

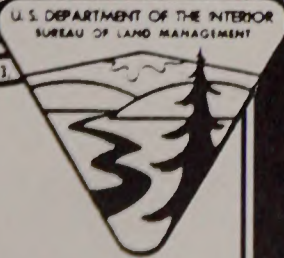


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# Utah BLM Statewide Wilderness Final Environmental Impact Statement

# Volume V South- East Region



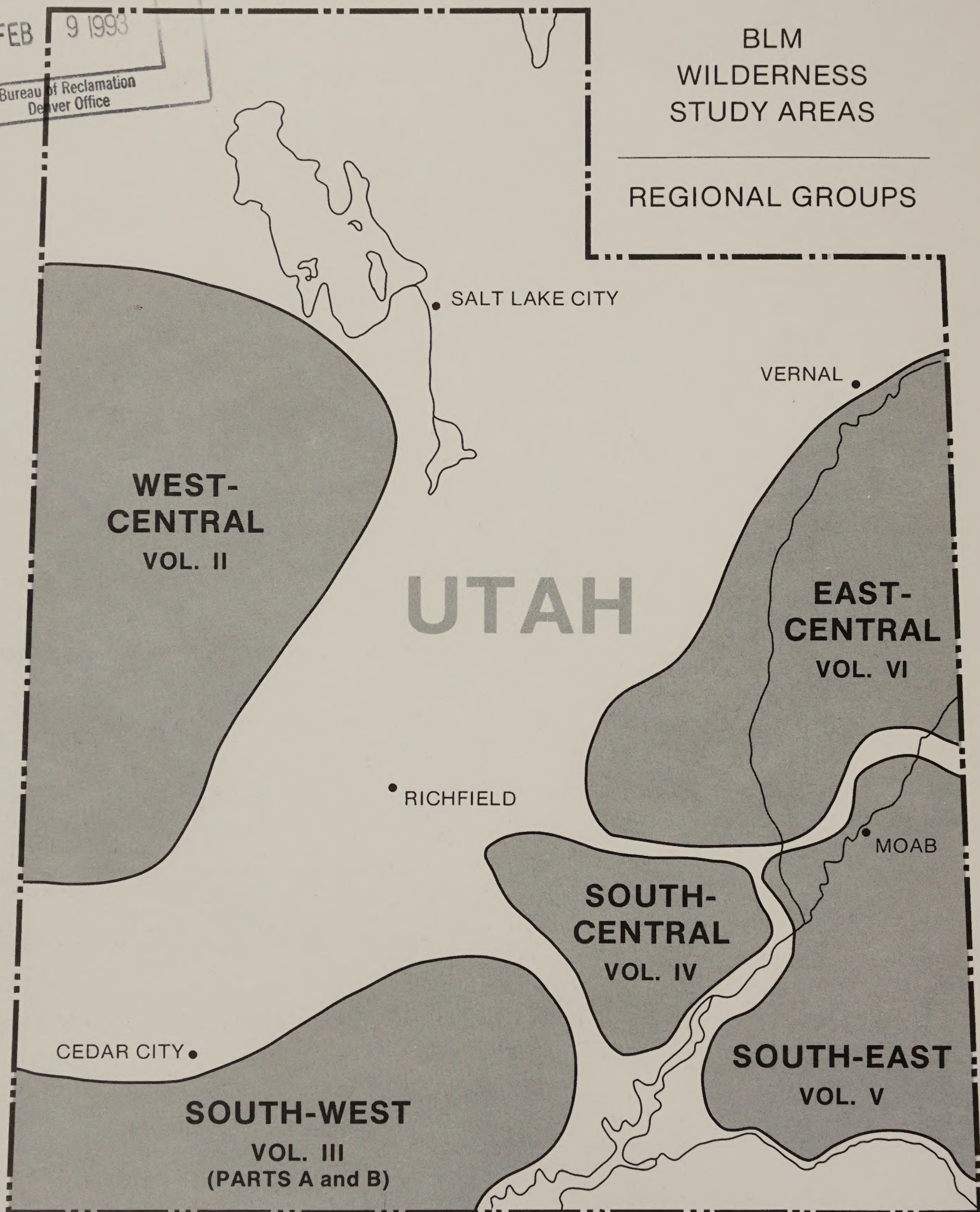
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This is **Volume V** of a seven volume set. Volume I is the state wide overview. It contains the Glossary and Appendices for all volumes. Volumes II-VI contain analyses for individual Wilderness Study Areas. Volume VII (parts A and B) contain public comments and responses.

