precluded on a temporary or long-term basis because of mining claim location, presence of archaeological sites, or other specific legal reasons.

Other tracts not listed in the following tables may be found to be suitable for sale under Sec. 203 of FLPMA. If an application for sale or other disposal is received, the requested tract would be examined to see if sale is in the national interest. The request may or may not be for an isolated parcel. A plan amendment would be required for sale of a tract that was not identified for sale in the resource management plan (RMP). Specific requests for lands disposal or sales cannot be successfully anticipated through the planning process.

Each parcel is designated by letter as to the type(s) of disposal for which it is suitable, and under what authority, as follows:

- A Tracts uneconomic to manage, suitable for sale under authority of Sec. 203(a)(1) of FLPMA.
- B Acquired tracts, suitable for sale under authority of Sec. 203(a)(2) of FLPMA.
- C Public objective tracts, suitable for sale under authority of Sec. 203(a)(3) of FLPMA.

D Tracts suitable for exchange under authority of Sec. 206(a) of FLPMA.

E Tracts suitable for recreation and public purpose (R&PP) patent under authority of the R&PP Act of 1926 and Sec. 212 of FLPMA.

ALTERNATIVE A

All of the parcels in alternative A (table AQ-1) are brought forward from existing management framework plans (MFPs), except the tract for the education center at Blanding, which has been classified as suitable for R&PP uses under the Montezuma MFP. Those parcels in the MFP that have been classified as unsuitable are not included in this listing.

ALTERNATIVE B

All isolated parcels in the SJRA, including those in alternative A, were examined. Those found to be suitable for grazing are not included for disposal under alternative B (table AQ-2). Other parcels such as the Fry Canyon store and Recapture Lake were included for community expansion purposes. The 2,277.85 acres identified in the Navajo Indian reservation are not needed for grazing but will be considered available to the public only if it is determined that they are not wanted by the Navajo Tribe.

ALTERNATIVE C

All isolated parcels in the SJRA, including those in alternative A, were examined. Those found to be suitable for recreation or wildlife purposes are not included for disposal under alternative C (table AQ-3). Recapture Lake and the Fry Canyon Store are included because of the

TABLE AQ-1

Tracts Identified as Suitable for Disposal Under Alternative A

<u>Designation</u>	<u>Legal Description</u>	<u>Geographic Area</u>	<u>Acreage</u>
A, D	T. 35 S., R. 22 E. Sec. 28: N 1/2 SW 1/4	north of Blanding	80.00
E	T. 36 S., R. 22 E., Sec. 27: SW 1/4 SW 1/4 Sec. 34: W 1/2 NW 1/4	education center at Blanding	120.00
A, D	T. 32 S., R. 23 E. Sec. 24: SE 1/4 SW 1/4,	Peters Hill	40.00
A, D	T. 35 S., R. 23 E. Sec. 9: NW 1/4 NW 1/4 Sec. 16: NE 1/4 NW 1/4 Sec. 19: NW 1/4 SE 1/4	Devils Canyon	120.00
A, D	T. 36 S., R. 23 E. Sec. 8: NW 1/4 NW 1/4 Sec. 20: NE 1/4 SE 1/4	northeast of Recapture Lake northeast of Blanding	40.00 40.00
A, D	T. 33 S., R. 24 E., Sec. 9: SE 1/4 NE 1/4 Sec. 33: SE 1/4 NE 1/4	near Monticello	80.00
A, D	T. 31 S., R. 25 E. Sec. 23: S. 1/2 NE 1/4, SE 1/4 NW 1/4, N 1/2 SW 1/4 NE 1/4 SE 1/4	west Summit	240.00
A, D	T. 32 S., R. 25 E., Sec. 1: SE 1/4 SW 1/4 Sec. 12: SW 1/4 NE 1/4 Sec. 23: NW 1/4 NE 1/4, N 1/2 SE 1/4 Sec. 24: S 1/2 NE 1/4	Summit/west Summit Point	280.00
A, D	T. 33 S., R. 25 E Sec. 13: SE 1/4 Sec. 19: NE 1/4 Sec. 24: SW 1/4	east of Monticello	480.00
A, D	T. 38 S., R. 25 E. Sec. 31: Lots 2, 3, 4	north of Hatch Trading Post	109.17

TABLE AQ-1 (Concluded)

<u>Designation</u>	<u>Legal Description</u>	<u>Geographic Area</u>	<u>Acreage</u>
A, D	T. 39 S., R. 25 E. Sec. 15: S 1/2	east of Hatch Trading Post	320.00
A, D	T. 32 S., R. 26 E Sec. 15: SE 1/4 SW 1/4 Sec. 19: N 1/2 SE 1/4	east Summit	120.00
A, D	T. 33 S., R. 26 E. Sec. 9: W 1/2 SW 1/4 Sec. 10: SE 1/4 NE 1/4 Sec. 14: Lots 3, 4 Sec. 19: SW 1/4 SE 1/4 Sec. 30: W 1/2 NE 1/4, SE 1/4 NE 1/4 Sec. 31: E 1/2 NE 1/4, SW 1/4 NE 1/4, SE 1/4 NW 1/4	north and west of Ucolo	488.04
A, D	T. 34 S., R. 26 E. Sec. 33: SW 1/4 NE 1/4 NW 1/4 SW 1/4, SE 1/4 SW 1/4	southeast of Eastland	120.00
A, D	T. 35 S., R. 26 E. Sec. 31: S 1/2 NW 1/4, N 1/2 SW 1/4, SW 1/4 SW 1/4	Cedar Point	<u>200.00</u>
TOTAL			2,877.21

TABLE AQ-2

Tracts Identified as Suitable for Disposal Under Alternative B

<u>Designation</u>	<u>Legal Description</u>	<u>Geographic Area</u>	<u>Acreage</u>
C	T. 36 S., R. 16 E. Sec. 28: W 1/2 NW 1/4 NE 1/4, N 1/2 NW 1/4 SW 1/4 NE 1/4	Fry Canyon store	25.00
A, D	T. 32 S., R. 19 E. Sec. 2: Lots 1, 2, S 1/2 NE 1/4	adjacent to Canyonlands NP	160.15
A, D	T. 35 S., R. 22 E. Sec. 28: N 1/2 SW 1/4	north of Blanding	80.00
E	T. 36 S., R. 22 E. Sec. 12: Lots 1, 2, 4, 6 E 1/2 NE 1/4, SE 1/4 SE 1/4 Sec. 13: E 1/2 NE 1/4	at Recapture Lake	363.80
E	T. 36 S., R. 22 E., Sec. 27: SW 1/4 SW 1/4 Sec. 34: W 1/2 NW 1/4	education center at Blanding	120.00
A, D	T. 36 S., R. 23 E. Sec. 8: NW 1/4 NW 1/4 Sec. 20: NE 1/4 SE 1/4	northeast of Recapture Lake northeast of Blanding	40.00 40.00
A, D	T. 39 S., R. 23 E. Sec. 23: SE 1/4 SE 1/4	in the Navajo Indian reservation	40.00
A, B, D	T. 39 S., R. 24 E. Sec. 17: S 1/2 Sec. 18: SE 1/4 Sec. 20: NE 1/4 Sec. 21: NE 1/4, S 1/2 Sec. 22: S 1/2 Sec. 27: W 1/2 Sec. 28: NE 1/4	in the Navajo Indian reservation	1,920.00
A, D	T. 39 S., R. 25 E. Sec. 6: NE 1/4 SE 1/4, S 1/2 SE 1/4 Sec. 7: Lot 2, E 1/2 NE 1/4, SW 1/4 NE 1/4, SE 1/4 NW 1/4	in the Navajo Indian Reservation	317.85

TABLE AQ-2 (Concluded)

<u>Designation</u>	<u>Legal Description</u>	<u>Geographic Area</u>	<u>Acreage</u>
A, D	T. 33 S., R. 24 E., Sec. 9: SE 1/4 NE 1/4 Sec. 33: SE 1/4 NE 1/4	near Monticello	80.00
A, D	T. 32 S., R. 25 E., Sec. 1: SE 1/4 SW 1/4 Sec. 12: SW 1/4 NE 1/4 Sec. 23: NW 1/4 NE 1/4, N 1/2 SE 1/4 Sec. 24: S 1/2 NE 1/4 Sec. 29: N 1/2	Summit/west Summit Point	600.00
A, D	T. 38 S., R. 25 E. Sec. 31: Lots 2, 3, 4	north of Hatch Trading Post	109.17
A, D	T. 34 S., R. 26 E. Sec. 33: SW 1/4 NE 1/4 NW 1/4 SW 1/4, SE 1/4 SW 1/4	southeast of Eastland	120.00
A, D	T. 35 S., R. 26 E. Sec. 31: S 1/2 NW 1/4, N 1/2 SW 1/4, SW 1/4 SW 1/4	Cedar Point	200.00
<u>San Juan County Landfill</u>			
C	T. 39 S., R. 13 E. Sec. 1: a portion of SE 1/4 SW 1/4, SW 1/4 SE 1/4 Sec. 12: a portion of NW 1/4 NE 1/4, NE 1/4 NW 1/4	between Clay Hills & Halls Crossing	20.00
C	T. 42 S., R. 19 E. Sec. 6: a portion of SW 1/4	near Mexican Hat	10.00
C	T. 40 S., R. 21 E. Sec. 27: E 1/2 E 1/2 NE 1/4 SW 1/4	near Bluff	10.00
C	T. 40 S., R. 23 E. Sec. 27: a portion of NE 1/4	near Montezuma Creek	10.00
TOTAL			<u>4,265.97</u>

TABLE AQ-3

Tracts Identified as Suitable for Disposal Under Alternative C

<u>Designation</u>	<u>Legal Description</u>	<u>Geographic Area</u>	<u>Acreage</u>
C	T. 36 S., R. 16 E. Sec. 28: W 1/2 NW 1/4 NE 1/4, N 1/2 NW 1/4 SW 1/4 NE 1/4	Fry Canyon store	25.00
A, D	T. 35 S., R. 22 E. Sec. 28: N 1/2 SW 1/4	north of Blanding	80.00
E	T. 36 S., R. 22 E. Sec. 12: Lots 1, 2, 4, 6 E 1/2 NE 1/4, SE 1/4 SE 1/4 Sec. 13: E 1/2 NE 1/4	at Recapture Lake	363.80
E	T. 36 S., R. 22 E., Sec. 27: SW 1/4 SW 1/4 Sec. 34: W 1/2 NW 1/4	education center at Blanding	120.00
C, D	T. 36 S., R. 22 E. Sec. 28: SE 1/4 NE 1/4, E 1/2 SE 1/4	adjacent to Blanding	120.00
A, D	T. 32 S., R. 23 E. Sec. 24: SE 1/4 SW 1/4 Sec. 35: NW 1/4 SW 1/4	Peters Hill northwest of Monticello Airport	40.00 40.00
A, D	T. 35 S., R. 23 E. Sec. 9: NW 1/4 NW 1/4 Sec. 16: NE 1/4 NW 1/4 Sec. 19: NW 1/4 SE 1/4	Devils Canyon	120.00
A, D	T. 36 S., R. 23 E. Sec. 8: NW 1/4 NW 1/4 Sec. 20: NE 1/4 SE 1/4	northeast of Recapture Lake northeast of Blanding	40.00 40.00
A, D	T. 39 S., R. 23 E. Sec. 23: SE 1/4 SE 1/4	in the Navajo Indian reservation	40.00
A, B, D	T. 39 S., R. 24 E. Sec. 17: S 1/2 Sec. 18: SE 1/4 Sec. 20: NE 1/4 Sec. 21: NE 1/4, S 1/2 Sec. 22: S 1/2 Sec. 27: W 1/2 Sec. 28: NE 1/4	in the Navajo Indian reservation	1,920.00

TABLE AQ-3 (Continued)

<u>Designation</u>	<u>Legal Description</u>	<u>Geographic Area</u>	<u>Acreage</u>
A, D	T. 39 S., R. 25 E. Sec. 6: NE 1/4 SE 1/4, S 1/2 SE 1/4 Sec. 7: Lot 2, E 1/2 NE 1/4, SW 1/4 NE 1/4, SE 1/4 NW 1/4	in the Navajo Indian Reservation	317.85
A, D	T. 33 S., R. 24 E., Sec. 9: SE 1/4 NE 1/4 Sec. 33: SE 1/4 NE 1/4	near Monticello	80.00
A, D	T. 31 S., R. 25 E. Sec. 23: S 1/2 NE 1/4, SE 1/4 NW 1/4, N 1/2 SW 1/4, NE 1/4 SE 1/4	west Summit Point	240.00
A, D	T. 32 S., R. 25 E., Sec. 1: SE 1/4 SW 1/4 Sec. 12: SW 1/4 NE 1/4 Sec. 23: NW 1/4 NE 1/4, N 1/2 SE 1/4 Sec. 24: S 1/2 NE 1/4	Summit/west Summit Point	280.00
A, D	T. 33 S., R. 25 E. Sec. 13: SE 1/4 Sec. 19: NE 1/4 Sec. 24: SW 1/4	east of Monticello	480.00
A, D	T. 38 S., R. 25 E. Sec. 31: Lots 2, 3, 4	north of Hatch Trading Post	109.17
A, D	T. 39 S., R. 25 E. Sec. 15: S 1/2	east of Hatch Trading Post	320.00
A, D	T. 32 S., R. 26 E. Sec. 14: Lots 1, 2, 3, 4 Sec. 15: SE 1/4 SW 1/4 Sec. 19: N 1/2 SE 1/4 Sec. 23: Lots 1, 2, 3, 4 Sec. 26: Lots 1, 2, 3, 4	east summit	312.35

TABLE AQ-3 (Concluded)

<u>Designation</u>	<u>Legal Description</u>	<u>Geographic Area</u>	<u>Acreage</u>
A, D	T. 33 S., R. 26 E. Sec. 9: W 1/2 SW 1/4 Sec. 10: SE 1/4 NE 1/4 Sec. 14: Lots 3, 4 Sec. 19: SW 1/4 SE 1/4 Sec. 30: W 1/2 NE 1/4, SE 1/4 NE 1/4 Sec. 31: E 1/2 NE 1/4, SW 1/4 NE 1/4, SE 1/4 NW 1/4	north and west of Ucolo	488.04
A, D	T. 34 S., R. 26 E. Sec. 33: SW 1/4 NE 1/4 NW 1/4 SW 1/4, SE 1/4 SW 1/4	southeast of Eastland	120.00
A, D	T. 35 S., R. 26 E. Sec. 31: S 1/2 NW 1/4, N 1/2 SW 1/4, SW 1/4 SW 1/4	Cedar Point	200.00
<u>San Juan County Landfill</u>			
C	T. 39 S., R. 13 E. Sec. 1: a portion of SE 1/4 SW 1/4, SW 1/4 SE 1/4 Sec. 12: a portion of NW 1/4 NE 1/4, NE 1/4 NW 1/4	between Clay Hills & Halls Crossing	20.00
C	T. 42 S., R. 19 E. Sec. 6: a portion of SW 1/4	near Mexican Hat	10.00
C	T. 40 S., R. 21 E. Sec. 27: E 1/2 E 1/2 NE 1/4 SW 1/4	near Bluff	10.00
C	T. 40 S., R. 23 E. Sec. 27: a portion of NE 1/4	near Montezuma Creek	<u>10.00</u>
TOTAL			5,946.21

recreational services they provide in the public sector. The 2,277.85 acres identified in the Navajo Indian reservation are not needed for recreation or wildlife purposes but will be considered available to the public only if it is determined that they are not wanted by the Navajo Tribe.

ALTERNATIVE D

All isolated parcels in the SJRA, including those in alternative A, were examined. Parcels not needed for natural succession and additional parcels needed for community expansion are included for disposal under alternative D (table AQ-4).

ALTERNATIVE E

All isolated parcels and those needed for community expansion were examined for resource conflicts. Those parcels that were needed for use in management of other resource programs are not included for disposal under alternative E (table AQ-5). However, the 2,277.85 acres identified in the Navajo Indian reservation will not be considered available to the public for 5 years after adoption of the RMP, in the event they are wanted by the Navajo tribe.

TABLE AQ-4

Tracts Identified as Suitable for Disposal Under Alternative D

<u>Designation</u>	<u>Legal Description</u>	<u>Geographic Area</u>	<u>Acreage</u>
C	T. 36 S., R. 16 E. Sec. 28: W 1/2 NW 1/4 NE 1/4, N 1/2 NW 1/4 SW 1/4 NE 1/4	Fry Canyon store	25.00
E	T. 36 S., R. 22 E. Sec. 12: Lots 1, 2, 4, 6, E 1/2 NE 1/4, SE 1/4 SE 1/4 Sec. 13: E 1/2 NE 1/4	at Recapture Lake	363.80
E	T. 36 S., R. 22 E., Sec. 27: SW 1/4 SW 1/4 Sec. 34: W 1/2 NW 1/4	education center at Blanding	120.00
A, D	T. 32 S., R. 23 E. Sec. 35: NW 1/4 SW 1/4	northwest of Monticello airport	40.00
A, D	T. 33 S., R. 24 E., Sec. 9: SE 1/4 NE 1/4 Sec. 33: SE 1/4 NE 1/4	near Monticello	80.00
A, D	T. 31 S., R. 25 E. Sec. 23: S 1/2 NE 1/4, SE 1/4 NW 1/4, N 1/2 SW 1/4, NE 1/4 SE 1/4	west Summit Point	240.00
A, D	T. 32 S., R. 25 E., Sec. 1: SE 1/4 SW 1/4 Sec. 12: SW 1/4 NE 1/4 Sec. 23: NW 1/4 NE 1/4, N 1/2 SE 1/4 Sec. 24: S 1/2 NE 1/4 Sec. 29: N 1/2	Summit/west Summit Point	600.00
A, D	T. 33 S., R. 25 E. Sec. 13: SE 1/4 Sec. 19: NE 1/4 Sec. 24: SW 1/4	east of Monticello	480.00
A, D	T. 32 S., R. 26 E. Sec. 14: Lots 1, 2, 3, 4 Sec. 15: SE 1/4 SW 1/4 Sec. 19: N 1/2 SE 1/4 Sec. 23: Lots 1, 2, 3, 4 Sec. 26: Lots 1, 2, 3, 4	east summit	312.35

TABLE AQ-4 (Concluded)

<u>Designation</u>	<u>Legal Description</u>	<u>Geographic Area</u>	<u>Acreage</u>
A, D	T. 33 S., R. 26 E. Sec. 9: W 1/2 SW 1/4 Sec. 10: SE 1/4 NE 1/4 Sec. 14: Lots 3, 4 Sec. 19: SW 1/4 SE 1/4 Sec. 30: W 1/2 NE 1/4, SE 1/4 NE 1/4 Sec. 31: E 1/2 NE 1/4, SW 1/4 NE 1/4, SE 1/4 NW 1/4	north and west of Ucolo	488.04
A, D	T. 34 S., R. 26 E. Sec. 33: SW 1/4 NE 1/4 NW 1/4 SW 1/4, SE 1/4 SW 1/4	southeast of Eastland	120.00
TOTAL			2,869.19