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# Volume V South- East Region

Mancos Mesa WSA

Grand Gulch ISA Complex

Road Canyon WSA

Fish Creek Canyon WSA

Mule Canyon WSA

Cheesebox Canyon WSA

Dark Canyon ISA Complex

Butler Wash WSA

Bridger Jack Mesa WSA

Indian Creek WSA

Behind the Rocks WSA

Mill Creek Canyon WSA

Negro Bill Canyon WSA

Horseshoe Canyon (North) WSA

Lost Spring Canyon WSA

South Needles WSA

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# INTRODUCTION TO VOLUME V -- SOUTH-EAST WSAs

The Utah Bureau of Land Management (BLM) State-wide Wilderness Final Environmental Impact Statement (EIS) is comprised of seven volumes which include one individual analysis of each of 83 Wilderness Study Areas (WSAs) (Volumes II through VI), a State-wide overview (Volume I), and public comments and responses on the Draft EIS (Volume VII). The individual WSA analyses are grouped into volumes by geographic location. Volume V is comprised of individual analyses of the following sixteen WSAs located in the South-East Region of Utah:

Map Reference Number	WSA	Acres
45	Mancos Mesa	51,440
46	Grand Gulch Complex	105,520
47	Road Canyon	52,240
48	Fish Creek Canyon	46,440
49	Mule Canyon	5,990
50	Cheesebox Canyon	15,410
51	Dark Canyon	68,030
52	Butler Wash	24,190
53	Bridger Jack Mesa	5,290
54	Indian Creek	6,870
55	Behind the Rocks	12,635
56	Mill Creek Canyon	9,780
57	Negro Bill Canyon	7,620
58	Horseshoe Canyon (North)	20,500
H	Lost Spring Canyon	3,880
J	South Needles	160

The alternatives analyzed for each WSA are: No Action/No Wilderness designation and All Wilderness, which would be designation of the entire WSA as part of the National Wilderness Preservation System (NWPS). In addition, for several WSAs one or more Partial Wilderness Alternatives are analyzed, where designation of a portion of the WSA would avoid conflicts between wilderness management and development and use of other resources, or where certain portions of WSAs have low quality wilderness values. Partial Wilderness Alternatives, based on wilderness values, would designate the portions of the WSA with outstanding opportunities for solitude, primitive recreation, and special features that are within a manageable boundary.

## CHANGES FOR THE FINAL EIS

In response to public comment, and changing resource conditions and plans, the following changes have been made for the Final EIS for all of the South-East WSAs:

1. The sections entitled Alternatives Considered and Eliminated from Detailed Study discuss citizen alternatives suggested during the public comment period.
2. New statements that further explain management of water resources, cultural resources, noxious weeds, and predators have been added to the Analysis Assumptions and Guidelines for All Alternatives section.
3. The sections entitled Affected Environment include new or updated information on wilderness values, geology, water resources, soil reclamation potential, threatened and endangered species, mineral resources, livestock grazing, land use plans, and economic conditions.
4. Issue Identification sections have been revised and expanded.
5. The environmental consequences of alternatives described in the individual analyses have been modified to address only significant issues.
6. The Analysis Assumptions and Guidelines for All Alternatives have been moved to the Introduction to Volume V. The specific assumptions on potential future activities inside the WSAs have been changed as described in the Assumed Action Scenarios in the descriptions of the alternatives analyzed in the individual WSA analyses.
7. The State of Utah's position on exchange of in-held State lands has changed from requiring exchange of in-holdings, to exchanging only on a case-by-case basis to be determined by the State in the future (see Chapter 1 in Volume I). In the Final EIS, it is assumed that State lands would not be exchanged, and access to in-held State sections could be required following wilderness designation.
8. The bibliographies for the individual WSAs have been merged into a comprehensive bibliography that is located at the end of Volume V.

Additional changes specific to WSAs are identified in the introductions to the WSA analyses.

## ISSUE IDENTIFICATION

BLM used the information obtained from scoping meetings, workshops, comments received during the public comment period on the Draft EIS, and input from

## INTRODUCTION TO VOLUME V: SOUTH-EAST WSAs

BLM professionals to identify the issues for detailed analysis. Issues related to wilderness in general are addressed in Volume I, the Statewide overview. Several Statewide issues also pertain to the South-East WSAs.

In determining the significance of issues, BLM considered the nature and magnitude of potential impacts, resources covered by law, requirements of BLM's wilderness review guidelines, and the level of public interest or concern over the potential impacts.

### ISSUES CONSIDERED BUT NOT ANALYZED IN DETAIL FOR THE SOUTH-EAST WSAs

1. Impacts on Air Quality: The public has expressed concern that wilderness designation could lead to redesignation of WSAs from the existing Class II, Prevention of Significant Deterioration (PSD) classification, to the more stringent Class I rating. Additional PSD Class I areas could restrict future industrial developments in South-East Utah. Since BLM's Wilderness Management Policy (BLM Manual 8560) states that BLM will manage all wilderness areas to comply with the existing air quality classification, wilderness designation or nondesignation would not cause the air quality classification to change. The decision to change air quality classification is the prerogative of the State of Utah, rather than BLM. Therefore, the impacts of wilderness designation on air quality are not analyzed in detail for the South-East WSAs.

2. Impacts on Geology and Topography: The South-East WSAs contain outstanding examples of Colorado Plateau topographic and geologic features. The public has expressed concern that only wilderness designation can adequately protect these features. The only potential threats to these features would be blasting and surface mining on a scale much larger than any projects anticipated for the WSAs. Therefore, impacts on geologic or topographic features are not a significant issue for any of the South-East WSAs.

3. Impacts on Water Rights: In November, 1985, U.S. District Court Judge John Kane ruled (*Sierra Club vs. Block*) that Federal wilderness in Colorado carries an implicit water right. The public is concerned that wilderness designation would interfere with development of existing water rights and would establish Federal reserved water rights that would conflict with future filings, transfers, or changes in points of diversion for water use. After study of the issue by the Department of the Interior Solicitor, the Secretary of the Interior asked the U.S. Attorney General's Office for

concurrence with the Solicitor's opinion. On July 28, 1988, the Attorney General (Meese, 1988) concluded that no legally sufficient basis exists for an implication of Federal reserved water rights for wilderness purposes. Therefore, impacts on water rights are not considered a significant issue for analysis in the EIS.

4. Land Use Plans and Policies: Issues related to land use plans and policies include: (a) consistency of wilderness designation with the plans and policies of BLM, other Federal agencies, and State, and local governments; (b) impacts on management and use of in-held private and State lands; and (c) impacts on special land use designations, existing facilities, and future proposals for rights-of-way for communication facilities, power transmissions lines, pipelines etc.

Wilderness designation as proposed in the Utah BLM Statewide Wilderness Final EIS is not addressed in the current BLM land use plans because it is handled as a Statewide planning process. Wilderness designation is part of BLM's multiple-use concept, and the Statewide Wilderness EIS is linked to the current plans through inclusion of the plans as the No Action/No Wilderness Alternative. Congressional designation of all or part of any of the WSAs would amend the applicable BLM land use plans.

The Federal Land Policy and Management Act (FLPMA) and BLM's Wilderness Study Policy (USDl, BLM, 1981) require BLM to consider and document the extent to which BLM's recommendations are consistent with the plans and policies of other agencies and governments. Wilderness designation is perceived by State and local governments as a threat to development of in-held State lands. The Utah State Legislature passed S.C.R. No. 1 in 1986 opposing any additional wilderness designation. The Consolidated Local Government Response to Wilderness (Utah Counties, 1986) also opposes wilderness designation of BLM lands in Utah. Designation of all or part of any WSA would not be consistent with the policies of State and local governments. The current policy of the State of Utah is to maximize economic returns and to reserve its position regarding exchange of in-held State lands (see Chapter 1 in Volume I). Therefore, BLM assumes that reasonable access would be provided to in-held State lands in response to specific proposals for development and use. In as much as access would be allowed, wilderness designation of adjacent Federal land would not prevent use of State land, so development of in-held State lands are not analyzed in detail for each WSA. Likewise, BLM's Wilderness Manage-

## INTRODUCTION TO VOLUME V: SOUTH-EAST WSAs

ment Guidelines require that access be provided to in-hold private lands, and impacts of designation on the use of private lands are not an issue for detailed analysis. Volume I provides additional information regarding State and private in-holdings.

The EIS notes the relationship of BLM wilderness study areas and National Park Service (NPS) units in the South-East region. Except for two small WSAs (Lost Spring Canyon and South Needles), the BLM areas are not dependent on NPS land use activities. The BLM areas are not intended to provide a buffer zone around the NPS areas. Fourteen WSAs in the South-East region are identified and analyzed on their individual merit.