TABLE AQ-5

Tracts Identified as Suitable for Disposal Under Alternative E

<u>Designation</u>	<u>Legal Description</u>	<u>Geographic Area</u>	<u>Acreage</u>
C	T. 36 S., R. 16 E. Sec. 28: W 1/2 NW 1/4 NE 1/4, N 1/2 NW 1/4 SW 1/4 NE 1/4	Fry Canyon store	25.00
A, D	T. 35 S., R. 22 E. Sec. 28: N 1/2 SW 1/4	north of Blanding	80.00
E	T. 36 S., R. 22 E. Sec. 12: Lots 1, 2, 4, 6 E 1/2 NE 1/4, SE 1/4 SE 1/4 Sec. 13: E 1/2 NE 1/4	at Recapture Lake	363.80
E	T. 36 S., R. 22 E., Sec. 27: SW 1/4 SW 1/4 Sec. 34: W 1/2 NW 1/4	education center at Blanding	120.00
C, D	T. 36 S., R. 22 E. Sec. 28: SE 1/4 NE 1/4, E 1/2 SE 1/4	adjacent to Blanding	120.00
A, D	T. 31 S., R. 23 E. Sec. 34: NW 1/4 NW 1/4	near U-211 at Photograph Gap	40.00
A, D	T. 32 S., R. 23 E. Sec. 18: NE 1/4 NW 1/4 Sec. 24: SE 1/4 SW 1/4 Sec. 35: NW 1/4 SW 1/4	Harts Draw Peters Hill northwest of Monticello Airport	40.00 40.00 40.00
A, D	T. 35 S., R. 23 E. Sec. 9: NW 1/4 NW 1/4 Sec. 16: NE 1/4 NW 1/4 Sec. 19: NW 1/4 SE 1/4	Devils Canyon	120.00
A, D	T. 36 S., R. 23 E. Sec. 8: NW 1/4 NW 1/4 Sec. 20: NE 1/4 SE 1/4	northeast of Recapture Lake northeast of Blanding	40.00 40.00
A, D	T. 39 S., R. 23 E. Sec. 23: SE 1/4 SE 1/4	in the Navajo Indian reservation	40.00

TABLE AQ-5 (Continued)

<u>Designation</u>	<u>Legal Description</u>	<u>Geographic Area</u>	<u>Acreage</u>
A, B, D	T. 39 S., R. 24 E. Sec. 17: S 1/2 Sec. 18: SE 1/4 Sec. 20: NE 1/4 Sec. 21: NE 1/4, S 1/2 Sec. 22: S 1/2 Sec. 27: W 1/2 Sec. 28: NE 1/4	in the Navajo Indian reservation	1,920.00
A, D	T. 39 S., R. 25 E. Sec. 6: NE 1/4 SE 1/4, S 1/2 SE 1/4 Sec. 7: Lot 2, E 1/2 NE 1/4, SW 1/4 NE 1/4, SE 1/4 NW 1/4	in the Navajo Indian Reservation	317.85
A, D	T. 33 S., R. 24 E., Sec. 9: SE 1/4 NE 1/4 Sec. 33: SE 1/4 NE 1/4	near Monticello	80.00
A, D	T. 31 S., R. 25 E. Sec. 23: S 1/2 NE 1/4, SE 1/4 NW 1/4, N 1/2 SW 1/4, NE 1/4 SE 1/4	west Summit Point	240.00
A, D	T. 32 S., R. 25 E., Sec. 1: SE 1/4 SW 1/4 Sec. 12: SW 1/4 NE 1/4 Sec. 23: NW 1/4 NE 1/4, N 1/2 SE 1/4 Sec. 24: S 1/2 NE 1/4 Sec. 29: N 1/2	Summit/west Summit Point	600.00
A, D	T. 33 S., R. 25 E Sec. 13: SE 1/4 Sec. 19: NE 1/4 Sec. 24: SW 1/4	east of Monticello	480.00
A, D	T. 38 S., R. 25 E. Sec. 31: Lots 2, 3, 4	north of Hatch Trading Post	109.17
A, D	T. 39 S., R. 25 E Sec. 15: S 1/2	east of Hatch Trading Post	320.00

TABLE AQ-5 (Concluded)

<u>Designation</u>	<u>Legal Description</u>	<u>Geographic Area</u>	<u>Acreage</u>
A, D	T. 32 S., R. 26 E. Sec. 14: Lots 1, 2, 3, 4 Sec. 15: SE 1/4 SW 1/4 Sec. 19: N 1/2 SE 1/4 Sec. 23: Lots 1, 2, 3, 4 Sec. 26: Lots 1, 2, 3, 4	east summit	312.35
A, D	T. 33 S., R. 26 E. Sec. 9: W 1/2 SW 1/4 Sec. 10: SE 1/4 NE 1/4 Sec. 14: Lots 3, 4 Sec. 19: SW 1/4 SE 1/4 Sec. 30: W 1/2 NE 1/4, SE 1/4 NE 1/4 Sec. 31: E 1/2 NE 1/4, SW 1/4 NE 1/4, SE 1/4 NW 1/4	north and west of Ucolo	488.04
A, D	T. 34 S., R. 26 E. Sec. 33: SW 1/4 NE 1/4 NW 1/4 SW 1/4, SE 1/4 SW 1/4	southeast of Eastland	120.00
A, D	T. 35 S., R. 26 E. Sec. 31: S 1/2 NW 1/4, N 1/2 SW 1/4, SW 1/4 SW 1/4	Cedar Point	200.00
<u>San Juan County Landfill</u>			
C	T. 39 S., R. 13 E. Sec. 1: a portion of SE 1/4 SW 1/4, SW 1/4 SE 1/4 Sec. 12: a portion of NW 1/4 NE 1/4, NE 1/4 NW 1/4	between Clay Hills & Halls Crossing	20.00
C	T. 42 S., R. 19 E. Sec. 6: a portion of SW 1/4	near Mexican Hat	10.00
C	T. 40 S., R. 21 E. Sec. 27: E 1/2 E 1/2 NE 1/4 SW 1/4	near Bluff	10.00
C	T. 40 S., R. 23 E. Sec. 27: a portion of NE 1/4	near Montezuma Creek	10.00
TOTAL			6,346.21

APPENDIX R — ECONOMIC ANALYSIS METHODOLOGIES

OVERVIEW

The purpose of this appendix is to describe the methods used for analyzing economic and social impacts of the various alternatives.

Economic impacts were grouped by resource uses. The analysis in chapter 4 discussed changes of more than 1 percent in personal, local, and regional revenues, costs, income, and employment. The analysis also considered the effect of the Bureau of Land Management's (BLM's) expenditures on the local economy.

Economic activities related to each resource use were identified in chapter 3. Where the economic indicators for a given resource use would change by less than 1 percent, the activity was not considered to be part of the affected economic environment. The impact analysis considered changes to (1) the local importance of those activities, (2) the fiscal importance of those activities to local taxing jurisdictions, and (3) the local importance of related government expenditures. Some economic methodologies were used for all resource uses, and some were specific to a particular resource use.

GENERAL METHODOLOGIES

Most resource management programs either regulate or affect some economic activities. Whenever possible, statistics for the local employment, earnings, and personal income generated by these activities were obtained from secondary sources such as the Bureau of Economic Analysis [BEA, 1984a and 1984b] and the Utah Department of Employment Security [UDES, 1982]. When such statistics were not available for a particular activity, estimates were based on conversations with persons having particular knowledge of these activities.

A U.S. Forest Service (USFS) economic input-output model of the county was used to estimate the indirect and induced local importance of these activities under existing and alternative management. The economic model used a 1977 data base [USFS, 1982]. Important economic sectors were updated using 1982 employment/output and sales/output ratios [BEA, 1984a and 1984b; UDES, 1982; USDC, 1984b; USDC, 1984c; USDC, 1984d; USDC, 1985]. The data used by the economic model are not strictly comparable with BEA statistics.

For consistency, BEA statistics were used whenever possible. Only employment multipliers were used from the county economic model. Earnings and personal income estimates were derived from BEA income/employment ratios.

Economic activities can affect the revenues and costs of local taxing jurisdictions. The fiscal importance calculations quantified the sales, use, and property tax revenues directly generated from an activity under existing and alternative management. The indirect and induced revenue effects were not calculated. For example, the sales and property taxes paid by a mine employee were not accounted for in the fiscal importance calculations of that mine.

Local sales, use, and property tax revenues collected by local taxing jurisdictions were broken down by broad revenue source, and more specifically according to the proportion of each industry's economic activity. Economic activity under existing and alternative management was measured by either gross output or employment estimates. Tax revenues under each alternative were calculated by applying the proportion of projected change in economic activity to baseline revenue conditions. The accounting systems used by local taxing jurisdictions did not allow

for a similar fiscal breakdown of the costs associated with identified activities.

GOVERNMENT EXPENDITURES

The cost of managing BLM programs generates local employment and income through direct manpower requirements and local purchases of supplies and materials. The 1985 budget was used as a baseline from which the costs of alternative plans were estimated (appendix K). These costs were then used to estimate direct manpower requirements.

The effect of government employment on local sales was estimated based on national average propensities to consume, broken out by sector. For the sectors that occur in the local economy, it was assumed that residents made those purchases locally; purchases from sectors that do not exist locally were assumed to have been made outside the local economy. The resulting local sales estimates were used in conjunction with the county model to estimate the indirect and induced effects of government employment.

All BLM 1984 procurement expenditures were reviewed to determine the percentage of purchases made locally. This proportion (35 percent) was applied to all procurement expenditures by program. These local expenditure estimates were then entered into the county economic model to derive the direct, indirect, and induced employment generated. The procurement figures were adjusted slightly to account for support programs and the discretionary allocation of fixed cost.

RECREATION

Although tourist related sales can generate a significant amount of local income and employment, the recreation industry is not delineated by standard economic statistics. Surveys on recreation trips and expenditures are conducted regularly by the Institute of Outdoor Recreation and Tourism [IORT, 1978; IORT, 1984; Dalton, 1982]. (NOTE: IORT was formerly ISORT, the Institute for the Study of Outdoor Recreation and Tourism.) Results are usually published for broad geographic regions.

Statistics published for the geographic region including San Juan County usually include figures for Grand County, and sometimes for Carbon and Emery Counties as well. Separate studies are usually conducted for out-of-state tourists and those who reside in Utah. In order to estimate the local importance of recreational activities in San Juan County, it was necessary to apportion trips and revenues by county and to aggregate the out-of-state and in-state recreation statistics.

Using the previous ISORT studies, it was possible to separate the recreation statistics for the Carbon and Emery County area from those for the San Juan and Grand County area. A recent study [SEUAOG, 1985] did divide out-of-state expenditures between Grand and San Juan Counties. Another study, associated with the Grand RMP [BLM, 1983], analyzed the importance of all tourism to Grand county by examining historic seasonal variations in total sales, tourist room sales, and population changes.

Both of these studies concluded that Grand county accounts for 65 percent of total tourist sales in Grand and San Juan Counties. The 65 percent figure was used to apportion estimates of both expenditures and visits between the two counties. This procedure may have led to an underestimation of visits to San Juan County, as it is widely believed that many of those visiting San Juan County purchase needed goods and supplies in Grand County.

Two methods were used to apportion the visits and expenditures due to recreation in the SJRA: (1) BLM visitation estimates were compared to estimates of total county visitation, and (2) visitation estimates from all other land managing agencies were subtracted from the estimates of total county visitation; the difference was assumed to be the visits due to recreation on public lands. The two procedures were judged necessary because of the inaccuracy associated with the BLM visitation estimates and the generally greater accuracy of such figures from other land managing agencies. The local expenditure estimates were entered into the county economic model to derive the direct, indirect, and induced employment generated.

LIVESTOCK

Ranchers using BLM forage in the SJRA were stratified according to herd size, season of federal rangeland use, and dependency on federal lands for grazing. Data from the U.S. Department of Agriculture (USDA) cost of production survey, for a broad geographic area which included San Juan County, were adjusted to reflect local conditions. These adjustments were based on interviews with ranchers and extension specialists.

Forage dependency estimates were based on BLM, USFS, and State of Utah grazing records; private leases recorded during the grazing fee appraisal; census estimates of privately produced forage; and a partial survey of local ranchers [USDC, 1984a; Tittman and Brownell, 1984].

Estimated total herd size for ranchers using SJRA forage was based on BLM records and on responses to a mail-back questionnaire. Local ranch herd sizes and budget production data were used to estimate local sales due to those ranching operations using SJRA forage. Sales figures were input into the county economic model to derive indirect and induced effects.

Based on ranch budgets, linear programming models were developed for each rancher stratum. Models were set up to maximize net income based on a series of production parameters and constraints. The amount of grazing on public lands

enters the model at a constrained level equal to that used by each of the typical ranch categories. The BLM forage constraints were then varied, in both timing and quantity, to see how the typical profit-maximizing ranches would adjust to these changes and how a typical ranch's average costs, returns, herd size, and hired labor requirements would be affected.

Operators were grouped into the same groups used in the ranch models. Each ranch has a unique set of characteristics affecting its operation which cannot be fully represented by a ranch model. However the ranch models can be used to estimate the aggregate impacts of changing the allocation of public land forage to those ranches in each group (tables AR-1, AR-2, AR-3, and AR-4).

SOCIAL ANALYSIS

SJRA resource specialists live in the affected area and have worked and dealt with persons and groups that have major interest in the public land management. The specialists, therefore, were able to describe the attitudes of various groups toward each planning issue. Precise representation of user groups and communities was not possible through this information gathering technique; however, major social concerns and effects were identified.

TABLE AR-1

Rancher Sales, Costs, and Returns per Cow, Fall/Winter/Spring Group

	Baseline	No Change in Season		Spring Exclusion	
		+25% in SJRA Forage	-25% in SJRA Forage	+25% in SJRA Forage	-25% in SJRA Forage
Sales	\$ 276.95	\$ 276.95	\$ 276.95	\$ 276.95	\$ 276.95
Variable costs					
Feed	29.05	28.30	27.87	27.76	28.04
Hay	21.64	19.69	24.65	40.95	40.96
Hired labor	9.32	11.84	5.64	8.22	8.21
Other ^a	<u>85.00</u>	<u>85.00</u>	<u>85.00</u>	<u>85.00</u>	<u>85.00</u>
TOTAL	\$ 145.01	\$ 144.83	\$ 143.16	\$ 161.93	\$ 162.21
Returns above variable cost	\$ 131.94	\$ 132.12	\$ 133.79	\$ 115.02	\$ 114.74
Fixed cost ^b	\$ 95.00	\$ 86.54	\$ 108.35	\$ 98.93	\$ 98.93
Returns to labor and investment	\$ 36.94	\$ 45.58	\$ 25.44	\$ 16.09	\$ 15.81
Herd size	359.50	359.20	315.65	345.70	345.70

^aIncludes veterinary services, marketing, maintenance and repair of machinery and equipment, and interest on operating capital.

^bIncludes general farm overhead, ownership cost of machinery and equipment, and land taxes.

TABLE AR-2

Rancher Sales, Costs, and Returns per Cow, Summer Group

	Baseline	No Change in Season		Spring Exclusion	
		+25% in SJRA Forage	-25% in SJRA Forage	+25% in SJRA Forage	-25% in SJRA Forage
Sales	\$ 276.72	\$ 276.72	\$ 276.72	\$ 276.72	\$ 276.72
Variable costs					
Feed	29.88	29.48	30.90	30.85	31.48
Hay	42.09	40.22	46.68	46.51	49.33
Hired labor	0.00	0.00	0.00	0.00	0.00
Other ^a	85.00	85.00	85.00	85.00	85.00
TOTAL	\$ 156.97	\$ 154.70	\$ 162.58	\$ 162.36	\$ 165.81
Returns above variable cost	\$ 119.75	\$ 122.02	\$ 114.14	\$ 114.36	\$ 110.91
Fixed cost ^b	\$ 95.00	\$ 90.79	\$ 105.36	\$ 105.00	\$ 111.36
Returns to labor and investment	\$ 24.75	\$ 31.23	\$ 8.78	\$ 9.36	\$ 0.45
Herd size	41.70	43.63	37.60	37.73	35.57

^aIncludes veterinary services, marketing, maintenance and repair of machinery and equipment, and interest on operating capital.

^bIncludes general farm overhead, ownership cost of machinery and equipment, and land taxes.

TABLE AR-3

Rancher Sales, Costs, and Returns per Cow, Yearlong Group

	Baseline	No Change in Season		Spring Exclusion	
		+25% in SJRA Forage	-25% in SJRA Forage	+25% in SJRA Forage	-25% in SJRA Forage
Sales	\$ 275.64	\$ 275.64	\$ 275.64	\$ 275.64	\$ 275.64
Variable costs					
Feed	25.94	25.51	26.80	30.58	27.26
Hay	28.40	26.00	33.13	27.54	34.70
Hired labor	6.39	9.22	5.47	7.41	5.23
Other ^a	<u>85.00</u>	<u>85.00</u>	<u>85.00</u>	<u>85.00</u>	<u>85.00</u>
TOTAL	\$ 145.73	\$ 145.73	\$ 150.40	\$ 150.53	\$ 152.19
Returns above variable cost	\$ 129.91	\$ 129.91	\$ 125.24	\$ 125.11	\$ 123.45
Fixed cost ^b	\$ 95.00	\$ 86.96	\$ 110.82	\$ 92.10	\$ 116.06
Returns to labor and investment	\$ 34.91	\$ 42.95	\$ 14.42	\$ 33.01	\$ 7.39
Herd size	297.57	324.99	255.03	306.88	243.51

^aIncludes veterinary services, marketing, maintenance and repair of machinery and equipment, and interest on operating capital.

^bIncludes general farm overhead, ownership cost of machinery and equipment, and land taxes.

TABLE AR-4

Budget Parameters and Feed Sources Used in Ranch Models

<u>Budget Parameters</u>	<u>Fall/Winter/ Spring Group</u>	<u>Summer Group</u>	<u>Yearlong Group</u>
Calf crop (percent)	90	90	90
Replacement rate (percent)	10	10	10
Death loss (percent)	2	2	3
Cow/bull ratio (percent)	5	5	5
Heifer calf weight (pounds)	480	480	480
Steer calf weight (pounds)	525	525	525
Heifer yearling weight (pounds)	660	660	660
Steer yearling weight (pounds)	730	730	730
Cull cows	1,000	1,000	1,000
Feed sources (percent)			
BLM San Juan Resource Area	40	33	57
Other BLM	1	0	2
Forest Service	24	8	8
State lands	4	2	2
Leased lands	10	11	7
Private rangelands	12	17	10
Aftermath	2	4	3
Hay	7	25	10

STATE OF CALIFORNIA - DEPARTMENT OF WATER RESOURCES

PROJECT	ACRES	PERCENTAGE	STATUS	REMARKS
1	100	100	100	Completed
2	200	150	100	Completed
3	300	250	100	Completed
4	400	350	100	Completed
5	500	450	100	Completed
6	600	550	100	Completed
7	700	650	100	Completed
8	800	750	100	Completed
9	900	850	100	Completed
10	1000	950	100	Completed
11	1100	1050	100	Completed
12	1200	1150	100	Completed
13	1300	1250	100	Completed
14	1400	1350	100	Completed
15	1500	1450	100	Completed
16	1600	1550	100	Completed
17	1700	1650	100	Completed
18	1800	1750	100	Completed
19	1900	1850	100	Completed
20	2000	1950	100	Completed

APPENDIX S — COMPARISON OF MINERAL POTENTIAL AND ALTERNATIVES

OVERVIEW

To aid in understanding impacts of the various alternatives described in chapter 2 upon minerals resources, a series of matrixes have been developed. These show, for each alternative, how the proposed development limitations on minerals activities correlate to areas of known or projected mineral potential.

Separate matrixes have been prepared for oil and gas, coal, tar sand, mineral materials, locatable minerals, and potash. The oil and gas matrix compares fluid mineral classifications with acres available under the different oil and gas leasing categories for each alternative. The locatable minerals matrix compares potential for occurrence of locatable minerals with acres open to entry under each alternative; consideration is limited to bedded uranium and placer gold deposits. The matrixes for coal, tar sand, and potash compare acres available for lease under each alternative, assuming that mineral potential is limited to the known deposit. The mineral materials matrix assumes that mineral potential occurs uniformly across the SJRA.

OIL AND GAS

Table AS-1 gives potential for oil and gas occurrence in terms of four classifications. Information Bulletin 84-261, Guidelines for Fluid Mineral Leasing Input into RMPs, defines the four official fluid mineral classifications as follows:

- (1) Known geologic structure (KGS): The trap in which an accumulation of oil or gas has been discovered by drilling and determined to be productive, the limits of which include all acreage that is presumptively productive.
- (2) Prospectively valuable (PV): Areas having a reasonable chance of containing oil or gas. The degree of chance ranges from near zero to near certainty and depends on factors such as the nature of potential source and reservoir rocks, proximity to productive areas, thickness of sedimentary section, extent of erosion, etc.
- (3) Not prospectively valuable (NPV): Areas not meeting the definition or qualifications for classification as prospectively valuable.
- (4) Unknown (UNK): Areas where there is not sufficient information to make a fluid mineral classification.

Within the SJRA, there are 73,717 acres of KGSs on public lands. All other lands, a total of 1,704,113 acres, have been classified as PV (table AS-1).

COAL

Table AS-2 assumes that coal potential is limited to the San Juan Coal Field (figure 3-4). It further assumes that coal potential is uniformly low over the entire field due to the poor quality of coal in place. Within this field, about 212,000 acres are federal surface with federally owned coal. This is the only area that would be subject to the leasing conditions developed in the RMP.

Coal leasing would be allowed only under alternative B. An unsuitability study would have to be done (43 CFR 3461) prior to any actual leasing of coal. That study could further limit use of all or certain types of mining operations.

TABLE AS-1

Fluid Mineral Classifications, by Alternative

<u>Alternative A</u>	<u>Approximate Acres</u>				
	<u>KGS</u>	<u>PV</u>	<u>NPV</u>	<u>UNK</u>	<u>Totals</u>
Category 1	73,417	1,589,993	0	0	1,663,410
Category 2	* 300	114,120	0	0	114,420
Category 3	0	0	0	0	0
<u>Totals</u>	<u>73,717</u>	<u>1,704,113</u>	<u>0</u>	<u>0</u>	<u>1,777,830</u>

*Turner-Bluff: 140, Recapture: 120, Unnamed: 40, (T. 40 S., R. 21 E.)

<u>Alternative B</u>	<u>KGS</u>	<u>PV</u>	<u>NPV</u>	<u>UNK</u>	<u>Totals</u>
Category 1	73,717	1,704,113	0	0	1,777,830
Category 2	0	0	0	0	0
Category 3	0	0	0	0	0
<u>Totals</u>	<u>73,717</u>	<u>1,704,113</u>	<u>0</u>	<u>0</u>	<u>1,777,830</u>

<u>Alternative C</u>	<u>KGS</u>	<u>PV</u>	<u>NPV</u>	<u>UNK</u>	<u>Totals</u>
Category 1	73,477	992,883	0	0	1,066,360
Category 2	240	711,230	0	0	711,470
Category 3	0	0	0	0	0
<u>Totals</u>	<u>73,717</u>	<u>1,704,113</u>	<u>0</u>	<u>0</u>	<u>1,777,830</u>

<u>Alternative D</u>	<u>KGS</u>	<u>PV</u>	<u>NPV</u>	<u>UNK</u>	<u>Totals</u>
Category 1	47,297	420,113	0	0	467,410
Category 2	*26,420	229,130	0	0	255,550
Category 3	0	1,054,870	0	0	1,054,870
<u>Totals</u>	<u>73,717</u>	<u>1,704,113</u>	<u>0</u>	<u>0</u>	<u>1,777,830</u>

*Mustang:	1,760	Bradford Canyon:	1,920	Squaw Canyon:	3,840
Horsehead Point:	2,490	Cave Canyon:	925	Unnamed:	360
Alkali Canyon:	6,710	Patterson Canyon:	8,095	Bug:	320

<u>Alternative E</u>	<u>KGS</u>	<u>PV</u>	<u>NPV</u>	<u>UNK</u>	<u>Totals</u>
Category 1	73,717	1,453,163	0	0	1,526,880
Category 2	0	250,950	0	0	250,950
Category 3	0	0	0	0	0
<u>Totals</u>	<u>73,717</u>	<u>1,704,113</u>	<u>0</u>	<u>0</u>	<u>1,777,830</u>

TABLE AS-2

Coal Development Limitations, by Alternative (San Juan Coal Field)

Alternative	Approximate Acres					Closed	Total Federal Coal
	Standard Limitations	Seasonal Limitations	Open		Subtotal (Limitations)		
			Year-round Limitations				
A	0	0	0	0	0	212,000 100%	212,000
B	211,600 (99%)	0	400	400	400 (1%)	0	212,000
C	0	0	0	0	0	212,000 (100%)	212,000
D	0	0	0	0	0	212,000 (100%)	212,000
E	0	0	0	0	0	212,000 (100%)	212,000

TAR SAND

Table AS-3 assumes that tar sand potential is limited to the White Canyon STSA, and that development potential within the STSA is uniformly low due to the remote location of the resource. See the regional tar sand EIS [BLM, 1984c] for a complete analysis.

The leasing categories described here are those for CHLs modified to conform with the revised oil and gas categories (appendix L). Acreages assigned to the different categories, by alternative, are as described in chapter 2.

MINERAL MATERIAL

Table AS-4 assumes that the potential for occurrence of mineral material deposits is uniform across the SJRA. No attempt has been made to assess the quality of mineral materials in place.

The matrix compares areas available for mineral materials disposal (through sale or free use) with different levels of restrictions, as described in chapter 2, for each alternative.

LOCATABLE MINERALS

Table AS-5 assumes that locatable mineral potential is limited to the areas shown in figure 3-7 and considers only bedded uranium deposits and placer gold deposits. High potential areas are the mining districts. Medium potential areas are those outside the mining districts where the geologic strata in place are known to be hosts to mineral

deposits. Low potential areas are those where the host strata have been eroded away or were never deposited.

Under the alternatives, different areas would remain open to mineral entry. However, in open areas, mining claim location (mineral entry) would not be subject to stipulations or categorical concerns, as mineral leases are. The matrix compares areas available for mining claim location with potential. The acres for each alternative total to the acres open to entry in that alternative.

POTASH

The only nonenergy leasable mineral believed viable in SJRA is potash, although other such minerals may be present. Table AS-6 assumes that potash potential is limited to deposits described in chapter 3, and that potential is uniformly high in the known potash leasing areas (KPLAs) and uniformly moderate over the remainder of the deposit. The entire deposit covers about 300,000 acres of public lands in SJRA, and the KPLAs about 4,400 acres of that area. Development potential is thought to be uniformly low over the entire deposit, including KPLAs, due to lack of interest and poor market conditions.

Leasing conditions (stipulations) have been applied, as indicated in chapter 2, for each alternative. The matrix compares areas available for lease under different alternatives, for both KPLAs (high potential areas) and the remaining potash reserve (moderate potential areas).

TABLE AS-3

Tar Sand Development Limitations, by Alternative

Alternative	Approximate Acres							
	Category 1, Open to Leasing				Total Open	Category 2		Total STSA
	Standard Limitations	Seasonal Limitations	Year-round Limitations ^a	Subtotal (Limitations)		No Surface Occupancy	Closed	
A	3,080 38%	2,280 29%	2,340 29%	4,620 58%	7,700 96%	120 2%	160 2%	7,980
B	7,980 100%	0	0	0	7,980 100%	0	0	7,980
C	2,010 25%	0	3,900 49%	3,900 49%	5,910 74%	2,070 26%	0	7,980
D	0	0	1,520 19%	1,520 19%	1,520 19%	0	6,460 81%	7,980
E	3,210 40%	0	4,690 59%	4,690 59%	7,900 99%	80 1%	0	7,980

NOTE: Percentages are not additive because of rounding.

May include seasonal restrictions in addition to other surface restrictions.

TABLE AS-4

Mineral Materials Development Limitations, by Alternative

Alternative	Approximate Acres							Total Surface Estate
	Standard Limitations	Seasonal Limitations	Open			Total Open	Closed	
			Year-round Limitations ^a	Subtotal (Limitations)	Total Open			
A	1,679,340 (94%)	0	0	0	0	1,679,340 (94%)	99,850 (6%)	1,779,190
B	1,774,600 (99%)	0	2,040 (1%)	2,040 (1%)	2,040 (1%)	1,776,640 (99%)	2,550 (1%)	1,779,190
C	387,110 (22%)	81,090 (5%)	599,760 (33%)	680,850 (38%)	680,850 (38%)	1,067,960 (60%)	711,230 (40%)	1,779,190
D	0	0	510,550 (29%)	510,550 (29%)	510,550 (29%)	510,550 (29%)	1,268,640 (71%)	1,779,190
E	596,310 (34%)	258,630 (14%)	672,270 (38%)	930,900 (52%)	930,900 (52%)	1,527,210 (86%)	251,100 (14%)	1,779,190

NOTE: Percentages are not additive because of rounding.

^aMay include seasonal restrictions in addition to other surface restrictions.

TABLE AS-5

Locatable Minerals Development Limitations, by Alternative

Alternative	Approximate Acres					Total Mineral Estate
	Open to Entry			Subtotal	Not Open To Entry	
	High Potential	Medium Potential	Low Potential			
A	545,090 (31%)	659,310 (37%)	470,080 (26%)	1,674,480 (94%)	103,300 (6%)	1,777,830
B	545,190 (31%)	657,520 (37%)	570,890 (32%)	1,776,190 (100%)	1,640 (1%)	1,777,830
C	528,720 (30%)	587,570 (33%)	422,140 (24%)	1,538,430 (87%)	239,400 (13%)	1,777,830
D	404,930 (23%)	310,350 (17%)	15,000 (1%)	730,280 (41%)	1,047,550 (59%)	1,777,830
E	533,340 (30%)	669,030 (37%)	458,520 (26%)	1,660,890 (93%)	116,940 (7%)	1,777,830

NOTE: Percentages are not additive because of rounding.

TABLE AS-6

Potash Development Limitations, by Alternative

Alternative	Approximate Acres							Total Minerals in Place	
	Category 1, Open to Leasing		Subtotal (Limitations)	Total Open	Category 2 No Surface Occupancy	Category 3 No Lease	Total Minerals in Place		
	Standard Limitations	Seasonal Limitations							Year-round Limitations ^a
A	KPLA	4,440 (100%)	0	0	0	4,440 (100%)	0	0	4,440
	Reserve	300,000 (100%)	0	0	0	300,000 (100%)	0	0	300,000
B	KPLA	4,430 (99%)	0	10 (1%)	10 (1%)	4,440 (100%)	0	0	4,440
	Reserve	299,800 (+99%)	0	200 (1%)	200 (1%)	300,000 (100%)	0	0	300,000
C	KPLA	2,400 (54%)	0	2,040 (46%)	2,040 (46%)	4,440 (100%)	0	0	4,440
	Reserve	15,800 (5%)	0	262,820 (88%)	262,820 (88%)	278,620 (93%)	21,380 (7%)	0	300,000
D	KPLA	0	0	2,400 (54%)	2,400 (54%)	2,400 (54%)	2,040 (46%)	0	4,440
	Reserve	0	0	97,700 (32%)	97,700 (32%)	97,700 (32%)	98,300 (33%)	104,000 (35%)	300,000
E	KPLA	4,430 (100%)	0	10 (1%)	10 (1%)	4,440 (100%)	0	0	4,440
	Reserve	178,910 (50%)	79,270 (26%)	39,900 (13%)	119,170 (39%)	298,080 (99%)	1,920 (1%)	0	300,000

NOTE: Percentages are not additive because of rounding.

^aMay include seasonal restrictions in addition to other surface restrictions.

APPENDIX T — ECOLOGICAL CONDITION OF GRAZING ALLOTMENTS, BY ALTERNATIVE

OVERVIEW

The purpose of this appendix is to show changes to ecological condition of the range based on different methods and intensities of range management (table AT-1). It includes changes caused by such actions as land treatments, implementation of allotment management plans (AMPs), and changes in season of use, as presented under the different alternatives in chapter 2.

ASSUMPTIONS

It was assumed that management of a grazing allotment under an AMP would improve ecological condition by 10 percent, and that the absence of an AMP would cause a 5 percent decline in

ecological condition. Some assessments of individual allotments did not follow these criteria because of existing conditions that would not allow the general criteria to be used. Generally, smaller allotments without AMPs were considered to remain static in ecological condition.

Elimination of spring grazing after March 31 was assumed to improve ecological condition by 10 percent; however, this was considered only for allotments to which the 10 percent increase from management under an AMP would not apply.

It was assumed that either maintenance of existing land treatments or implementation of new ones would improve ecological condition to climax.

TABLE AT-1

Ecological Condition by Percentage of Allotment, by Alternative

Allotment and Ecological Condition Class	Current	Alternative				
		A	B	C	D	E
ALKALI CANYON 6801						
Climax	5	5	23	10	8	9
Late seral	30	28	29	29	29	29
Mid seral	26	27	12	25	27	26
Early seral	30	31	27	27	27	27
Rock outcrop/badlands	9	9	9	9	9	9
ALKALI POINT 6802						
Climax	9	9	22	20	10	20
Late seral	10	10	10	10	10	10
Mid seral	13	12	5	7	12	7
Early seral	62	63	57	57	62	57
Rock outcrop/badlands	6	6	6	6	6	6
BEAR TRAP 4830						
Climax	-	-	-	-	-	-
Late seral	-	-	-	-	-	-
Mid seral	100	100	100	100	100	100
Early seral	-	-	-	-	-	-
Rock outcrop/badlands	-	-	-	-	-	-
BIG INDIAN 4826						
Climax	-	-	5	5	5	5
Late seral	-	-	5	-	-	5
Mid seral	47	45	39	41	41	39
Early seral	24	26	22	25	25	22
Rock outcrop/badlands	29	29	29	29	29	29
BLACK STEER 6804						
Climax	-	-	1	-	1	1
Late seral	9	9	14	9	14	14
Mid seral	61	61	56	61	56	56
Early seral	15	15	14	15	14	14
Rock outcrop/badlands	15	15	15	15	15	15
BLUE MOUNTAIN 6835						
Climax	-	-	-	-	-	-
Late seral	29	29	29	29	29	29
Mid seral	71	71	71	71	71	71
Early seral	-	-	-	-	-	-
Rock outcrop/badlands	-	-	-	-	-	-
BLUFF BENCH 6803						
Climax	63	63	57	63	63	63
Late seral	-	-	6	-	-	-
Mid seral	16	16	14	16	16	16
Early seral	-	-	2	-	-	-
Rock outcrop/badlands	21	21	21	21	21	21

TABLE AT-1 (Continued)

Allotment and Ecological Condition Class	Alternative					
	Current	A	B	C	D	E
BROWN CANYON 6805						
Climax	-	-	-	-	-	-
Late seral	-	-	-	-	-	-
Mid seral	30	30	30	30	30	30
Early seral	50	50	50	50	50	50
Rock outcrop/badlands	20	20	20	20	20	20
BUG-SQUAW 6846						
Climax	12	12	12	12	12	12
Late seral	4	9	9	9	9	9
Mid seral	56	53	53	53	53	53
Early seral	21	19	19	19	19	19
Rock outcrop/badlands	7	7	7	7	7	7
BULLDOG 6806						
Climax	4	4	4	4	4	4
Late seral	2	2	2	2	2	2
Mid seral	86	82	82	82	82	82
Early seral	2	6	6	6	6	6
Rock outcrop/badlands	6	6	6	6	6	6
CAVE CANYON 6808						
Climax	-	-	3	4	4	4
Late seral	39	39	36	38	38	38
Mid seral	24	24	23	24	24	24
Early seral	26	26	27	23	23	23
Rock outcrop/badlands	11	11	11	11	11	11
CHURCH ROCK 4827						
Climax	-	-	-	-	-	-
Late seral	-	-	6	6	6	6
Mid seral	64	64	58	58	58	58
Early seral	-	-	-	-	-	-
Rock outcrop/badlands	36	36	36	36	36	36
COMB WASH 6836						
Climax	3	7	11	5	5	5
Late seral	20	21	18	22	22	22
Mid seral	45	42	38	42	42	42
Early seral	15	13	16	14	14	14
Rock outcrop/badlands	17	17	17	17	17	17
CORRAL 6838						
Climax	-	-	-	-	-	-
Late seral	14	14	14	14	14	14
Mid seral	86	86	86	86	86	86
Early seral	-	-	-	-	-	-
Rock outcrop/badlands	-	-	-	-	-	-

TABLE AT-1 (Continued)

Allotment and Ecological Condition Class	Alternative					
	Current	A	B	C	D	E
CROSS CANYON 6811						
Climax	-	-	21	3	1	2
Late seral	6	6	11	11	9	11
Mid seral	57	54	34	52	55	53
Early seral	29	32	26	26	27	26
Rock outcrop/badlands	8	8	8	8	8	8
DEVILS CANYON 6812						
Climax	-	-	-	-	-	-
Late seral	-	-	-	-	-	-
Mid seral	28	26	26	26	26	26
Early seral	66	68	68	68	68	68
Rock outcrop/badlands	6	6	6	6	6	6
DODGE CANYON 6813						
Climax	-	-	-	-	-	-
Late seral	60	60	60	60	60	60
Mid seral	35	35	35	35	35	35
Early seral	-	-	-	-	-	-
Rock outcrop/badlands	5	5	5	5	5	5
DODGE POINT 6814						
Climax	-	-	-	-	-	-
Late seral	33	33	33	33	33	33
Mid seral	19	19	19	19	19	19
Early seral	41	41	41	41	41	41
Rock outcrop/badlands	7	7	7	7	7	7
DRY FARM 4804						
Climax	-	-	-	-	-	-
Late seral	7	7	7	7	7	7
Mid seral	93	93	93	93	93	93
Early seral	-	-	-	-	-	-
Rock outcrop/badlands	-	-	-	-	-	-
DRY VALLEY-DEER NECK 4820						
Climax	-	-	-	-	-	-
Late seral	-	-	4	4	4	4
Mid seral	42	40	44	44	44	44
Early seral	54	56	48	48	48	48
Rock outcrop/badlands	4	4	4	4	4	4
EAST CANYON 4814						
Climax	-	-	22	2	-	1
Late seral	-	-	5	5	5	5
Mid seral	52	50	30	50	52	51
Early seral	44	46	39	39	39	39
Rock outcrop/badlands	4	4	4	4	4	4

TABLE AT-1 (Continued)

Allotment and Ecological Condition Class	Alternative					
	Current	A	B	C	D	E
EAST LEAGUE 6815						
Climax	34	34	32	38	38	38
Late seral	36	36	36	33	33	33
Mid seral	12	12	13	11	11	11
Early seral	6	6	7	6	6	6
Rock outcrop/badlands	12	12	12	12	12	12
EAST SUMMIT 4810						
Climax	5	5	5	5	5	5
Late seral	-	-	-	-	-	-
Mid seral	95	95	95	95	95	95
Early seral	-	-	-	-	-	-
Rock outcrop/badlands	-	-	-	-	-	-
HARTS DRAW 4811						
Climax	2	2	8	4	4	4
Late seral	16	15	19	19	17	19
Mid seral	48	47	39	43	45	43
Early seral	4	6	4	4	4	4
Rock outcrop/badlands	30	30	30	30	30	30
HARTS POINT 4825						
Climax	-	-	11	-	-	-
Late seral	-	-	-	7	7	7
Mid seral	66	63	52	59	59	59
Early seral	-	3	3	-	-	-
Rock outcrop/badlands	34	34	34	34	34	34
HORSEHEAD CANYON 6816						
Climax	1	1	1	1	1	1
Late seral	47	47	41	47	47	47
Mid seral	32	32	34	32	32	32
Early seral	14	14	18	-	14	14
Rock outcrop/badlands	6	6	6	6	6	6
HURRAH PASS 4813						
Climax	8	8	10	10	10	10
Late seral	18	18	20	20	20	20
Mid seral	38	37	34	34	34	34
Early seral	6	7	6	6	6	6
Rock outcrop/badlands	30	30	30	30	30	30
INDIAN CREEK 4815						
Climax	5	6	6	6	4	6
Late seral	12	14	14	14	14	14
Mid seral	39	36	36	36	36	36
Early seral	20	20	20	20	22	20
Rock outcrop/badlands	24	24	24	24	24	24