These current plans and policies of the various agencies and governments relative to wilderness designation are described in the Affected Environment sections of the individual WSA analyses under the heading, Land Use Plans, but this conflict is not repetitively analyzed for each of the alternatives because further analysis would lead only to restatement of the conflicts explained above.

The affects of wilderness designation on specific proposals and existing facilities or rights in WSAs may or may not be significant issues. Refer to the Issue Identification sections found in the Introductions to the individual WSA analyses for further discussion on these and other resource related issues not presented here.

### ANALYSIS ASSUMPTIONS AND GUIDELINES FOR ALL ALTERNATIVES

The following analysis assumptions and guidelines are applicable to the analysis of the WSA alternatives described in the Final EIS:

1. The alternatives would be carried out as cited in the Description of the Alternatives section.
2. For the No Action/No Wilderness Alternatives, and the nondesignated portions of WSAs with the Partial Wilderness Alternatives, it is assumed that BLM would manage according to the current BLM land use planning document. The following general management practices would apply to all of the South-East WSAs:

BLM would establish and maintain land use management practices which assure the protection of water supplies and aquatic habitat from chemical, physical, or biological deterioration as defined by the

Environment-al Protection Agency (EPA) and State water quality standards to protect health of the public and other beneficial uses.

Private, commercial, and military aircraft use of airspace over the WSA would continue as at present.

Cultural resources would be protected by provisions of the Uniform Rules and Regulations (43 Code of Federal Regulations [CFR] Part 3) to carry out the Antiquities Act, the Historic Sites Act, Executive Order 11593, the National Historic Preservation Act, and the Archaeological Resources Protection Act. Cultural resources could be excavated, stabilized, or interpreted without regard for wilderness values.

Prior to authorizing surface-disturbing activities, BLM would consult with the U.S. Fish and Wildlife Service (FWS) as required under the provisions of the Endangered Species Act. Appropriate measures would be taken to protect endangered, threatened, or sensitive species.

Measures to control fire, insects, noxious weeds, or disease would be taken as required, if in conformance with land use plans and BLM guidelines.

Activities for the purpose of gathering information would be allowed by permit provided they are carried out in an environmentally sound manner.

Hunting would be allowed subject to applicable State and Federal laws and regulations.

Control of predators would be allowed without wilderness considerations and would be conducted according to State law and the Animal and Plant Health Inspection Service (APHIS) guidelines. Methods of control would be determined as appropriate.

3. With the All Wilderness Alternative, and for the portions of the WSAs that would be designated as wilderness with the Partial Wilderness Alternatives, it is assumed that BLM would manage according to provisions of the BLM Wilderness Management Policy (BLM Manual 8560). The following general measures would apply to all WSAs (see Appendix 1 in Volume I):

All designated areas would be withdrawn from mineral location and closed to new mineral leasing and sale. Exploration and development of existing leases and valid claims would be allowed, with certain limitations to minimize effects on wilderness values.

## INTRODUCTION TO VOLUME V: SOUTH-EAST WSAs

Livestock grazing would continue as authorized in the BLM land use plans. New rangeland developments would be allowed on a case-by-case basis if necessary for rangeland and/or wilderness protection and effective management of these resources. Occasional use of motor vehicles, motorized equipment, or mechanical transport may be permitted where practical alternatives are not available.

New water resource facilities or watershed activities (not related to rangeland or wildlife management) would be allowed only if they would enhance wilderness values, correct conditions presenting imminent hazard to life or property, or if authorized by the President pursuant to Section 4(d)(1) of the Wilderness Act (Eighty-Eighth Congress of the U.S., 1964)

BLM would establish and maintain land use management practices which assure the protection of water supplies and aquatic habitat from chemical, physical, or biological deterioration as defined by EPA and State water quality standards to protect the health of the public and other beneficial uses. Management practices would be consistent with the BLM Wilderness Management Guidelines.

Prior to authorizing surface-disturbing activities BLM would consult with the FWS as required under the provisions of the Endangered Species Act. Appropriate measures would be taken to protect endangered, threatened or sensitive species.

Wildlife transplants or habitat developments would be allowed if compatible with wilderness values. Projects would be considered for approval on a case-by-case basis.

Designated areas would be closed to off-road vehicle (ORV) use except for users with valid existing rights if approved by BLM in accordance with 43 CFR 2920 provisions.

Specific Wilderness Management Plans would be developed that would guide use and protection of the wilderness areas. It is assumed that a maintenance-and-use border would be allowed along roads that are adjacent to or cherry-stem the wilderness areas, for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be from 100 to 300 feet from the centerline of the road travel surface.

Private, commercial, and military aircraft use of airspace over the WSA would continue, but a minimum

elevation of 2,000 feet would be encouraged by BLM and the Federal Aviation Administration (FAA).

Harvest of forest products would not be allowed in designated areas, except for harvest of pine nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means for use in the wilderness. Increased vehicular access for harvest of forest products would not be allowed.

Cultural resources would be protected with the various antiquities and cultural resource protection acts. However, in most instances they would be subject to the forces of nature, and study and management would not normally include any excavation, stabilization, or interpretation activities. Exceptions would be allowed on a case-by-case basis after special approval of the BLM State Director.

Visual resources would be managed in accordance with Visual Resource Management (VRM) Class I standards which generally allow for only natural ecological change.

Measures to control fire, insects, noxious weeds, or disease would be taken in designated areas in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken would be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques.

Any activity for the purpose of gathering information about natural resources would be allowed by permit provided it is carried out in a manner compatible with the preservation of the wilderness resource. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.

Hunting would be allowed subject to applicable State and Federal laws and regulations, but would be limited to nonmotorized access.

Where control of predators is necessary to protect endangered or threatened wildlife species, or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the



## INTRODUCTION TO VOLUME V: SOUTH-EAST WSAs

offending individuals while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns (M-44s) would not be allowed. Approval of a predator control program would be contingent upon a clear showing that removal of the offending predators would not diminish the wilderness values of the areas.

4. Future users in WSAs would meet requirements for all applicable Federal, State, and local permits. Stipulations, mitigating measures, and reclamation procedures would be carried out in compliance with Federal, State, and local laws and regulations.

5. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources with wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation.

6. The impacts of wilderness designation would result from: (a) protection of certain resources; (b) denial of opportunity to develop certain resources; or (c) restrictions on or changes in allowable management practices and land uses.

7. The short term is defined as that time from the present to the year 2020. The long term is defined as beyond the year 2020. The term foreseeable future refers to both the short and long terms in reference to activities that are likely to occur in the WSA.

Although the degree of future development cannot be predicted with certainty, Assumed Action Scenarios are presented for analysis purposes in the description of the alternatives. Based on known plans and proposals, known estimated resource values, and projections of future economic conditions, the Assumed Action Scenarios describe activities likely to occur in the WSAs over the foreseeable future, if the alternative is implemented.

8. Development potential in many of the WSAs has been divided into short-term and long-term projections. Even within the short term the quality of data varies. From the present time to about the year 2005, there are relatively good data with which to make development projections. From the year 2005 to the year 2020, little data exist. Development expectations are more speculative. Surface disturbance figures, and subsequent environmental impact

analysis in the Final EIS, are based on activities projected in the foreseeable future.

9. Mineral evaluations and estimates of in-place mineral resources are based on a mineral resource evaluation of the WSAs by the Science Applications Incorporated (SAI), U.S. Geological Survey (USGS), and U.S. Bureau of Mines (USBM) Mineral Survey Reports, where available, and subsequent evaluations conducted by BLM personnel. These estimates are generally based on literature studies and known mineral and energy activities in the vicinity of the WSA. The analysis estimates the potentially recoverable mineral resources and then, using BLM's field experience and judgment, determines the probability of short-term and long-term development. (Appendix 6 in Volume I explains the mineral exploration and development projections and Appendix 10 explains the process for estimating surface disturbance from projected activities in the WSA.)