TABLE AT-1 (Continued)

Allotment and Ecological Condition Class	Alternative					
	Current	A	B	C	D	E
INDIAN ROCK 4822						
Climax	-	-	-	-	-	-
Late seral	2	2	-	2	2	2
Mid seral	18	18	-	18	18	18
Early seral	49	49	69	49	49	49
Rock outcrop/badlands	31	31	31	31	31	31
JOHNSON CREEK 6818						
Climax	-	-	-	-	-	-
Late seral	-	-	-	-	-	-
Mid seral	95	95	95	95	95	95
Early seral	-	-	-	-	-	-
Rock outcrop/badlands	5	5	5	5	5	5
LAKE CANYON 6833						
Climax	11	11	16	14	14	11
Late seral	24	22	24	24	24	22
Mid seral	20	20	17	18	18	20
Early seral	7	9	5	6	6	9
Rock outcrop/badlands	38	38	38	38	38	38
LAWS 6839						
Climax	-	-	-	-	-	-
Late seral	-	-	-	-	-	-
Mid seral	29	29	29	29	29	29
Early seral	51	51	51	51	51	51
Rock outcrop/badlands	20	20	20	20	20	20
LITTLE BOULDER 6819						
Climax	6	10	10	10	10	10
Late seral	21	15	15	15	15	15
Mid seral	60	58	58	58	58	58
Early seral	6	9	9	9	9	9
Rock outcrop/badlands	7	8	8	8	8	8
LONE CEDAR 4801						
Climax	-	-	15	-	-	1
Late seral	-	-	7	7	7	7
Mid seral	67	64	45	60	60	59
Early seral	-	3	-	-	-	-
Rock outcrop/badlands	33	33	33	33	33	33
LONG CANYON 6820						
Climax	-	-	-	-	-	-
Late seral	33	33	33	33	33	33
Mid seral	21	21	21	21	21	21
Early seral	39	39	39	39	39	39
Rock outcrop/badlands	7	7	7	7	7	7

TABLE AT-1 (Continued)

Allotment and Ecological Condition Class	Alternative					
	Current	A	B	C	D	E
LYMAN 6821						
Climax	-	-	-	-	-	-
Late seral	22	22	22	22	22	22
Mid seral	-	-	-	-	-	-
Early seral	62	62	62	62	62	62
Rock outcrop/badlands	16	16	16	16	16	16
MAIL STATION 4819						
Climax	-	-	-	-	-	-
Late seral	-	-	9	9	9	9
Mid seral	89	84	80	80	80	80
Early seral	2	7	2	2	2	2
Rock outcrop/badlands	9	9	9	9	9	9
McCRACKEN 6822						
Climax	36	36	37	37	37	37
Late seral	12	12	12	12	12	12
Mid seral	14	14	13	13	13	13
Early seral	-	-	-	-	-	-
Rock outcrop/badlands	38	38	38	38	38	38
MONTEZUMA CANYON 6823						
Climax	7	6	12	9	9	9
Late seral	18	17	18	18	18	18
Mid seral	24	24	26	26	26	26
Early seral	40	42	33	36	36	36
Rock outcrop/badlands	11	11	11	11	11	11
MONTICELLO COWBOY 4806						
Climax	-	-	-	-	-	-
Late seral	-	-	8	-	-	8
Mid seral	81	73	74	81	81	74
Early seral	11	19	10	11	11	10
Rock outcrop/badlands	8	8	8	8	8	8
MONUMENT 6825						
Climax	3	7	14	10	9	10
Late seral	24	20	17	22	22	22
Mid seral	50	50	41	47	48	47
Early seral	16	16	21	14	14	14
Rock outcrop/badlands	7	7	7	7	7	7
OWENS DUGOUT 6824						
Climax	-	-	2	2	2	2
Late seral	20	20	24	24	24	24
Mid seral	55	55	49	49	49	49
Early seral	-	-	-	-	-	-
Rock outcrop/badlands	25	25	25	25	25	25

TABLE AT-1 (Continued)

Allotment and Ecological Condition Class	Current	Alternative				
		A	B	C	D	E
PEARSON POINT 6845						
Climax	-	30	30	30	30	30
Late seral	30	-	-	-	-	-
Mid seral	55	55	55	55	55	55
Early seral	9	9	9	9	9	9
Rock outcrop/badlands	6	6	6	6	6	6
PERKINS BROTHERS 6827						
Climax	17	16	18	18	18	18
Late seral	53	51	51	51	51	51
Mid seral	22	24	23	23	23	23
Early seral	1	2	1	1	1	1
Rock outcrop/badlands	7	7	7	7	7	7
PETERS CANYON 4807						
Climax	-	-	-	-	-	-
Late seral	-	-	10	10	10	10
Mid seral	100	100	90	90	90	90
Early seral	-	-	-	-	-	-
Rock outcrop/badlands	-	-	-	-	-	-
PETERS POINT 4805						
Climax	15	32	69	33	30	32
Late seral	15	1	1	1	1	1
Mid seral	10	9	9	9	9	9
Early seral	60	58	21	57	60	58
Rock outcrop/badlands	-	-	-	-	-	-
PIUTE KNOLL 6841						
Climax	-	_a	-	_a	_a	_a
Late seral	50	-	50	-	-	-
Mid seral	50	-	50	-	-	-
Early seral	-	-	-	-	-	-
Rock outcrop/badlands	-	-	-	-	-	-
ROGERS 6842						
Climax	-	-	-	-	-	-
Late seral	-	-	-	-	-	-
Mid seral	60	60	60	60	60	60
Early seral	30	30	30	30	30	30
Rock outcrop/badlands	10	10	10	10	10	10
ROUNDUP CORRAL 6847						
Climax	-	-	-	-	-	-
Late seral	37	37	37	37	37	37
Mid seral	63	63	63	63	63	63
Early seral	-	-	-	-	-	-
Rock outcrop/badlands	-	-	-	-	-	-

TABLE AT-1 (Continued)

Allotment and Ecological Condition Class	Alternative					
	Current	A	B	C	D	E
SAGE FLAT 6724						
Climax	-	-	-	-	-	-
Late seral	-	-	-	-	-	-
Mid seral	100	100	100	100	100	100
Early seral	-	-	-	-	-	-
Rock outcrop/badlands	-	-	-	-	-	-
SAGE GROUSE 6716						
Climax	-	-	_a	-	_a	_a
Late seral	-	-	-	-	-	-
Mid seral	100	100	-	100	-	-
Early seral	-	-	-	-	-	-
Rock outcrop/badlands	-	-	-	-	-	-
SLICKHORN 6834						
Climax	10	15	41	19	11	19
Late seral	25	20	13	20	26	20
Mid seral	31	30	19	28	28	28
Early seral	27	28	20	26	28	26
Rock outcrop/badlands	7	7	7	7	7	7
SOUTH CANYON 4824						
Climax	-	-	-	-	-	-
Late seral	3	3	3	3	3	3
Mid seral	97	87	87	87	87	87
Early seral	-	10	10	10	10	10
Rock outcrop/badlands	-	-	-	-	-	-
SPRING CREEK 4823						
Climax	8	7	57	12	8	10
Late seral	-	-	-	-	-	-
Mid seral	92	88	43	88	92	90
Early seral	-	5	-	-	-	-
Rock outcrop/badlands	-	-	-	-	-	-
SPRING CREEK WEST 4812						
Climax	-	-	76	8	-	-
Late seral	-	-	-	-	-	-
Mid seral	100	100	24	92	100	100
Early seral	-	-	-	-	-	-
Rock outcrop/badlands	-	-	-	-	-	-
SQUAW CANYON 6828						
Climax	-	4	4	4	-	4
Late seral	4	-	-	-	-	-
Mid seral	66	66	60	66	66	66
Early seral	24	24	30	24	28	24
Rock outcrop/badlands	6	6	6	6	6	6

TABLE AT-1 (Continued)

Allotment and Ecological Condition Class	Alternative					
	Current	A	B	C	D	E
STATE LINE 4831						
Climax	-	-	-	-	-	-
Late seral	-	-	-	-	-	-
Mid seral	100	100	100	100	100	100
Early seral	-	-	-	-	-	-
Rock outcrop/badlands	-	-	-	-	-	-
STEVENS 6830						
Climax	-	-	-	-	-	-
Late seral	-	-	-	-	-	-
Mid seral	-	-	-	-	-	-
Early seral	90	90	90	90	90	90
Rock outcrop/badlands	10	10	10	10	10	10
SUMMIT CANYON 4818						
Climax	-	-	-	-	-	-
Late seral	-	-	-	-	-	-
Mid seral	100	100	100	100	100	100
Early seral	-	-	-	-	-	-
Rock outcrop/badlands	-	-	-	-	-	-
TANK BENCH-BRUSHY BASIN 6831						
Climax	10	11	19	13	13	13
Late seral	19	18	20	20	20	20
Mid seral	42	42	36	39	39	39
Early seral	10	10	6	9	9	9
Rock outcrop/badlands	19	19	19	19	19	19
TANK DRAW 4802						
Climax	-	-	-	-	-	-
Late seral	-	-	8	8	8	8
Mid seral	83	79	76	76	76	76
Early seral	8	12	7	7	7	7
Rock outcrop/badlands	9	9	9	9	9	9
TEXAS-MULEY 6844						
Climax	4	9	39	10	7	11
Late seral	-	-	7	7	7	7
Mid seral	66	57	40	55	55	54
Early seral	21	25	5	19	22	19
Rock outcrop/badlands	9	9	9	9	9	9
UPPER EAST CANYON 4817						
Climax	-	-	-	-	-	-
Late seral	-	-	-	-	-	-
Mid seral	100	100	100	100	100	100
Early seral	-	-	-	-	-	-
Rock outcrop/badlands	-	-	-	-	-	-

TABLE AT-1 (Concluded)

Allotment and Ecological Condition Class	Alternative					
	Current	A	B	C	D	E
VEGA CREEK 4803						
Climax	-	-	-	-	-	-
Late seral	-	-	-	-	-	-
Mid seral	100	100	100	100	100	100
Early seral	-	-	-	-	-	-
Rock outcrop/badlands	-	-	-	-	-	-
VERDURE CREEK 6832						
Climax	-	-	-	-	-	-
Late seral	53	53	53	53	53	53
Mid seral	36	36	36	36	36	36
Early seral	3	3	3	3	3	3
Rock outcrop/badlands	8	8	8	8	8	8
WHITE CANYON 6837						
Climax	15	20	27	22	19	22
Late seral	32	30	27	30	30	30
Mid seral	35	32	28	30	30	30
Early seral	2	2	2	2	5	2
Rock outcrop/badlands	16	16	16	16	16	16
WHITE MESA 6840						
Climax	3	11	26	12	11	12
Late seral	20	19	19	21	21	21
Mid seral	38	32	17	31	32	31
Early seral	28	27	27	25	25	25
Rock outcrop/badlands	11	11	11	11	11	11

^aThe entire allotment is to be disposed of in this alternative.

APPENDIX U — MANAGEMENT ACTIONS, BY ALLOTMENT

OVERVIEW

This appendix presents the management actions projected for each grazing allotment, by alternative. Its purpose is to provide a

breakdown of management actions so that the effect (impact) to each allotment can be determined. Changes to animal unit months (AUMs), acres of land treatments, and acres available for grazing are shown in table AU-1.

TABLE AU-1

Grazing Management by Allotment, by Alternative

Allotment	5 Year Avg. AUMs	Alternative A		Alternative B		Alternative C		Alternative D		Alternative E	
		Future AUMs	Future AUMs	Future AUMs	Future AUMs	Future AUMs	Future AUMs	Future AUMs	Future AUMs	Future AUMs	Future AUMs
6801 ALKALI CANYON	1,349	1,349	2,830	1,390	1,349	1,349	1,349	1,349	1,349	1,349	1,349
Season of use AMP		11/1-5/31 No	11/1-5/31 Yes	11/1-3/31 Yes	11/1-3/31 Yes	11/1-3/31 Yes	11/1-3/31 Yes	11/1-3/31 Yes	11/1-5/31 Yes	11/1-5/31 Yes	11/1-5/31 Yes
New land treatments Alkali Ridge ACEC			3,750 ac.	23,910 ac.	330 ac. 23,910 ac.	23,910 ac.	23,910 ac.	23,910 ac.	23,910 ac.	23,910 ac.	23,910 ac.
6802 ALKALI POINT	282	282	465	395	282	282	282	282	282	282	282
Season of use AMP		5/16-6/20 No	5/16-6/20 Yes	6/1-6/20 Yes	6/1-6/20 Yes	6/1-6/20 Yes	6/1-6/20 Yes	6/1-6/20 Yes	5/16-6/20 Yes	5/16-6/20 Yes	5/16-6/20 Yes
New land treatments Alkali Ridge ACEC			1,000 ac.	900 ac. 6,790 ac.	900 ac. 6,790 ac.	900 ac. 6,790 ac.	900 ac. 6,790 ac.	900 ac. 6,790 ac.	900 ac. 6,790 ac.	900 ac. 6,790 ac.	900 ac. 6,790 ac.
4830 BEAR TRAP	102	102	130	102	102	102	102	102	102	102	102
Season of use		7/15-11/30	7/15-11/30	7/15-11/30	7/15-11/30	7/15-11/30	7/15-11/30	7/15-11/30	7/15-11/30	7/15-11/30	7/15-11/30
4825 BIG INDIAN	750	750	873	812	750	750	750	750	750	750	750
Season of use AMP		12/5-5/25 No	12/5-5/25 Yes	12/5-5/25 No	12/5-5/25 No	12/5-5/25 No	12/5-5/25 No	12/5-5/25 No	12/5-5/25 Yes	12/5-5/25 Yes	12/5-5/25 Yes
New land treatments Exclude grazing			500 ac.	500 ac. riparian 18 ac.	500 ac. riparian 18 ac.	500 ac. riparian 18 ac.	500 ac. riparian 18 ac.	500 ac. riparian 18 ac.	500 ac. riparian 18 ac.	500 ac. riparian 18 ac.	500 ac. riparian 18 ac.
6804 BLACK STEER	314	285	537	285	314	314	314	314	314	314	314
Season of use AMP		12/1-4/30 No	12/1-4/30 Yes	12/1-4/30 No	12/1-4/30 No	12/1-4/30 No	12/1-4/30 No	12/1-4/30 No	12/1-4/30 Yes	12/1-4/30 Yes	12/1-4/30 Yes
Land disposal		320 ac.		320 ac.		320 ac.		320 ac.			320 ac.

TABLE AU-1 (Continued)

Allotment	5 Year Avg. AUMs	Alternative A		Alternative B		Alternative C		Alternative D		Alternative E	
		Future AUMs	10/16-5/31	Future AUMs	10/16-5/31	Future AUMs	10/16-5/31	Future AUMs	10/16-5/31	Future AUMs	10/16-5/31
6836											
COMB WASH	2,870	3,033	10/16-5/31	4,774	10/16-5/31	1,671	10/16-5/31	705	10/16-5/31	2,903	10/16-5/31
Season of use		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AMP		1,300 ac.		6,500 ac.		400 ac.				290 ac.	
New land treatments											
Abandon treatments											
Exclude grazing						riparian 150 ac.		riparian 150 ac.			
Land disposal						120 ac.					
Fish & Owl ONA						12,370 ac.					120 ac.
Arch Canyon ONA						2,700 ac.					
Road Canyon ONA						12,200 ac.					
Lime Canyon ONA						10,880 ac.					
Grand Gulch SRMA		65,610 ac.		65,610 ac.		65,610 ac.		65,610 ac.		65,610 ac.	
Hole-in-the-Rock Trail		790 ac.		790 ac.		790 ac.		790 ac.		790 ac.	
6838											
CORRAL	16	16	5/20-7/19	16	5/20-7/19	16	5/20-7/19	16	5/20-7/19	16	5/20-7/19
Season of use											
6811											
CROSS CANYON	2,289	2,289	11/1-5/31	4,688	11/1-5/31	2,374	11/1-5/31	2,267	11/1-5/31	2,343	11/1-5/31
Season of use											
AMP											
New land treatments				8,700 ac.		870 ac.				435 ac.	
Abandon treatments											
Exclude grazing						riparian 18 ac.		riparian 18 ac.		640 ac.	
Alkali Ridge ACEC						16,210 ac.		16,210 ac.		16,210 ac.	
Tin Cup Archaeologic District						2,610 ac.		2,610 ac.		2,610 ac.	
Cajon Pond ACEC										40 ac.	
6812											
DEVILS CANYON	195	195	6/1-9/30	212	6/1-9/30	195	6/1-9/30	195	6/1-9/30	195	6/1-9/30
Season of use											
Exclude grazing						riparian 25 ac.		riparian 25 ac.			
Alkali Ridge ACEC						7,100 ac.		7,100 ac.		7,100 ac.	

6813	DODGE CANYON	100	100	110	100	100	100	100	100
	Season of use	5/1-10/15	5/1-10/15	5/1-10/15	5/1-10/15	5/1-10/15	5/1-10/15	5/1-10/15	5/1-10/15
6814	DODGE POINT	13	13	13	13	13	13	13	13
	Season of use	6/1-10/31	6/1-10/31	6/1-10/31	6/1-10/31	6/1-10/31	6/1-10/31	6/1-10/31	6/1-10/31
4804	DRY FARM	34	34	34	34	34	34	34	34
	Season of use	5/1-5/30	5/1-5/30	5/1-5/30	5/1-5/30	5/1-5/30	5/1-5/30	5/1-5/30	5/1-5/30
4820	DRY VALLEY- DEER NECK	1,008	1,008	1,286	1,008	1,008	1,008	1,008	1,008
	Season of use	12/1-5/10	12/1-5/10	12/1-5/10	12/1-5/10	12/1-5/10	12/1-5/10	12/1-5/10	12/1-5/10
	AMP	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4814	EAST CANYON	1,045	1,045	1,316	1,058	1,045	1,045	1,045	1,051
	Season of use	12/1-4/15	12/1-4/15	12/1-4/15	12/1-4/15	12/1-4/15	12/1-4/15	12/1-4/15	12/1-4/15
	AMP	No	Yes	Yes	No	Yes	Yes	Yes	Yes
	New land treatments		1,000 ac.	100 ac.					50 ac.
	Exclude grazing			riparian 27 ac.			riparian 27 ac.		
6815	EAST LEAGUE	1,800	1,800	2,463	1,798	1,798	1,798	1,800	1,800
	Season of use	10/16-5/15	10/16-5/15	10/16-5/15	10/16-5/15	10/16-5/15	10/16-5/15	10/16-5/15	10/16-5/15
	AMP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Exclude grazing			riparian 24 ac.			riparian 24 ac.		
	Alkali Ridge ACEC			4,260 ac.			4,260 ac.		
	San Juan RA SRMA		450 ac.	450 ac.			450 ac.		450 ac.
4810	EAST SUMMIT	25	25	33	17	17	17	17	17
	Season of use	4/1-12/31	4/1-12/31	4/1-12/31	4/1-12/31	4/1-12/31	4/1-12/31	4/1-12/31	4/1-12/31
	Land disposal		40 ac.	230 ac.			230 ac.		230 ac.

NOTE: Existing land treatments will be maintained under all alternatives unless stated to be abandoned.

KEY: ACEC = area of critical environmental concern; AMP = allotment management plan; NR = National Register; ONA = outstanding natural area; PA = primitive area; RNA = research natural area.

TABLE AU-1 (Continued)

Allotment	5 Year Avg. AUMs	Alternative A		Alternative 8		Alternative C		Alternative D		Alternative E	
		Future AUMs		Future AUMs		Future AUMs		Future AUMs		Future AUMs	
4811	2,359	2,359		2,898		1,585		1,380		2,371	
HARTS DRAW		10/16-6/15	10/16-6/15	10/16-6/15	10/16-3/31	10/16-3/31	10/16-3/31	10/16-3/31	10/16-6/15	10/16-6/15	
Season of use		No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
AMP				3,500 ac.		220 ac.		2,100 ac.		110 ac.	
New land treatments					riparian 90 ac.			riparian 90 ac.			
Abandon treatments											
Exclude grazing											
Land disposal											
Indian Creek SRMA						29,000 ac.		29,000 ac.		riparian 10 ac.	
North Abajo ACEC						15,100 ac.		15,100 ac.		40 ac.	
Shay Canyon ACEC						42,660 ac.		42,660 ac.		29,000 ac.	
Lockhart ACEC										1,250 ac.	
4825	478	478		1,368		270		120		485	
HARTS POINT		3/1-5/31	3/1-5/31	3/1-5/31	3/1-3/31	3/1-3/31	3/1-3/31	3/1-3/31	3/1-5/31	3/1-5/31	
Season of use		No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
AMP				2,300 ac.		10 ac.		3,840 ac.		55 ac.	
New Land treatments											
North Abajo ACEC											
6816	83	83		144		83		83		83	
HORSEHEAD CANYON		5/16-10/31	5/16-10/31	5/16-10/31	6/1-10/31	6/1-10/31	6/1-10/31	6/1-10/31	5/16-10/31	5/16-10/31	
Season of use											
4813	246	246		262		123		246		246	
HURRAH PASS		11/25-3/31	11/25-3/31	11/25-3/31	11/25-3/31	11/25-3/31	11/25-3/31	11/25-3/31	11/25-3/31	11/25-3/31	
Season of use		No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
AMP											
Exclude grazing											
Lockhart ACEC						riparian 45 ac.		riparian 45 ac.		riparian 45 ac.	
						14,000 ac.		14,000 ac.		14,000 ac.	
4815	5,171	5,171		8,518		2,770		1,480		5,171	
INDIAN CREEK		10/16-6/15	10/16-6/15	10/16-6/15	10/16-6/15	10/16-6/15	10/16-6/15	10/16-6/15	10/16-6/15	10/16-6/15	
Season of use		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
AMP											
Abandon treatments											
Exclude grazing											
Bridger Jack & Lavender											
				2,400 ac.		220 ac.		6,640 ac.		riparian 20 ac.	
						5,840 ac.		5,840 ac.		5,840 ac.	

TABLE AU-1 (Continued)

Allotment	5 Year Avg. AUMs	Alternative A		Alternative B		Alternative C		Alternative D		Alternative E	
		Future AUMs	Future AUMs	Future AUMs	Future AUMs	Future AUMs	Future AUMs	Future AUMs	Future AUMs	Future AUMs	Future AUMs
4801	1,108	1,108	1,896	738	791	1,123					
LONE CEDAR		12/1-4/30	12/1-4/30	12/1-4/30	12/1-4/30	12/1-4/30					
Season of use		No	Yes	Yes	Yes	Yes					
AMP											
New land treatments			3,300 ac.	6,270 ac.	6,270 ac.	120 ac.					
North Abajo ACEC											
6820	116	116	140	116	116	116					
LONG CANYON		5/15-10/15	5/15-10/15	5/15-10/15	5/15-10/15	5/15-10/15					
Season of use											
Alkali Ridge ACEC			300 ac.	300 ac.	300 ac.						
6821	6	6	6	6	6	6					
LYMAN		3/1-2/28	3/1-2/28	3/1-2/28	3/1-2/28	3/1-2/28					
Season of use											
4819	1,187	1,187	1,446	1,187	1,187	1,187					
MAIL STATION		11/1-4/30	11/1-4/30	11/1-4/30	11/1-4/30	11/1-4/30					
Season of use		No	Yes	Yes	Yes	Yes					
AMP											
6822	602	602	950	602	602	602					
McCRACKEN		1/1-5/15	1/1-5/15	1/1-5/15	1/1-5/15	1/1-5/15					
Season of use		Yes	Yes	Yes	Yes	Yes					
AMP											
Exclude grazing			riparian 45 ac.	riparian 45 ac.	riparian 45 ac.	riparian 45 ac.					
San Juan River SRMA		2,420 ac.	2,420 ac.	2,420 ac.	2,420 ac.	2,420 ac.					
6823	1,581	1,581	2,075	1,595	1,581	1,581					
MONTEZUMA		11/1-5/31	11/1-3/31	11/1-3/31	11/1-3/31	11/1-5/31					
Season of use		No	Yes	Yes	Yes	Yes					
AMP											
New land treatments			1,400 ac.	110 ac.	110 ac.	55 ac.					
Exclude grazing				riparian 55 ac.	riparian 55 ac.	riparian 55 ac.					
Alkali Ridge ACEC				26,810 ac.	26,810 ac.	26,810 ac.					
Montezuma Creek SRMA				2,900 ac.	2,900 ac.	2,900 ac.					
Three Kiva NR eligible		1 ac.	1 ac.	1 ac.	1 ac.	1 ac.					

4806	MONTICELLO COWBOY	618	814	618	618	618
	Season of use	11/16-4/30	11/16-4/30	11/16-4/30	11/16-4/30	11/16-4/30
	AMP	No	No	No	Yes	
	Exclude grazing		riparian 20 ac.	riparian 20 ac.		
6825	MONUMENT CANYON	434	1,553	466	430	445
	Season of use	12/5-5/31	12/5-5/31	12/5-3/31	12/5-5/31	12/5-5/31
	AMP	No	Yes	Yes	Yes	Yes
	New land treatments		3,300 ac.	330 ac.		165 ac.
	Exclude grazing		riparian 90 ac.	riparian 90 ac.		
	Land disposal		320 ac.	320 ac.		320 ac.
	Alkali Ridge ACEC		24,030 ac.	24,030 ac.		
6824	OWENS DUGOUT	265	275	265	265	265
	Season of use	11/25-5/20	11/25-5/20	11/25-5/20	11/25-5/20	11/25-5/20
6845	PEARSON POINT	100	125	100	100	100
	Season of use	3/1-12/31	3/1-12/31	6/1-12/31	6/1-12/31	3/1-12/31
6827	PERKINS BROS.	3,411	7,592	2,347	1,000	3,411
	Season of use	11/1-5/31	11/1-5/31	11/1-5/31	11/1-5/31	11/1-5/31
	AMP	No	Yes	Yes	Yes	Yes
	No land treatments		100 ac.			
	Exclude grazing			riparian 160 ac.	riparian 160 ac.	
	San Juan River SRMA		12,230 ac.	12,230 ac.		12,230 ac.
	Grand Gulch SRMA		47,380 ac.	47,380 ac.		47,380 ac.
	Cedar Mesa Archaeologic District			40,450 ac.		40,450 ac.
	Johns Canyon ONA		700 ac.	700 ac.		
	Lime Canyon ONA		1,940 ac.	1,940 ac.		
	Hole-in-the-Rock Trail		860 ac.	860 ac.		860 ac.
	Sand Island		1 ac.	1 ac.		1 ac.
	River House MR eligible		1 ac.	1 ac.		1 ac.
4807	PETERS CANYON	90	90	50	50	50
	Season of use	11/16-5/15	11/16-3/31	11/16-3/31	11/16-3/31	11/16-3/31
	Exclude grazing		riparian 2 ac.	riparian 2 ac.		

NOTE: Existing land treatments will be maintained under all alternatives unless stated to be abandoned.

KEY: ACEC = area of critical environmental concern; AMP = allotment management plan; MR = National Register; ONA = outstanding natural area; PA = primitive area; RNA = research natural area.

TABLE AU-1 (Continued)

Allotment	5 Year Avg. AUMS	Alternative A		Alternative B		Alternative C		Alternative D		Alternative E			
		Future AUMS	Future AUMS	Future AUMS	Future AUMS	Future AUMS	Future AUMS	Future AUMS	Future AUMS	Future AUMS	Future AUMS		
4805	135	144	405	150	135	146	Season of use AMP New land treatments	5/1-10/31 Yes	5/1-10/31 Yes	5/1-10/31 Yes	5/1-10/31 Yes	146	90 ac.
6841	25	0	30	0	0	0	Season of use Land disposal	5/1-10/31	5/1-10/31	5/1-10/31	5/1-10/31	0	160 ac.
6842	0	0	7	0	0	0	Season of use	1/1-4/30	1/1-4/30	1/1-4/30	1/1-4/30	0	160 ac.
6847	4	4	8	4	4	4	Season of use	6/30-7/1, 9/30-10/1	6/30-7/1, 9/30-10/1	6/30-7/1, 9/30-10/1	6/30-7/1, 9/30-10/1	4	13
6724	13	13	13	13	13	13	Season of use	6/1-6/30	6/1-6/30	6/1-6/30	6/1-6/30	13	320 ac.
6716	7	7	0	7	0	0	Season of use Land disposal	5/1-5/31	5/1-5/31	5/1-5/31	5/1-5/31	0	320 ac.
6834	1,716	1,716	6,045	1,177	430	1,927	Season of use AMP New land treatments Abandon treatments Exclude grazing Hole-in-the-Rock Trail Grand Gulch SRMA	10/16-6/15 Yes	10/16-6/15 Yes	10/16-6/15 Yes	10/16-6/15 Yes	1,927	7,190 ac. 750 ac. 730 ac. 127,210 ac.

TABLE AU-1 (Concluded)

Allotment	5 Year Avg. AUMs	Alternative A		Alternative B		Alternative C		Alternative D		Alternative E	
		Future AUMs	10/16-6/10 Yes	Future AUMs	10/16-6/10 Yes	Future AUMs	10/16-6/10 Yes	Future AUMs	10/16-6/10 Yes	Future AUMs	10/16-6/10 Yes
6831											
TANK BENCH	4,072	4,091		6,332		3,466		4,072		4,113	
Season of use		10/16-6/10		10/16-6/10		10/16-6/10		10/16-6/10		10/16-6/10	
AMP		Yes		Yes		Yes		Yes		Yes	
New land treatments		150 ac.		7,000 ac.		470 ac.		riparian 140 ac.		330 ac.	
Exclude grazing						riparian 140 ac.					
Grand Gulch SRMA		9,600 ac.		9,600 ac.		9,600 ac.		9,600 ac.		9,600 ac.	
Butler Wash Archaeologic District		2,030 ac.		2,030 ac.		2,030 ac.		2,030 ac.		2,030 ac.	
4802											
TANK DRAW	1,705	1,705		2,130		1,705		1,705		1,705	
Season of use		12/1-4/30		12/1-4/30		12/1-3/31		12/1-3/31		12/1-4/30	
AMP				AMP		AMP		AMP		AMP	
6844											
TEXAS-MULEY	1,504	1,504		4,170		1,042		375		1,620	
Season of use		11/15-5/31		11/15-5/31		11/15-5/31		11/15-5/31		11/15-5/31	
AMP		No		Yes		Yes		Yes		Yes	
New land treatments				19,000 ac.		420 ac.		1,360 ac.		930 ac.	
Abandon treatments						riparian 20 ac.		riparian 20 ac.			
Exclude grazing						66,600 ac.		66,600 ac.		66,600 ac.	
Cedar Mesa Archaeologic District						66,600 ac.		66,600 ac.		66,600 ac.	
Grand Gulch SRMA		66,000 ac.		66,600 ac.		3,200 ac.		3,200 ac.		66,600 ac.	
Johns Canyon ONA						6,000 ac.		6,000 ac.			
Mule Canyon ONA						1,500 ac.		1,500 ac.			
Arch Canyon ONA						11,100 ac.		11,100 ac.			
Road Canyon ONA						12,480 ac.		12,480 ac.			
Lime Canyon ONA						1 ac.		1 ac.		1 ac.	
Mule Canyon NR Eligible		1 ac.		1 ac.		1 ac.		1 ac.		1 ac.	
4817											
UPPER EAST CANYON	18	15		15		15		15		15	
Season of use		5/1-10/31		5/1-10/31		5/1-10/31		5/1-10/31		5/1-10/31	
Land disposal		120 ac.		120 ac.		120 ac.		120 ac.		120 ac.	

4803	VEGA CREEK	69	80	69	69	69
	Season of use	10/1-10/31	10/1-10/31	10/1-10/31	10/1-10/31	10/1-10/31
6832	VERDURE CREEK	103	118	103	103	103
	Season of use	3/1-2/28	3/1-2/18	6/1-3/31	6/1-3/31	3/1-2/28
	Montezuma Creek SRMA			480 ac.	480 ac.	
6837	WHITE CANYON	3,572	7,543	2,217	2,084	3,514
	Season of use	3/1-2/28	3/1-2/28	3/1-2/28	3/1-2/28	3/1-2/28
	AMP	Yes	Yes	Yes	Yes	Yes
	New land treatments	50 ac.	16,000 ac.	120 ac.	6,737 ac.	820 ac.
	Abandon treatments					
	Exclude grazing		25 ac.	32,140 ac.	25 ac.	56,740 ac.
	Land disposal			25 ac.		25 ac.
	Dark Canyon	PA	SRMA	ONA	ONA	ACEC
		16,000 ac.	16,000 ac.	16,000 ac.	16,000 ac.	16,000 ac.
6840	WHITE MESA	2,741	5,781	2,491	2,741	2,805
	Season of use	12/1-5/31	12/1-5/31	12/1-5/31	12/1-5/31	12/1-5/31
	AMP	Yes	Yes	Yes	Yes	Yes
	New land treatments	280 ac.	10,000 ac.	1,020 ac.	riparian 45 ac.	510 ac.
	Exclude grazing			riparian 45 ac.		
	Grand Gulch SRMA	2,600 ac.	2,600 ac.	2,600 ac.	2,600 ac.	2,600 ac.

NOTE: Existing land treatments will be maintained under all alternatives unless stated to be abandoned.

KEY: ACEC = area of critical environmental concern; AMP = allotment management plan; NR = National Register; ONA = outstanding natural area; PA = primitive area; RNA = research natural area.

APPENDIX V — AIR QUALITY STANDARDS

OVERVIEW

The purpose of this appendix is to show the critical threshold levels for air quality. Table AV-1 presents the National Ambient Air Quality Standards (NAAQS); table AV-2 presents the de minimis levels.

CRITICAL THRESHOLDS

Any action that caused the secondary NAAQS to be exceeded would be said to degrade the air quality within the San Juan Resource Area.

The de minimis emission rates present a monitoring exemption and can be used as a critical threshold. If site-specific modeling for a given project shows that pollutant concentrations would exceed the monitoring exemption level, at least 1 year of baseline monitoring would be required after the project commences to determine the pollutant's total concentration.

The Environmental Protection Agency (EPA) has established emission standards for asbestos, beryllium, mercury, and vinyl chloride (40 CFR 61). These standards present critical threshold criteria.

TABLE AV-1
 Applicable State and Federal Ambient Air Quality Standards

Pollutant		Utah (ug/m ³) ^a	Federal (ug/m ³)
Sulfur dioxide			
Primary	annual	80	80
	24-hour ^b	365	365
Secondary	3-hour	1,300	1,300
Particulate matter			
Primary	annual	75	75
	24-hour ^b	260	260
Secondary	annual	60	60
	24-hour ^b	150	150
Carbon monoxide			
	8-hour	^c 10,000 mg/m ³	^c 10,000 mg/m ³
	1-hour	^c 40,000 mg/m ³	^c 40,000 mg/m ³
Ozone	1-hour ^d	235	235
Nitrogen dioxide	annual	100	100
Lead	0.25 year	1.	1.5

^aMicrograms per cubic meter.

^bNot to be exceeded more than once per year.

^cMilligrams per cubic meter.

^dExpected number of days in a calendar year with maximum hourly values above 235 ug/m³ cannot exceed one.

Source: NPS and BLM, 1984.

TABLE AV-2

De Minimis Levels

<u>Pollutant</u>	<u>Emission Rate (tons/year)</u>	<u>Monitoring Exemptions</u>	
		<u>(ug/m³)</u>	<u>Averaging Period</u>
Carbon monoxide	100	575	8-hour
Nitrogen oxides	40	14	annual
Sulfur dioxide	40	13	24-hour
Particulate matter	25	10	24-hour
Ozone	40	N/A	
Lead	0.6	0.1	24-hour
Asbestos	0.007	N/A	
Beryllium	0.0004	0.0005	24-hour
Mercury	0.0004	0.0005	24-hour
Vinyl chloride	1	15	24-hour
Fluorides	3	0.25	24-hour
Sulfuric acid mist	7	N/A	
Hydrogen sulfide (H ₂ S)	10	0.04	1-hour
Total reduced sulfur (including H ₂ S)	10	10	1-hour
Reduced sulfur compounds (including hydrogen sulfide)	10	10	1-hour

Source: BLM, 1984c.

TABLE 204

24-MONTH AVERAGE

Country	Production (1000 tons)	Production (1000 tons)
United States	100	100
Canada	40	40
United Kingdom	40	40
France	30	30
Germany	40	40
Italy	0.5	0.5
Japan	0.001	0.001
Spain	0.002	0.002
Sweden	0.002	0.002
Switzerland	1	1
Belgium	0.5	0.5
Denmark	10	10
Finland	10	10
Other countries	10	10

APPENDIX W — VEGETATION IMPACT ANALYSIS ASSUMPTIONS

OVERVIEW

The purpose of this appendix is to present the assumptions that were used to project the amount of disturbance to vegetation resources under the various alternatives described in chapter 2. Assumptions are given for both vegetative cover and forestry resources.

VEGETATIVE COVER

The assumptions used to determine the loss to the general vegetative cover are given for both short-term (temporary) and residual (permanent) losses, in acres, by alternative (tables AW-1, AW-2, AW-3, AW-4, and AW-5). No attempt has been made to project where the disturbance would actually occur, or what type of vegetation would be lost.

For determining general vegetation disturbance, it was assumed that impacts from private and commercial woodland product harvest would be insignificant, or if significant, would not be in addition to those already identified from oil, gas, and minerals.

Disturbance from off-road vehicles (ORVs) was assumed to be included in or overlapped by vegetation disturbance from other activities.

It was assumed that impacts from maintenance and construction of watershed control structures would be insignificant, since fewer than 100 acres would be involved.

It was assumed that approximately half the acreage in existing seedings, or 25,000 acres, would be maintained through the year 2000.

FOREST RESOURCES

It was assumed that about 35 percent of the resource area acreage, or 638,722 acres, is forested.

It was assumed that both dead and live wood exist on the same acreage.

Impacts to forest resources were measured in terms of forested acreage removed from harvest by either surface disturbance or restrictive stipulations. Standard and special stipulations were not considered restrictive.