10. It is assumed that, once designated, management of WSAs as wilderness would continue over the long term.

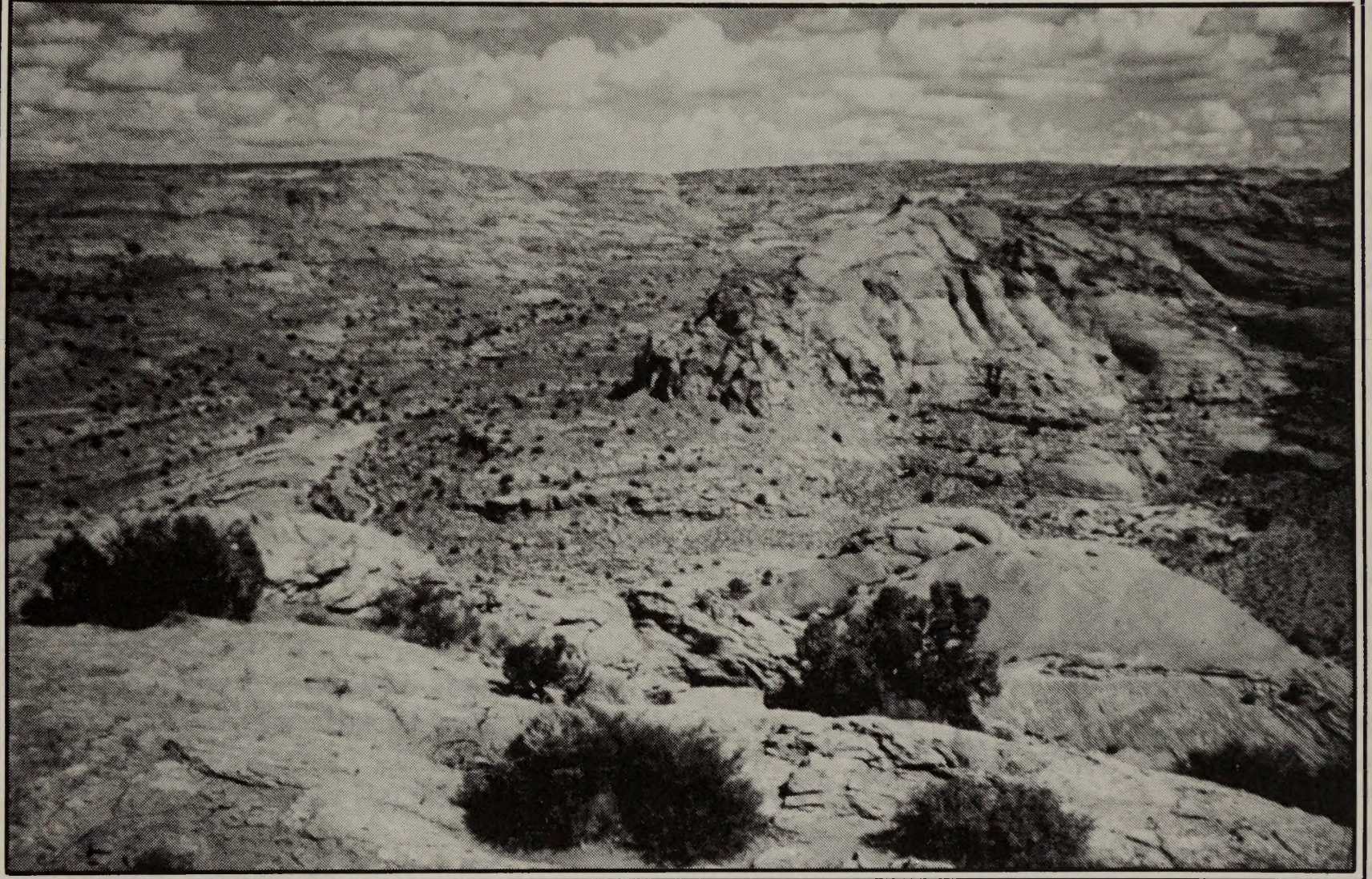
11. The environmental consequences of alternatives analyze only the significant issues identified in the Introduction to the WSA analyses.



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# Mancos Mesa WSA



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# MANCOS MESA WSA

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# MANCOS MESA WSA

(UT-060-181)

## INTRODUCTION

### General Description of the Area

The Mancos Mesa WSA is located in western San Juan County, about 50 miles west of Blanding, Utah. The WSA is about 13 miles long (north to south) and up to about 12 miles across (east to west). The WSA contains 51,440 acres of BLM-administered land.

The Mancos Mesa WSA is characterized by extremely rugged topographic features. The mesa is over 6,000 feet in elevation in the southeast, sloping down westward to an elevation of about 4,800 feet along the boundary of the Glen Canyon NRA. Canyon bottoms are down to 4,200 feet in elevation. The rim of Red Canyon forms the eastern border of the WSA. The northern and western WSA boundaries coincide with the Glen Canyon NRA boundary. The rim of Moki Canyon (600 to 800 feet deep) forms the southern boundary.

Three major canyons and small segments of two canyons form the major topographic features of the WSA. The canyons are rugged, winding, and steep-walled. North Gulch (450 to 800 feet deep) starts near the center of the unit and extends southwest for 8 miles to the Glen Canyon NRA boundary. Cedar Canyon starts near the eastern edge of the WSA and extends northwest for 12 miles to the northwest corner, where it enters the Glen Canyon NRA. In the upper portions of Cedar Canyon there are many side canyons, forming a dissected area about 4 miles long east to west by 2 miles across. In the north of the WSA a major side canyon of Cedar Canyon (called Mancos Canyon locally) parallels the unit boundary for 8 miles, 250 to 450 feet deep. Wind-blown sand covers large parts of the mesa top, and large deposits occur in places in the canyons where it has blown in from above. Blackbrush is the most common vegetation in the WSA.

The WSA is adjacent to the NPS recommended 41,700-acre Moki-Mancos Mesa wilderness (as proposed for Glen Canyon NRA).

Information on the climate of the Mancos Mesa WSA is based on the nearest weather station at Natural Bridges National Monument. The next nearest weather station is 50 air miles to the east at Blanding, Utah. The average annual temperature at the Bridges

National Monument is 51 degrees Fahrenheit (F), with an average low of 30 degrees F and an average high of 65 degrees F. The record low is -2 degrees F, and the record high is 101 degrees F. Annual precipitation ranges from about 8 to 12 inches.

### Changes For the Final EIS

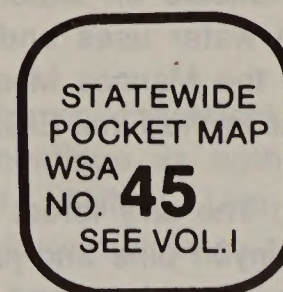
In addition to the changes noted in the Introduction to Volume V, the following changes specific to the WSA have been made since publication of the Draft EIS.

1. The BLM Proposed Action in the Draft EIS was the 46,120-acre Partial Wilderness Alternative. The BLM Proposed Action for the Final EIS is the 51,440-acre All Wilderness Alternative.
2. The anticipated surface disturbance presented in the Draft EIS (200 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities projected to be feasible within the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of surface disturbance estimates from the 94 acres reported in the Draft EIS to 200 acres of surface disturbance for the Final EIS.

### Specific Issues Identified Through Scoping and Public Comment

- Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume V (ie., impacts on air quality, geology and topography, water rights, and land use plans and policies), the following issues or impacts specific to the Mancos



# MANCOS MESA WSA

Mesa WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Soils: Approximately 94 acres of soil disturbance is projected for the Mancos Mesa WSA in the foreseeable future. This would be only 0.2 percent of the surface of the WSA. There are no perennial streams in the WSA and precipitation is light, only 8 to 12 inches annually. In addition, soils are loamy to sandy and 45 percent of the area is rock outcrop that is not susceptible to erosion. Therefore, major increases in soil erosion are not likely, and impacts on soils are not considered significant issues for the Final EIS.

2. Vegetation Including Special Status Species: Estimates of surface disturbance without wilderness designation have been revised downward from the 200 acres reported in the Draft EIS to 94 acres of mineral-related surface disturbance in the Final EIS. Given this new scenario, the impacts of direct disturbance of vegetation would be reduced and would not be significant with any of the alternatives (about 0.2 percent of the WSA). There are no threatened, endangered or proposed threatened or endangered plant species known to occur within the WSA. Only one Category 2 Candidate species is known to occur in the area. In any event, BLM would conduct site-specific clearances of potentially disturbed areas and consult with the FWS concerning impacts on threatened or endangered plant species. Therefore, impacts on vegetation are not analyzed in detail for the Mancos Mesa WSA.

3. Water Resources: The public is concerned that wilderness designation would interfere with development of water. Future developments could also increase sediment yield and affect water quality. There are no perennial streams in the Mancos Mesa WSA. The only potential uses of the eight springs in the WSA are the present uses for recreation, livestock, and wildlife. Springs could be developed following wilderness designation if designed and installed compatibility with wilderness protection guideline. As explained above, there is little potential for significant increases in erosion and related affects on water quality. Therefore, the impacts on water uses and quality are not significant issues for the Mancos Mesa WSA and are not discussed in detail in the Final EIS.

4. Forest Resources: The only forest resources in the WSA are scattered pinyon pine and juniper trees. The area is remote, demand is low, and there is limited access. For these reasons, impacts on forest re-

sources are not significant issues for analysis in the Final EIS.