TABLE AW-1

Assumptions for Vegetation Disturbance and Loss Under Alternative A

<u>Acres Permanent Loss</u>	<u>Acres Temporary Disturbance</u>	<u>Remarks</u>
	1,500	Rights-of-way for pipelines to producing wells (100 acres/year).
		Rights-of-way to county, state, and other roads.
300		Permanent forage loss (20 acres/year).
	450	Temporary forage loss (30 acres/year).
	150	Rights-of-way for transmission lines.
2,880		Land disposals.
	7,150	Geophysical disturbance.
1,950		Oil and gas producing wells and access.
	1,500	Mineral material disposal.
	1,500	Mineral exploration.
	1,100	New land treatments (seedings).
	25,000	Maintenance of existing land treatments (includes prescribed fire).
	150	Disturbance at developed recreation sites.
	900	Wildfire (60 acres/year).
<u>5,130</u>	<u>39,400</u>	

TABLE AW-2

Assumptions for Vegetation Disturbance and Loss Under Alternative B

<u>Acres Permanent Loss</u>	<u>Acres Temporary Disturbance</u>	<u>Remarks</u>
	1,500	Rights-of-way for pipelines to producing wells (100 acres/year).
		Rights-of-way to county, state, and other roads.
300		Permanent forage loss (20 acres/year).
	450	Temporary forage loss (30 acres/year).
	150	Rights-of-way for transmission lines.
4,220		Land disposals.
	7,150	Geophysical disturbance.
1,950		Oil and gas producing wells and access.
	750	Coal leasing.
	1,500	Mineral material disposal.
	1,500	Mineral exploration.
	136,900	New land treatments (seedings).
	25,000	Maintenance of existing land treatments (includes prescribed fire).
	150	Disturbance at developed recreation sites.
	1,000	Wildfire (66 acres/year, 10 percent increase from alternative A because more land under limited fire suppression).
<u>6,470</u>	<u>176,050</u>	

TABLE AW-3

Assumptions for Vegetation Disturbance and Loss Under Alternative C

<u>Acres Permanent Loss</u>	<u>Acres Temporary Disturbance</u>	<u>Remarks</u>
	1,500	Rights-of-way for pipelines to producing wells (100 acres/year).
		Rights-of-way to county, state, and other roads.
300		Permanent forage loss (20 acres/year).
	450	Temporary forage loss (30 acres/year).
	150	Rights-of-way for transmission lines.
5,900		Land disposals.
	3,000	Geophysical disturbance.
1,950		Oil and gas producing wells and access.
	1,350	Mineral material disposal.
	1,500	Mineral exploration.
	6,170	New land treatments
	25,000	Maintenance of existing land treatments (includes prescribed fire).
	250	Disturbance at developed recreation sites.
	1,000	Wildfire (same as Alternative B) more fire since more acres under limited suppression.
<u>8,150</u>	<u>40,370</u>	

TABLE AW-4

Assumptions for Vegetation Disturbance and Loss Under Alternative D

<u>Acres Permanent Loss</u>	<u>Acres Temporary Disturbance</u>	<u>Remarks</u>
	1,500	Rights-of-way for pipelines to producing wells (100 acres/year).
		Rights-of-way to county, state, and other roads.
300		Permanent forage loss (20 acres/year).
	450	Temporary forage loss (30 acres/year).
	150	Rights-of-way for transmission lines.
2,870		Land disposals.
	3,780	Geophysical disturbance.
1,170		Oil and gas producing wells and access.
	1,125	Mineral material disposal.
	1,500	Mineral exploration.
	150	Disturbance at developed recreation sites.
	14,000	Maintenance of existing seedings (includes prescribed fire).
	1,000	Wildfire (same as alternative B) more fire since more acres under limited suppression.
<u>4,340</u>	<u>23,655</u>	

TABLE AW-5

Assumptions for Vegetation Disturbance and Loss Under Alternative E

<u>Acres Permanent Loss</u>	<u>Acres Temporary Disturbance</u>	<u>Remarks</u>
	1,500	Rights-of-way for pipelines to producing wells (100 acres/year).
		Rights-of-way to county, state, and other roads.
300		Permanent forage loss (20 acres/year).
	450	Temporary forage loss (30 acres/year).
	150	Rights-of-way for transmission lines.
6,300		Land disposals.
	7,150	Geophysical disturbance.
1,950		Oil and gas producing wells and access.
	1,500	Mineral material disposal.
	1,500	Mineral exploration.
	6,300	New land treatments (seedings).
	25,000	Maintenance of existing land treatments (includes prescribed fire).
	250	Disturbance at developed recreation sites.
	1,000	Wildfire (same as alternative B) more fire since more acres under limited suppression.
<u>8,550</u>	<u>44,800</u>	

APPENDIX X — LIVESTOCK FORAGE IMPACT ANALYSIS ASSUMPTIONS

OVERVIEW

The purpose of this appendix is to present the assumptions and formulas used to estimate changes in animal unit months (AUMs) of forage for livestock that would result from management actions under the alternatives described in chapter 2.

ALTERNATIVE A

Under alternative A there would be a net increase of 1,891 AUMs (to a total of 56,735 AUMs) by the year 2000, based on the following assumptions and calculations.

A net gain of 2,000 AUMs in operator demand is anticipated, mostly in White Canyon Allotment, which is presently licensed at full preference (5,544 AUMs) and would probably remain so. This is nearly 2,000 AUMs more than the 5-year average (3,572 AUMs) for the allotment.

Monitoring studies may show a need for an increase or decrease, but the net change from the 5-year average for the entire resource area would be small. This is difficult to predict. It is expected that some of the reductions would be made from total active preference, which would not affect the 5-year average.

It was assumed that 10 percent of the new land treatments proposed in existing allotment management plans (AMPs) would be implemented by the year 2000 (10,800 actually treatable acres times 10 percent equals 1,080 acres) at 8 acres per AUM equals approximately 130 AUMs. Actually treatable acres are approximately half of the gross treatment acres because of deductions for archaeological values, poor soils, and landscaping.

It was assumed that some of the 40 tracts offered for disposal would be disposed of, amounting to approximately 88 AUMs in seven existing allotments.

New producing oil and gas wells would continue to take land out of forage production. It was assumed that 20 new producers per year would take 6.5 acres per well out of production, which would amount to 1,950 acres at 15 acres per AUM, or 130 AUMs.

There would be no net change in AUMs from nonproducers and seismic activity, assuming that any forage lost would be recovered in 5 years.

It was assumed that approximately 20 acres per year would be taken out of forage production for rights-of-way (20 acres times 15 years equals 300 acres), at 15 acres per AUM, or 20 AUMs.

It was assumed that livestock would be excluded from 3 miles or 10 acres of riparian habitat at 10 acres per AUM, or 1 AUM. This includes 1 mile in the Lake Canyon Allotment and 2 miles in the Indian Creek and Harts Draw Allotments.

ALTERNATIVE B

Under alternative B there would be a net increase of 42,660 AUMs (an increase of 40,769 from alternative A or a total of 97,504 AUMs) by the year 2000, based on the following assumptions and calculations.

The anticipated net gain in operator demand is the same as for alternative A. It was assumed that permittees would be licensed at full active preference or 79,887 AUMs rather than the 5-year average of 54,844. This is a difference of 25,043 AUMs.

Monitoring studies would probably not result in any change from the assumption given in alternative A.

It was assumed that all 136,950 actually treatable acres would be treated. At 8 acres per AUM this is approximately 17,100 AUMs. The rationale for figuring actually treatable acres was the same as in Alternative A.

It was assumed that 33 AUMs would be lost because of land disposals on six existing allotments.

The assumption for forage impacts from oil and gas activity was the same as in alternative A (130 AUMs lost).

The assumption for impacts from rights-of-way was the same as for alternative A (20 AUMs lost).

The assumption for impacts from riparian area exclusions was the same as for alternative A (1 AUM lost).

The creation of new grazing allotments on wild-life areas and scattered tracts of currently unallotted lands would add 701 AUMs for live-stock.

ALTERNATIVE C

There would be a net decrease of 11,039 AUMs from the 5-year licensed average by the year 2000 (12,930 fewer AUMs than under alternative A, or a total of 43,805 AUMs), based on the following assumptions and calculations.

A 660-AUM increase in operator demand was projected for alternative C, using White Canyon Allotment as in alternative A and assuming that an increase would be allowable in the roaded natural (RN) recreation opportunity spectrum (ROS) class. The RN class covers 74,300 acres, or 33 percent of the 225,970-acre allotment; 33 percent of the 2,000-AUM expected demand increase equals 660 AUMs.

Monitoring studies would probably not result in any change from the assumption given in alternative A.

It was assumed that 10 percent of the actually treatable acres would be treated; 61,680 acres times 10 percent equals 6,168 acres at 8 acres per AUM, or approximately 770 AUMs. The rationale for calculating actually treatable acres was the same as under alternative A.

It was assumed that 109 AUMs would be lost on 10 existing allotments because of land disposals.

The assumption for forage impacts from oil and gas activity was the same as in alternative A (130 AUMs lost).

The assumption for impacts from rights-of-way was the same as in alternative A (20 AUMs lost).

Approximately 300 AUMs would be lost to live-stock as a result of exclusions from riparian areas (1,500 acres, 148 AUMs) and desert bighorn mesas (56,740 acres, 160 AUMs).

Licensing reductions in certain ROS class areas (50 percent of average 5-year licensed use in semiprimitive areas and 25 percent in primitive areas) would result in a loss of 11,910 AUMs.

ALTERNATIVE D

There would be a net decrease of 16,668 AUMs from the 5-year licensed average (18,559 fewer AUMs than under alternative A, or a total of 38,176 AUMs) by the year 2000, based on the following assumptions and calculations.

An 840-AUM increase in operator demand was projected for alternative D, using White Canyon Allotment as in alternative A and assuming that an increase would be allowable outside of natural succession areas. Approximately 95,500 acres, or 42 percent of the 225,970-acre allotment, are outside natural succession areas; 42 percent of the expected 2,000-AUM demand increase equals 840 AUMs.

Monitoring studies would probably not result in any change from the assumption given in alternative A.

No new land treatments would be allowed.

It was assumed that 75 AUMs would be lost in eight existing allotments because of land disposals.

It was assumed that, because of oil and gas activity, 780 acres would be lost to forage production in 15 years at 15 acres per AUM, or 52 AUMs.

There would be no net change in AUMs from nonproducers and seismic activity, assuming that any forage lost would be recovered in 5 years.

The assumption for impacts from rights-of-way was the same as alternative A (20-AUM loss).

It was assumed that 144 AUMs would be lost to livestock because of exclusions from 1,500 acres of riparian habitat.

Licensing reductions in certain ROS class areas (25 percent of the 5-year averaged licensed use in primitive and semiprimitive class areas) would result in a loss of 17,217 AUMs.

ALTERNATIVE E

There would be a net increase of 2,258 AUMs from the 5-year licensed average (367 more AUMs than under alternative A, or a total of 57,102 AUMs) by the year 2000, based on the following assumptions and calculations.

The anticipated net gain in operator demand is the same as for alternative A, and no restrictions to this demand are anticipated.

Monitoring studies would probably not result in any change from alternative A.

A 790-AUM increase is expected from new land treatments, assuming that 5 percent of the actually treatable acres would be treated (5 percent of 126,800 acres equals 6,340 acres) at 8 acres per AUM, or approximately 790 AUMs. The rationale for calculating actually treatable acres is the same as under alternative A.

It was assumed that 118 AUMs would be lost because of land disposals in twelve existing allotments.

The assumptions for forage impacts from oil and gas activity (130-AUM loss) and from rights-of-way (20-AUM loss) were the same as under alternative A .

A 264-AUM loss is expected because of livestock exclusions from riparian areas (40 acres, 4 AUMs), bighorn sheep mesas (56,740 acres, 160 AUMs), Dark Canyon ACEC, (2,000 acres grazeable, 100 AUMs).

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APPENDIX Y — CULTURAL RESOURCE IMPACT ANALYSIS ASSUMPTIONS

OVERVIEW

The purpose of this appendix is to describe the methods used to determine the number of cultural resources sites that could be damaged or protected under the various alternatives. These are the impacts that would be anticipated to occur despite mitigation measures. The number and severity of adverse impacts would be greater if mandated protection (mitigation) were not employed.

The number of cultural sites damaged under each alternative would depend on the acreages subject to or protected from surface disturbance, or where the accessibility and visibility of sites would be altered.

ASSUMPTIONS

The following assumptions were used to quantify impacts to cultural resources. These numbers were then used in the equation given later in this appendix.

These calculations are estimates based on best professional judgment and on an intensive review of site files and other available information concerning damage to cultural resources.

The number of acres of surface disturbance for management actions common to all alternatives was added to the number of acres of surface disturbance assumed under each of the alternatives, as given in chapter 4, to estimate impacts to the year 2000.

An average density of 40 sites per square mile was assumed for most management actions, except in areas where site densities are known to be higher or lower.

For most management actions, a ratio of 1:10 (one site damaged out of ten sites present) was assumed. For some management actions in the lands, recreation, and grazing management programs, ratios of 1:20 to 1:1,000 were used because surface disturbance would be less intense.

To project impacts resulting from illegal surface collection and excavation not associated with specific managements actions, it was assumed that 100 people collect surface artifacts from an average of 7.5 sites per year, and that 25 people excavate an average of 10 sites per year. This would result in 1,000 sites per year damaged by vandalism.

A factor of 0.75 was used to account for the fact that some sites have the potential to be damaged from more than one type of management action. This was done to avoid double counting of impacts.

It was assumed that all sites listed in the National Register of Historic Places or located within areas of critical environmental concern (ACECs) designated under management program 4331, Cultural Resources Management, would be protected. Otherwise, no attempt was made to determine which specific sites might be impacted, the cultural or scientific significance of sites impacted, or the extent of damage. It was assumed that damage would be extensive enough so that most sites would lose a significant portion of their value for scientific use.

EQUATION

The following equation was used to estimate the number of sites damaged under each alternative. The acreage of assumed surface disturbance (see chapter 4) differs for each alternative.

The number of acres of surface disturbance, divided by 640 (to convert to square miles), times the number of sites per square mile (given above, usually 40), divided by the ratio of the number of sites impacted (given above, usually 1:10), plus the number of sites impacted by vandalism (given above, or 1,000 sites per year), times a factor of 0.75 (to avoid double counting from multiple impacts, as explained above), equals the number of sites damaged.

The number of sites protected under the various alternatives was estimated by adding the number of additional sites in new National Register cultural properties and archaeological districts, cultural ACECs (all overlapping areas were considered), sites protected by Secretarial withdrawals, areas excluded from livestock use, and research natural areas.

APPENDIX Z — VISUAL RESOURCE IMPACT ANALYSIS ASSUMPTIONS

OVERVIEW

The purpose of this appendix is to describe the assumptions used to determine the number of contrast rating scores that would exceed visual resource management (VRM) objectives under the various alternatives.

The number of scores exceeding objectives under each alternative would depend on the acreages subject to or protected from surface disturbance, the type of development proposed, and the VRM class in which the project would be located (for example, class II is more restrictive than class IV).

ASSUMPTIONS

The following assumptions were used to quantify impacts to visual resources.

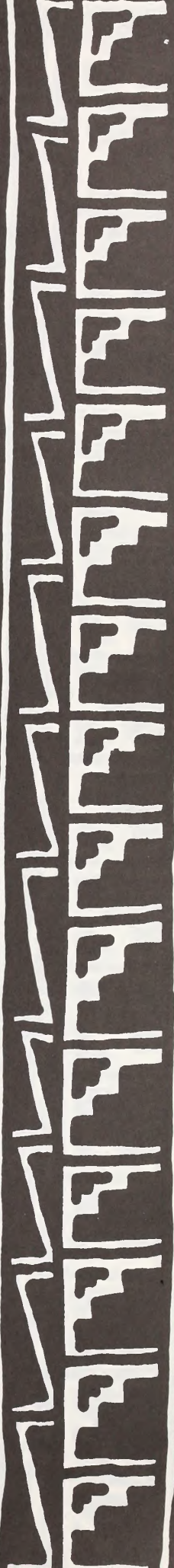
The total number of management actions for each activity was calculated to estimate impacts to the year 2000.

The areas identified for potential development under each alternative (for example, known geologic structures or known potash leasing areas) were then evaluated to determine the percentage of the area covered by each VRM class. It was assumed that management actions would take place uniformly across the potential development area.

It was then determined, based on best professional judgment, which activities (such as oil and gas, mineral materials, etc.) and their resultant levels of development (location, exploration, production, etc.) would be compatible with the VRM class objectives.

GLOSSARY

BACK MATTER



BACK MATTER



GLOSSARY

Acre-foot. The volume of material or water that will cover an area of 1 acre to a depth of 1 foot (43,560 cubic feet or 325,851 gallons).

Activity plan. A detailed and specific plan for management of a single resource program or plan element undertaken as necessary to implement the more general RMP decisions.

Adventive species. Plant species, originally introduced as exotics, which have become well established in the vicinity (for example, crested wheatgrass).

Affected interest. Any person, group, or organization potentially affected by a proposed action or an alternative.

Air pollution. Accumulation of aerial wastes beyond the concentrations that the atmosphere can absorb and, in turn, which may damage the environment.

Air quality classes. Classes established by the Environmental Protection Agency (EPA) that define the amount of air pollution considered significant within an area. Class I applies to areas where almost any change in air quality would be considered significant; class II applies to areas where the deterioration normally accompanying moderate, well-controlled growth would be considered insignificant; and class III applies to areas where deterioration up to the national standards would be considered insignificant.

Airshed. A region within which air movement tends to be confined by topographic barriers, meteorology, and local circulations.

Alkali soil. Soil having so high a degree of alkalinity (pH 8.5 or higher), or so high a

percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Allotment. See Grazing allotment.

Allotment management plan (AMP). A concisely written program of livestock grazing management, including supportive measures, if required, designed to attain specific management goals in a grazing allotment.

Alternatives. Different ways of addressing the planning issues and management activities considered in the planning process. These serve to provide the decision maker and the public a clear basis for choices among options.

Alluvial. Relating to or formed by water carrying and depositing rocks, soil, and other materials.

Ambient air quality. Prevailing condition of the atmosphere at a given time; the outside air. Concentration levels in the outside air for a specified pollutant and a specified averaging time period within a given area.

Animal unit Month (AUM). The amount of forage necessary for the sustenance of one cow or five sheep for 1 month.

Anomaly (geologic). A geologic feature, especially in the subsurface, that is different from its general surroundings and is often of potential economic value.

Aquifer. An underground body of rock or similar material capable of storing water and transmitting it to wells or springs (including both the saturated and unsaturated parts of the permeable unit).

Archaeologic district. An area designated to the National Register of Historic Places that provides a concentration of cultural properties in a discrete, definable location.

Area of Critical Environmental Concern (ACEC). An area within the public lands where special management attention is required to protect important historic, cultural, or scenic values, fish and wildlife or natural systems or processes, or to protect life and safety from natural hazards.

Avoidance area. An environmentally sensitive area where rights-of-way will be granted only in cases where there is a prevailing need and no practical alternative location exists, and then only with appropriate provisions to protect the sensitive component(s). (See Exclusion area.)

Badland. Steep or very steep, commonly nonstony, barren land dissected by many intermittent drainage channels. Badland is most common in semiarid and arid regions where streams are entrenched in soft geologic material. Local relief generally ranges from 25 to 500 feet. Runoff potential is very high, and geologic erosion is active.

Base property. Those lands in a ranching enterprise that are owned or under long-term control of the operator and have the capability to sustain the number of livestock for a specified time period for which a grazing privilege is sought (base property requirement).

Baseline. Conditions, including trends, existing in the human environment before a proposed action is begun; a benchmark state from which all environmental consequences are forecast and all changes expected to occur under existing management are projected. (For National Environmental Policy Act (NEPA) purposes, existing management is the no action alternative.)

Browse. As a verb, to consume or feed on (a plant); as a noun, the tender shoots, twigs, and leaves of trees and shrubs often used as food by cattle, deer, elk, and other animals.

Brush. Vegetation consisting primarily of bushes and shrubs, usually undesirable for livestock or timber management. It may sometimes be of value for browse or for watershed protection.

Butte. An isolated hill with steep sides and a top that is flat.

Carrying capacity (grazing). The maximum stocking rate possible without inducing damage to vegetation or related resources such as watershed. Normally expressed in terms of acres per AUM, or sometimes referred to as the total AUMs that are available in any given area, such as a grazing allotment.

Carrying capacity (recreation). The maximum number of people at one time that an area or facility can accommodate without impairing the natural, cultural, or developed resource.

C&MU Classification. Lands classified under the Classification and Multiple Use Act.

Change agent. The apparent cause of an environmental consequence, an antecedent related empirically to an environmental consequence.

Classification. Designation of public lands as being valuable, or suitable, for specific purposes, uses, or resources.

Climax. The seral stage in which a biotic community is at 76 to 100 percent of potential.

Climax vegetation. The final vegetation community that emerges after a series of successive vegetational stages. The climax community perpetuates itself indefinitely unless disturbed by outside forces.

Combined hydrocarbon lease (CHL). A lease issued in a special tar sand area (STSA) which entitles the lessee to remove any gas and nongaseous hydrocarbon substance other than coal, oil shale, or gilsonite.

Communitization agreement. An arrangement which allows the bringing together of a sufficient number of leases to provide enough acreage for wells to be drilled under state spacing requirements.

Component. One of the structural elements of an ecosystem.

Conservation for future use. A cultural resource management category indicating that, because of a scarcity of similar cultural properties, a research potential that surpasses the current state of the art, singular historic importance or architectural interest, or comparable reasons, a cultural property is not presently eligible for consideration as the subject of scientific or historical study that would result in its physical alteration; that it is worthy of segregation from other land or resource uses that would threaten the maintenance of its present condition; and which it will remain in this use category until specified provisions are met in the future.

Context. The context of an impact is explained in the CEQ regulations at 40 CFR 1508.27. It includes considerations of spatial, temporal, social, and economic factors that constitute a framework, setting, or "context" for an impact. Context defines the relative importance of an environmental consequence.

Contrast (visual). The effect of a striking difference in the form, line, color, or texture of an area being viewed.

Contrast rating. A method of determining the extent of visual impact of an existing or proposed activity that will modify any landscape feature.

Corridor. A linear strip of land forming a passageway between two points in which transportation and/or utility systems exist or may be located.

Critical watershed. An area having either sensitive soils or stream bank erosion.

Cropland. Land used primarily for the production of crops.

Crucial wildlife habitat. That portion of the living area of a wildlife species that is essential to the survival and perpetuation of

the species, either as individuals or as a population.

Cuesta. A hill or ridge with a steep face on one side and a gentle slope on the other.

Cultural clearance. A statement, based upon an inventory, that a given tract of land contains no cultural resource values or that, if cultural resources are present, compliance actions will be undertaken and other adverse impacts on them sufficiently mitigated.

Cultural property. A specific site where cultural resources are located.

Cultural resources. Those fragile and nonrenewable remains of human activities, occupations, and endeavors as reflected in sites, buildings, structures, or objects, including works of art, architecture, and engineering. Cultural resources are commonly discussed as prehistoric and historic values, but each period represents a part of the full continuum of cultural values from the earliest to the most recent.

Current scientific use. A cultural resource management category indicating that a cultural property is the subject of an ongoing scientific or historical study or project, under permit, at the time of evaluation; upon completion of that study or project, the cultural property shall be assigned to one of the other use categories.

Custodial management. A limited form of resource management employed on lands with low resource production potential that are producing near potential and where opportunities for positive economic return on public investment do not exist.

De facto corridor. An area in which one or more linear facilities already exist. Such a land use pattern probably developed in response to considerations such as topography and ease of access which prompted closely parallel rights-of-way. This pattern did not develop with the intent of establishing the best corridor based on environmental considerations.

Demand. The amount of goods or services that users are willing to take at a specified price, time period, and condition of sale.

De minimis. Prevention of significant deterioration (PSD) standards for pollutants besides total suspended particulate matter (TSP) and sulfur dioxide.

Designated corridor. A linear area of land with legally defined and recognized boundaries and capacities having environmental or engineering advantages over other areas for the location of present or future rights-of-way. These areas are identified by legal public notice.

Direct effect. Changes in sales, employment, or income of a firm that result directly from a firm's change in output.

Directional drilling. Slant drilling or drilling at an angle. Directional drilling is sometimes utilized when the operator is not allowed to occupy the surface of a given tract of land, but still wishes to drill a structure or target beneath that tract.

Discharged use. A cultural resource management category indicating that a cultural property, previously qualified for assignment to any of the other six categories, no longer possesses the qualifying characteristics for that use or for assignment to an alternative use; that records pertaining to it represent its only remaining importance; and that its location no longer presents a management constraint for competing land uses.

Distance zone. The area that can be seen from a travel route as foreground-middleground (up to 3 to 5 miles), background (from foreground-middleground up to 15 miles), and areas which are seldom seen (or beyond 15 miles).

Drainage basin. An area bounded by a water parting and drained by a particular river and its tributaries (watershed).

Early seral. The seral stage in which a biotic community is at 0 to 25 percent of potential (climax).

Ecological condition. The present state of vegetation of a range site in relation to the climax (natural potential) plant community for that site. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of the climax plant community.

Economic impact. The change, positive or negative, in economic conditions (including distribution and stability of employment and income in affected local and regional economies) that directly or indirectly result from an activity, project, or program.

Ecosystem. Same as human environment.

Ecotone. The effect achieved where two habitat types come together. The edge between the two merging types will be more favorable as wildlife habitat than either type considered alone.

Effect. Same as environmental consequence.

Employment. Labor input into a production process, measured in the number of person-years or jobs. A person-year is 2,000 working hours by one person working yearlong or by several persons working seasonally.

Endangered animal species. Any 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. See Threatened and Sensitive animal species.

Endangered plant species. Species of plants in danger of extinction throughout all or a significant portion of their ranges. Existence may be endangered because of the destruction, drastic change, or severe curtailment of habitat, or because of overexploitation, disease, predation, or even unknown reasons. Plant taxa from very limited areas (e.g., the type localities only), or from restricted fragile habitats usually are considered

endangered. See Threatened and Sensitive plant species.

Environmental consequence. A temporal or spatial change in the human environment caused by an act of man. The change should be (1) perceptible, (2) measurable, and (3) relatable through a change agent to a proposed action or alternative. A consequence is something that follows an antecedent (as a cause or agent). Consequences are synonymous with impacts and effects. In the CEQ regulations, consequences are caused by a proposed action (40 CFR 1508.7; 1508.8; 1508.14).

Ephemeral stream. A stream that flows only briefly after a storm or during snowmelt. See Perennial stream.

Erosion. The group of natural processes including weathering, dissolution, abrasion, corrosion, and transportation, by which earthy or rocky material is removed from any part of the earth's surface.

Excavation (archaeological). The scientifically controlled recovery of subsurface materials and information from a cultural site. Recovery techniques are relevant to research problems and are designed to produce maximum knowledge about the site's use, its relation to other sites and the natural environment, and its significance in the maintenance of the cultural system.

Exclusion area. An environmentally sensitive area where rights-of-way will be granted only in cases where there is a legal requirement to provide access. (See Avoidance area.)

Existing land leases. As used in this document, leases granted under the provisions of Section 302(b) of FLPMA, the R&PP Act, or the Airport Leasing Act. At the time this document was prepared (1986), existing land leases in SJRA are limited to one small business lease, two R&PP leases, and one airport lease.

Exotic plants. Those plant species that are not native to an area.

Fire management. The integration of fire protection, prescribed burning, and fire ecology

knowledge into multiple use planning, decision making, and land management activities. Fire management is a program, not of letting fires burn, but rather of placing fire in perspective with overall land management objectives to fulfill the needs of society.

Fiscal year. The BLM planning and budgeting year, October 1 through September 30.

Flood peak. The highest value of the stage or discharge attained by a flood; thus, peak stage or peak discharge.

Floodplain. The flat ground along a stream covered by water at the flood stage for a given interval (i.e., a 500-year floodplain will be larger than a 100-year floodplain).

Forage. Vegetation of all forms available for animal consumption.

Forb. A broadleaved herb other than grass; a weed..

Formation. A distinctive layer or group of layers in a stratigraphic sequence that are most frequently tabular in shape and are mappable at the earth's surface or traceable in the subsurface.

Full suppression. An all-out effort to extinguish wildfires.

Geophysics. The measurement and interpretation of characteristics such as specific gravity, electrical conductivity, and magnetic susceptibility to determine the geologic properties of the earth's subsurface.

Goal. The desired state or condition that a resource management policy or program is designed to achieve. A goal is usually not quantifiable and may not have a specific date by which it is to be completed. Goals are the bases from which objectives are developed.

Grazing allotment. An area of land where one or more operators graze their livestock; it generally consists of public land but may include parcels of private or state lands. An

allotment may consist of several pastures or be only one pasture.

Grazing preference. The total number of AUMs of livestock grazing on public lands apportioned and attached to base property owned or controlled by a permittee or lessee. Active preference and suspended preference combined make up total grazing preference.

Ground water. Water filling the unblocked pores of underlying material below the water table.

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.

Human environment. The natural and physical environment and the relationship of people with that environment. (See complete definition in the CEQ regulations, 40 CFR 1508.14.)

Hydrocarbons. Organic chemical compounds of hydrogen and carbon atoms which form the basis of all petroleum products.

Impact. Same as environmental consequence.

Income. Employee compensation, profits, rents, and other payments to households.

Index. A number, usually dimensionless (such as a ratio), that compares the condition of an ecosystem component or process against a standard value or against another component or process; also used in relation to thresholds, such as air or water quality standards that indicate environmental quality.

Indicator. An element of the human environment affected, or potentially affected, by a change agent. An indicator can be a structural component, a functional process, or an index. A key indicator integrates several system elements in such a way as to indicate the general health of that system.

Indirect effect. Economic impacts that result when supporting industries sell goods or services to directly affected industries or businesses.

Indirect or induced employment. Employment in all sectors of a regional economy resulting from an increase or decrease in direct employment.

Induced effect. Economic impacts that result when employees or owners of directly or indirectly affected industries spend their income within the economy.

Infrastructure. The basic transportation systems, utilities, services, enterprises, and other investments necessary for the operation and growth of a community.

Inholding. A tract of land, located within a large block of public land, that is owned by a private individual or by the State of Utah.

Input-output model. An economic model of the interdependence of the producing and consuming sectors in a given area.

Instant study area (ISA). All public lands that were formally designated as natural or primitive areas before November 1, 1975. These areas are being considered for designation as wilderness areas and, if designated, would be included in the national wilderness preservation system.

Integral vista. A viewshed, or area of view, from a pristine location, such as from a class I air quality area, that has been identified as being an important attribute to the area from which it is being viewed and that is worthy of protection to maintain its exceptional quality.

Interdisciplinary approach. Cooperative, interactive consultation and analysis among individuals representing two or more disciplines. Such an approach should "insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making, which may have an impact on man's environment" [NEPA 102(2)(A)].

Interim management policy (IMP). An interim measure governing uses on lands under wilderness review. This policy protects wilderness study areas (WSAs) from impairment of their suitability for designation as wilderness.

Intrusion (visual). A land, vegetation, or structural feature that is generally considered out of context with the characteristic landscape.

Isolated tract. A parcel of vacant public lands surrounded by private lands.

Issue. Same as planning issue.

Known geologic structure (KGS). A natural underground reservoir capable of holding oil and gas and verified to be productive or capable of production.

Labor force. Persons 16 years of age and older (excluding those institutionalized) who are currently employed or seeking employment.

Land disposal. A transaction that leads to the transfer of title of public lands from the Federal Government.

Land treatment. Alteration of the soil and/or vegetation of an area by mechanical, biological, or chemical means, or by burning. Land treatments are implemented to reduce erosion or improve vegetation for livestock or wildlife.

Late seral. The seral stage in which a biotic community is at 51 to 75 percent of potential (climax).

Lifestyle. The characteristic way people live, indicated by consumption patterns, work, leisure, and other activities.

Limited suppression. A policy of limiting fire suppression activity in areas where the expense associated with usual suppression procedures is not warranted (usually because of extreme suppression difficulty or because the values threatened are low).

Lithic scatter. An archaeological site characterized by the presence of flaked stone.

Livestock distribution. The uniformity of livestock grazing use over a range area. It is affected by topography, availability of water, and type and palatability of vegetation.

Management facilities. Structures and other capital improvements that have been constructed to aid the administration of a resource program.

Management framework plan (MFP). A planning decision document prepared before the effective date of the regulations implementing the land use planning provisions of FLPMA.

Management use. A cultural resource management category indicating that a cultural property is eligible for controlled experimental study that would result in its physical alteration, to be conducted by the BLM or other entities concerned with the management of cultural properties, for purposes of obtaining specific information leading to a better understanding of kinds and rates of natural or human-caused deterioration, effectiveness of protection measures, and similar lines of inquiry that would ultimately aid in the management of cultural properties.

M, I, and C categorization. The grouping of allotments into three different categories (M=maintain, I=improve, and C=custodial) for management purposes.

Midden. An accumulation of refuse about a cultural site.

Mid-seral. The seral stage in which a biotic community is at 26 to 50 percent of potential (climax).

Mitigating measures. Methods used (often included as stipulations or special conditions attached to a lease) to reduce the significance of or eliminate an anticipated environmental impact.

Modeling. A simulation technique for artificially imposing physical characteristics of an area onto some parameter to determine what the interaction between the parameter and the environment will be without actually observing and measuring the interaction. Air quality

modeling typically takes expected pollutant emissions from a proposed source and predicts concentrations of the pollutant in the air at various distances.

Monitoring. The orderly collection and analysis of data to evaluate progress in meeting resource management objectives. Monitoring may also include: (1) the collection of data to evaluate progress in complying with laws, regulations, policies, executive orders, and management decisions, and (2) the collection of data to assist in resource protection. Sampling of data and observation of progress toward plan objectives, the accuracy of impact analysis, and the effectiveness of mitigation measures are also of particular interest in terms of RMP monitoring activities.

Multiple use. Management of public lands and their various resource values so that they are used in the combination best meeting the present and future needs of the American people. Relative resource values are considered, not necessarily the combination of uses that will give the greatest potential economic return or the greatest unit output

Multiplier effects. The indirect and induced effects resulting from a direct effect.

National ambient air quality standards (NAAQS). National standards, established under the Clean Air Act by the Environmental Protection Agency (EPA), prescribing levels of pollution in the outdoor air which may not be exceeded. (See Primary NAAQS.)

National Register of Historic Places. A list of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, and culture, maintained by the Secretary of the Interior.

National Register property. A site, district, building, structure, or object deemed significant in American history, architecture, archaeology, or culture which is listed in the National Register of Historic Places.

National Wilderness Preservation System. A system composed of federally owned areas

designated by Congress as wilderness areas. These areas shall be administered for the use and enjoyment of the American people; management actions will preserve wilderness values for future use and enjoyment.

Natural hazard. A natural characteristic of land or water resources or areas that: (1) constitutes conditions significantly dangerous, or potentially significantly dangerous, to human life, or property, or that (2) would be significantly dangerous to life or the safety of property if development or other activity were permitted. Such a hazard may be either existing or considered likely to occur in the future.

NEPA documentation. A document prepared to assess environmental impacts of a proposed action, as required by the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) regulations at 40 CFR 1500. Four types of documents could be prepared, depending on the scope of the proposal: an environmental impact statement, for major actions; an environmental assessment, for actions with no significant impacts; a categorical exclusion, for certain actions predetermined to have no significant impacts; or a pre-emptory rejection, for projects that are not feasible from a legal or technical standpoint.

No action alternative. An alternative under which the current management direction or level of management intensity would be continued.

Notice of intent. A notice submitted to BLM by a geophysical exploration company outlining a proposed oil and gas exploration program. Also the notice submitted for mining or mining exploration where fewer than 5 acres will be disturbed.

Objectives. Planned results to be achieved within a stated time period. Objectives are subordinate to goals, narrower in scope and shorter in range, and more likely to be attained. Time periods for completion are specified, as are measurable and quantifiable outputs or achievements.

Obligations. Total resource management program expenditures, including costs of the operation plan, equipment, and work months.

Off-road vehicle (ORV). Any motorized vehicle capable of or designed for travel on or immediately over land, water, or other natural terrain, excluding (1) any nonamphibious registered motorboat; (2) any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; (3) any vehicle whose use is expressly authorized by the authorizing officer, or otherwise officially approved; (4) vehicles in official use; and (5) any combat or combat support vehicle when used in times of National defense emergencies. (Quoted from Executive Order 11989.)

Outstanding Natural Area (ONA). An area of unusual natural characteristics where management of recreation activities is necessary to preserve those characteristics.

Paleontology. The study of fossils.

Particulate matter. Any material, except water, in a chemically uncombined form that is or has been airborne and exists as a liquid or solid at standard temperature and pressure. Minute particles of coal dust, fly ash, and oxides temporarily suspended in the atmosphere.

Pasture. As used in this document, a subdivision of a grazing allotment.

Payment in lieu of taxes (PILT). Payments to local or state governments based on ownership of federal land and not directly dependent on production of outputs or receipt sharing.

Pediment. A broad, flat or gently sloping, rock-floored erosion surface or plain of low relief.

Perennial stream. A stream that flows throughout the year.

Permeability (soil). The ease with which gases or liquids penetrate or pass through soil.

Petroglyph. Prehistoric rock art cut or pecked into a stone surface.

Phenology. The science concerned with periodic biological events in their relation to seasonal climatic changes. Plant phenology refers to dates of sprouting, flowering, seed production, and regrowth, as well as other observable occurrences in plant development.

Pictograph. Prehistoric rock art drawn or painted onto a stone surface.

Placer claim. A mining claim on a surface mineral deposit formed by the mechanical concentration of mineral particles from weathered debris.

Planning criteria. The standards or rules and other factors developed by the manager and interdisciplinary team for their use in forming judgments about decision making, analysis, and data collection during planning.

Planning horizon. The period of time, expressed in years, that serves as a common base for considering future conditions and effects in the planning process.

Planning issue. A matter of controversy or dispute over resource management activities or land use that is well defined and/or topically discrete and entails alternatives among which to choose or decide.

Plan of operations. As used in this EIS, a plan submitted by a lessee which outlines exploration and mining proposals in detail.

Plant vigor. The relative well-being and health of a plant as reflected by its ability to manufacture sufficient food for growth and maintenance.

Pot hunting. Illegal excavation resulting in damage to and destruction of a cultural site.

Potential scientific use. A cultural resource management category indicating that a cultural property is presently eligible for consideration as the subject of scientific or historical study utilizing currently available research techniques, including study that would result in its physical alteration, and it need not be con-

served in the face of an appropriate research or data recovery (mitigation) proposal.

Powersite. Public lands that have a potential value for water power development.

Preferred alternative. That plan alternative, in the draft environmental analysis or impact statement, which management has initially selected as offering the most acceptable resolution of the planning issues and management concerns.

Prescribed fire. The skillful application of fire to natural fuels under conditions of weather, fuel moisture, soil moisture, etc., that will allow confinement of the fire to a predetermined area and at the same time produce the intensity of heat and rate of spread required to accomplish certain planned benefits to one or more objectives of wildlife management, grazing, hazard reduction, etc. Its objective is to employ fire scientifically to realize maximum benefits at minimum damage and acceptable cost.

Primary NAAQS: standard set at a level to protect the public health from damage from air pollution. **Secondary NAAQS:** standard set at a level to protect public welfare from damage from air pollution.

Primitive area. An area composed of natural, undeveloped lands that are essentially unaffected by civilization and located where the natural environment can be preserved by management of recreation activities and exclusion of additional roads and commercial developments.

Primitive recreation. Nonmotorized and undeveloped types of outdoor recreational activities.

Prior stable population. The carrying capacity for a given habitat range, derived by considering population dynamics and averaging 10 or more years when populations were stable.

Process. A mechanism whereby an ecosystem component undergoes metabolism, transformation, or any other kind of change. Any process implies an energy flow. Processes are responsible for ecosystem dynamics. They control the way components function and interact.

Propensity to consume. The proportion of a consumer's personal income that is spent on goods and services.

Proprietor. Owner of an enterprise.

Public lands. Any lands or interest in lands outside Alaska owned by the United States and administered by the Secretary of the Interior through the BLM, except lands located on the Outer Continental Shelf or lands held for the benefit of Indians.

Public use. A cultural resource management category indicating that a cultural property is eligible for consideration as an interpretive exhibit-in-place, a subject of supervised participation in scientific or historical study, a subject of unsupervised collecting under permit, or related educational and recreational uses by members of the general public.

Range improvement. A structure or practice that increases forage production, improves watershed and range condition, or facilitates management of the range or the grazing livestock.

Rehabilitation. Restoration of damaged or lost environment as nearly as possible to its original state.

Research natural area (RNA). An area established and maintained for the primary purpose of research and education because the land has one or more of the following characteristics: (1) a typical representation of a common plant or animal association; (2) an unusual plant or animal association; (3) a threatened or endangered plant or animal species; (4) a typical representation of common geologic, soil, or water features; or (5) outstanding or unusual geologic, soil, or water features.

Resource management plan (RMP). A written lands use plan that outlines BLM's decisions and strategies for management of the resources in a particular area. The RMP replaces the MFP in BLM's planning system.

Rest-rotation grazing system. A grazing plan providing for systematic and sequential grazing

by livestock and resting from livestock use on a range area to provide for production of livestock while maintaining or improving the vegetation and soil fertility.

Return above cash cost. Annual sales minus those costs that must be paid that same year.

Return on labor and investment. Annual sales minus the cost that must be paid that same year and the depreciation incurred on capital equipment.

Right-of-way. The legal right for use, occupancy, or access across land or water areas for a specified purpose or purposes. Such use on federal land is authorized by permit, lease, easement, or license. Also, the lands covered by such an easement or permit.

Right-of-way corridor. The designation of a corridor on an undisturbed area or the inclusion of undisturbed areas in an existing transportation and utility corridor, with a defined width. Right-of-way corridor designations must meet the criteria of 43 CFR 2806.2, including a technical feasibility study and environmental assessment of facility types and compatibility prior to designation.

Riparian habitat. A unique, specialized form of wetland restricted to areas along, adjacent to, or contiguous with, perennially and intermittently flowing rivers, streams, and other bodies of water.

Saline soil. Soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Salinity. Total dissolved solids (TDS) in water after all carbonates have been converted to oxides, all bromide and iodide have been replaced by chloride, and all organic matter has been oxidized.

Scenic quality. The visual aesthetics of an area, based on the key factors: landforms, vegetation, color, water, influence of adjacent scenery, scarcity, and amount of cultural modification. It indicates the visual quality

of an area relative to other scenery in the region. BLM ratings are A = exceptional/extraordinary; B = high; and C = low/common.

Season of use. The time of livestock grazing on a range area based on type and stage of vegetative growth.

Sediment. Soil or mineral material transported by water and deposited in streams or other bodies of water.

Sediment yield. The total amount of eroded material that completes the journey from its source to a downstream control point, such as a reservoir.

Segregation. Generally speaking, any action (such as withdrawal) that suspends the operation of the general public land or mineral laws on particular public lands.

Sensitive animal species. Species not yet officially listed but undergoing status review for listing on the official Fish and Wildlife Service (FWS) threatened and endangered species list; species whose populations are small and widely dispersed or restricted to a few localities; and species whose numbers are declining so rapidly that official listing may be necessary. See Endangered and Threatened plant species.

Sensitive plant species. Plants 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 plants also include species rare in one locality (such as in Utah) but abundant elsewhere. See Endangered and Threatened plant species.

Sensitive soils. Soils that are erodible, have a relatively high content of clay and silt, and are slightly to moderately saline.

Sensitivity level (visual). An index of the response to visual change in an area based on such weighted criteria as social attitudes, amount of use, types of resource uses, manage-

ment attitudes, etc. Levels are classified as high, medium, or low.

Seral stage. Any of the three distinct temporary subclimax vegetative communities. An expression of the relative degree to which the kinds, proportions, and amounts of plants in a biotic community resemble the potential natural community for a given area. See Early seral, Mid-seral, Late seral, and Climax.

Shrub. A plant that has a persistent woody stem, a relatively low growth habit, and generally produces several basal shoots instead of a single trunk.

Significance. The degree of importance as indicated by either quantitative measurements or qualitative judgments. Significant issues and impacts require explicit consideration in preparing a plan.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Socio-cultural use. A cultural resource management category indicating that a cultural resource is perceived by a specified social and/or cultural group as having attributes that contribute to maintaining the heritage or existence of that group, and is to be managed in a way that takes those attributes into account, as applicable.

Special condition. A requirement attached to approval of a specific project, often dealing with protection of the environment. Compare to Stipulation.

Special tar sand area (STSA). An area designated by order of the Secretary of the Interior on November 20, 1980 (45 Federal Register 76800) and January 21, 1981 (46 Federal Register 6077), and referred to in those orders as designated tar sand areas, as containing substantial deposits for tar and sand. Eleven STSAs are recognized in Utah by the Combined Hydrocarbon Leasing Act of 1981. The Act pro-

vided for the conversion of existing oil and gas leases in STSAs to combined hydrocarbon leases (CHLs). This Act also requires competitive leasing for currently unleased lands within STSAs.

Stabilization (cultural). Protective techniques usually applied to structures and ruins to keep them in their existing condition, prevent further deterioration, and provide structural safety without significant rebuilding.

Stipulation. A requirement, usually dealing with protection of the environment, that is made a part of a lease, grant, or other authorizing document.

Surface water. All forms of water on the surface of the earth.

Threatened animal species. Any animal species likely to become endangered within the foreseeable future throughout all or a significant part of its range. See Endangered and Threatened animal species.

Threatened plant species. Species of plants that are likely to become endangered within the foreseeable future throughout all or a significant portion of their ranges, including species categorized as rare, very rare, or depleted. See Endangered and Sensitive plant species.

Threshold. A maximum or minimum number, or other value, for an environmental impact or resource use which, if exceeded, causes that impact or use to take on new importance. The relative importance of a threshold depends upon its context.

Topography. The relief and contour of the land, especially when taken collectively, as over a region or large area.

Total dissolved solids (TDS). Salt: an aggregate of carbonates, bicarbonates, chlorides, sulfates, phosphates, and nitrates of calcium, magnesium, manganese, sodium, potassium, and other cations that form salts. High TDS solutions can change the chemical nature of water. High TDS concentrations exert varying

degrees of osmotic pressures and often become lethal to aquatic life.

Total suspended particulates (TSP). All solid or semisolid material found in the atmosphere.

Transportation and utility corridor. The designation of an existing group of rights-of-way capable of accommodating one or more compatible rights-of-way of like kind, with no width defined.

Unemployment. The sum of persons in the labor force who are currently unemployed but who are looking for work, and those who are on layoff or waiting to start new jobs within 30 days.

Unsuitability criteria. Criteria, specified in coal management regulations at 43 CFR 3461, that identify those lands that shall be considered unsuitable for certain stipulated methods of coal mining.

Visit (recreation). The entry of any person into a site or area of land or water generally recognized as providing outdoor recreation.

Visitor day. Twelve visitor hours which may be aggregated continuously, intermittently, or simultaneously by one or more persons.

Visual distance zone. The normal distance of viewers from an area being viewed: foreground/middleground (up to 5 miles); background (up to 15 miles); and seldom seen (more than 15 miles or areas screened from normal viewpoints).

Visual elements. The elements that determine how the character of a landscape is perceived. **Form:** the shapes of objects such as landforms or patterns in the landscape. **Line:** perceivable linear changes in contrast resulting from abrupt differences in form, color, and texture. **Color:** the reflected light of different wavelengths that enables the eye to differentiate otherwise identical objects. **Texture:** the visual result of variation in the surface of an object.

Visual resources. The land, water, vegetation, animals, structures, and other features that are visible on all public lands.

Visual resource management (VRM) classes. Classification containing specific objectives for maintaining or enhancing visual resources, including the amount of acceptable change to the existing landscape to meet established visual goals.

Watershed. The total area above a given point on a stream that contributes water to the flow at that point.

Water table. The upper level of an unconfined underground water body.

Wealth. The aggregate market value of an owner's assets.

Wetlands. Lands including swamps, marshes, bogs, and similar areas such as wet meadows, river overflows, mud flats, and natural ponds.

Wilderness area. An area officially designated as wilderness by Congress. Wilderness areas will be managed to preserve wilderness characteristics and shall be devoted to the public purposes of conservation and recreational, scenic, scientific, educational, and historical uses.

Wilderness management policy. The BLM policy that governs administration of public lands designated as wilderness areas by Congress. It is based on the Wilderness Act of 1964 and the Federal Land Policy and Management Act (FLPMA) of 1976. FLPMA requires a wilderness area to be a roadless area or island that has been inventoried and found to have wilderness characteristics as described in Section 603 of FLPMA and in Section 1(c) of the Wilderness Act.

Wilderness review. The inventory, study, and reporting phases of BLM's wilderness program.

Wilderness study area (WSA). An area under study for possible inclusion as a wilderness area.

Wildlife. All species of mammals, birds, fish, amphibians, and reptiles found in a wild state.

Wildlife habitat. All elements of a wild animal's environment necessary for completion of its life cycle, including food, cover, water, and living space.

Withdrawal. An action that restricts the use of public lands and segregates the land from

operation of some or all of the public land or mineral laws.

Work month. A unit containing 173.3 hours of government labor.

ACRONYMS

ACEC	area of critical environmental concern	NP	national park
ACMP	area of critical mineral potential	NPS	National Park Service
AMP	allotment management plan	NRA	national recreation area
APD	application for permit to drill	ONA	outstanding natural area
AUM	animal unit month	ORV	off-road vehicle
BEA	Bureau of Economic Analysis	P	primitive ROS class
BIA	Bureau of Indian Affairs	PILT	payment in lieu of taxes
BLM	Bureau of Land Management	PSD	prevention of significant deterioration
BOR	Bureau of Reclamation	R	rural ROS class
C	custodial allotment management category	R&PP	recreation and public purpose
C&MU	Classification and Multiple Use (as in Act)	RMA	recreation management area
CEQ	Council on Environmental Quality	RMP	resource management plan
CFR	Code of Federal Regulations	RN	roaded natural ROS class
CHL	combined hydrocarbon lease	RNA	research natural area
CRMP	cultural resource management plan	ROD	record of decision
DOE	Department of Energy	ROS	recreation opportunity spectrum
EA	environmental assessment	RPS	rangeland program summary
EIS	environmental impact statement	R.S.	Revised Statute
EPA	Environmental Protection Agency	SCS	U.S. Department of Agriculture, Soil Conservation Service
FAA	Federal Aviation Administration	SJRA	San Juan Resource Area, Moab District, Utah, BLM
FHWA	Federal Highway Administration	SPM	semiprimitive motorized ROS class
FLPMA	Federal Land Policy and Management Act of 1976	SPNM	semiprimitive nonmotorized ROS class
FWS	U.S. Department of the Interior, Fish and Wildlife Service	SRMA	special recreation management area
HMP	habitat management plan	STSA	special tar sand area
I	improve allotment management category	TDS	total dissolved solids
IMP	Interim Management Policy	T/E	threatened or endangered
ISA	instant study area	U	urban ROS class
KGS	known geologic structure	UDES	Utah Department of Employment Security
KPLA	known potash lease area	UDWR	Utah Division of Wildlife Resources
M	maintain allotment management category	U.S.C.	United States Code
MDO	Moab District Office, BLM	USDA	U.S. Department of Agriculture
MFP	management framework plan	USDI	U.S. Department of the Interior
MSA	management situation analysis	USFS	U.S. Department of Agriculture, Forest Service
NAAQS	national ambient air quality standards	USGS	U.S. Department of the Interior, Geological Survey
NEPA	National Environmental Policy Act	USO	Utah State Office (BLM)
NF	national forest	VRM	visual resource management
NHL	national historic landmark	WSA	wilderness study area
NM	national monument		

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INDEX

- Air quality 2-94, 3-27, A-181
- Allotment management plans A-121
- Alternatives 2-9
 - considered but eliminated 2-9
 - detailed descriptions of 2-11
 - goals and objectives of 2-12, 2-16, 2-52
 - management actions for 2-62
 - preferred S-4
- Analysis guidelines 4-2, 4-7, 4-21, 4-33
 - 4-48, 4-61, A-185, A-191, A-195, A-197
- Antelope 2-95, 3-42
- Archaeology (see Cultural resources)
- Areas of critical environmental concern
 - (see special management designations)
- Assumptions (see Planning assumptions)
- Bighorn sheep 2-95, 3-41
- Classifications and segregations 3-88
- Coal management 2-2, 2-62, 2-92, 3-10
- Comparative impact analysis summary 2-50
- Comparison of mineral potential
 - and limitations A-147
- Consistency with other plans 5-2
 - Forest Service 5-2
 - Environmental Protection Agency 5-5
 - National Park Service 5-5
 - Bureau of Land Management 5-7
 - State of Utah 5-8
 - Indian Tribes 5-8
 - Local governments 5-8
- Consultation and coordination 5-1
- Corridors (see rights-of-way)
- Crucial wildlife habitat 2-95
- Cultural resources 1-6, 2-6, 2-69, 2-96, 3-58
- Deer 2-95, 3-49
- Demographics 3-91
- Distribution 5-10
- Ecological condition A-109, A-155
- Economic considerations 3-87
- Economic impacts 2-98, A-139
 - minerals 4-19, 4-29, 4-44, 4-58, 4-72
 - soil and water 4-19, 4-29, 4-45, 4-58, 4-72
- Economic impacts (concluded)
 - livestock grazing 4-20, 4-29, 4-45, 4-58, 4-72
 - recreation 4-20, 4-30, 4-47, 4-60, 4-74
 - other land uses 4-21, 4-32, 4-47, 4-60, 4-74
 - plan budget 4-21, 4-32, 4-48, 4-60, 4-75
- Employment and income 3-91
 - hunting 2-99
 - mining 2-98, 3-94
 - ranching 2-99, 3-98
 - other land uses 2-100, 3-101
 - tourism 2-99, 3-100
- Environmental impacts S-4, 4-1
 - oil and gas 4-7, 4-22, 4-33, 4-49, 4-62
 - coal 4-8, 4-22, 4-35, 4-50, 4-63
 - tar sand 4-8, 4-22, 4-35, 4-50, 4-63
 - mineral materials 4-9, 4-23, 4-35, 4-50, 4-63
 - locatable minerals 4-9, 4-23, 4-35, 4-51, 4-63
 - nonenergy leasables 4-10, 4-23, 4-36, 4-51, 4-64
 - air 4-10, 4-23, 4-36, 4-52, 4-64
 - soils 4-11, 4-24, 4-36, 4-52, 4-64
 - water 4-12, 4-24, 4-37, 4-52, 4-65
 - vegetation 4-13, 4-25, 4-37, 4-52, 4-65
 - wildlife 4-14, 4-26, 4-38, 4-53, 4-66
 - grazing 4-15, 4-27, 4-40, 4-55, 4-68
 - cultural resources 4-16, 4-27, 4-40, 4-56, 4-68
 - recreation 4-17, 4-28, 4-41, 4-56, 4-69
 - visual resources 4-18, 4-28, 4-43, 4-57, 4-71
 - lands 4-18, 4-29, 4-43, 4-57, 4-71
- Final environmental impact statement S-1, I-10
- Final resource management plan S-1, I-10
- Fire management 2-73
- Forest development 2-5, 2-67
- Forest management 2-5, 2-66, 2-95
- Geothermal resources management 2-2, 2-62
- Gold 2-93, 3-18

Grazing allotment categorization	A-47	Public participation	S-13, 5-9
Habitat management plans	A-105	Purpose and need of the plan	I-1
Hazardous waste management	2-8, 2-72	Recreation management areas	2-7, 2-70, 3-66, 3-71
Impacts (see Environmental impacts)		Recreation opportunity spectrum	2-7, 2-96, 3-66, 3-69, 3-70, A-55
Implementation schedule (see Monitoring, resource management plan)		Recreation planning issue	1-3, 2-11
Income (see employment and income)		Research natural areas (see Special management designations)	
Indicators	3-1	Rights-of-way	2-4, 2-65, 2-98, 3-82
Instant study areas (see Wilderness study areas)		Riparian/aquatic habitat	2-95, 3-49
Land treatments (see Vegetation)		Salinity	2-99, 3-97
Land ownership and administration	I-17	Sand and gravel (see Mineral materials)	
Lands	2-4, 2-65, 2-98, 3-82	Season of use (see Livestock grazing)	
Lands identified for disposal	A-125	Social conditions	3-102
Limited fire suppression (see Fire management)		Social impacts	2-100, 4-21, 4-32, 4-48, 4-61, 4-75
List of preparers	5-13	Soils, sensitive	3-28
Livestock grazing	2-5, 2-67, 2-96, 3-53, A-167	Soil, water, and air management	2-7, 2-72, 2-94
Livestock management planning issue	1-2, 2-11	Special management designations	S-4, 2-60, 2-71, 2-72, A-61, A-75
Management concerns	1-6	Special recreation management areas	2-92
Management guidance common to all alternatives	S-1, 2-1	Summary comparison of impacts	2-92
Management objectives, proposed	2-52	Support requirements	2-50, 2-51, 2-100, A-91
Mineral materials	2-3, 2-63, 2-93, 3-1	Tar sand management	2-2, 2-63, 2-93, 3-17
Mining law administration	2-3, 2-64	Threatened or endangered species	2-8, 2-73, 3-52
Mitigation	S-4, A-1	Tourism (see Recreation)	
Monitoring, rangeland	A-89	Transportation corridors (see rights-of-way)	
Monitoring, resource management plan	2-19, A-29	Uranium	2-93, 3-18
Natural history (see Cultural resources)		Utility corridors (see rights-of-way)	
Natural succession areas	2-14	Vegetation	2-95, 3-37, A-101
Nonenergy leasable minerals	2-3, 2-64, 2-93, 3-27	Vegetation planning issue	1-3, 2-11
Off-road vehicle use and limitations	2-7, 2-71, 2-74, 2-96, A-49	Visual resource management	2-7, 2-72, 2-97, 3-80, A-59
Oil and gas leasing	2-1, 2-62, 2-92, 3-1, A-99	Water quality	2-94, 3-33
Outstanding natural areas (see Special management designations)		Wilderness planning issue	1-2, 2-11
Paleontology (see Cultural resources)		Wilderness management	2-7, 2-69
Payments in lieu of taxes	3-94, 3-95	Wilderness study areas	1-4
Planning assumptions	1-1	Wildlife habitat planning issue	1-3, 2-12
Planning criteria	1-6	Wildlife habitat management	2-8, 2-72, 3-41
Planning decisions, by alternative	2-76	Withdrawal processing and review	2-5, 2-65, 2-98, 3-87
Planning issues	S-1, 1-1, 1-3		
Planning process	I-1		
Potash (see Nonenergy leasable minerals)			
Prescribed fire (see Fire management)			

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