5. Livestock: The public is concerned that wilderness designation would interfere with livestock management by placing restrictions on access for maintenance of existing range improvements, moving of livestock, and by preventing future range improvements. Restrictions would be placed on predator control and livestock losses could increase in both the wilderness area and on adjacent lands. However, the Mancos Mesa comprises only a portion of one grazing allotment utilized by one rancher. The only vehicle use for livestock management takes place on boundary roads that would remain open for use following wilderness designation. There are no developments or rangeland improvements planned for the WSA. Predators have not been controlled in the area for several years. For these reasons the impacts on livestock management are not significant issues for the Mancos Mesa WSA.

6. Visual Resources: As discussed above for vegetation, 94 acres of surface disturbance are projected for the WSA in the Final EIS. There would be some affect on visual resources. These affects are not analyzed in the Final EIS as a separate topic, but are addressed in relation to naturalness and special features in the Wilderness Values section.

7. Recreation: The public has expressed concern that wilderness designation would change recreational use from motorized to primitive or, conversely, that without wilderness designation motorized recreation will eliminate or reduce opportunities for primitive recreation. Recreational use of the WSA is light (estimated 1,200 visitor days per year) and would remain mostly primitive with or without wilderness designation due to the remoteness of the WSA and limited access. Therefore, impacts on recreation use would not be significant and they are not analyzed in detail in the Final EIS. Affects of potential activities on primitive recreation are discussed in the analysis of impacts on wilderness values.

8. Economic Conditions: The public, including State and local government, is concerned that wilderness designation would preclude mineral or other economic developments and adversely affect local economic conditions. Others believe that primitive recreation use would increase following wilderness designation and would contribute to the local economy.



# MANCOS MESA WSA

Projected mineral exploration would employ only 10 to 40 persons at one time (approximately 1 percent of current employment in San Juan County) for only 3 to 6 months. Because no major economic developments are expected, and because recreational use is only 270 visitor days per year, potential impacts on economic conditions are not significant issues for the Mancos Mesa WSA.

## • Issues Analyzed in Detail

The significant issues for the Mancos Mesa WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on mineral resources, including uranium and oil and gas exploration and production.
3. Impacts on wildlife habitat and populations including special status species.
4. Impacts on the preservation of cultural resources.

Comments made during the public comment period for the Draft EIS centered mainly on the need for, and adequacy of, the rationale for the BLM Proposed Action; errors in the BLM wilderness inventory, IMP violations, and BLM's assessment of wilderness values, visual resources, and mineral values. See Volume VII-B, for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 45, for responses to specific comments about the Mancos Mesa WSA.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated from Detailed Study

An alternative that would designate approximately 52,260 additional acres of Federal land and 4,500 acres of State land along the eastern border of the WSA and between Moqui Canyon and State Highway 95 outside the WSA was suggested in the public comments. This alternative is not analyzed because the inclusion of State lands is not consistent with BLM's wilderness review guidelines (refer to Volume VII-B, General Comment Response 6.4) and because other public lands were dropped from study during the inventory phase (refer to Volume VII-B, General Comment Response 3.1).

## Alternatives Analyzed

Three alternatives are analyzed for this WSA: (1) No Action/No Wilderness; (2) All Wilderness (Proposed Action) (51,440 acres); and (3) Partial Wilderness (46,120 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case. The assumed managements actions presented in the Introduction to Volume V are also applicable.

### • No Action/No Wilderness Alternative

With this alternative, none of the 51,440-acre Mancos Mesa WSA would be designated by Congress as part of the NWPS. Although BLM's land use plans are regularly updated, it is projected that the area would continue to be managed in accordance with the South San Juan MFP (USDI, BLM, 1971) until that plan is superseded by the San Juan Resource Area Resource Management Plan (RMP). The 4,481 acres of State land within the WSA (refer to Map 1) has not been identified in the MFP for special Federal acquisition through exchange or purchase.

### • Management Conditions and Constraints

All 51,440 acres would remain open to mineral location and sale. Development work, extraction, and patenting would be allowed on the 3,520 acres in 176 existing mining claims and, on future mining claims, development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) without concern for wilderness values. Ten existing oil and gas leases which cover 22,656 acres of the WSA could be developed under leasing Category 1 (standard stipulations). Although minerals would be managed as described, only exploration for oil and gas and uranium resources is projected for the foreseeable future. Mineral development is not projected following exploration because the level of known resources and the probability of development are too low to support a development assumption (see Appendix 6 in Volume I).

The present domestic livestock grazing use in the WSA would continue as authorized in the MFP (estimated 514 AUMs). Use of two developed springs and 660 feet of fence would continue. No

# MANCOS MESA WSA

R. 13 E.

R. 14 E.

### Map 1

### LAND STATUS

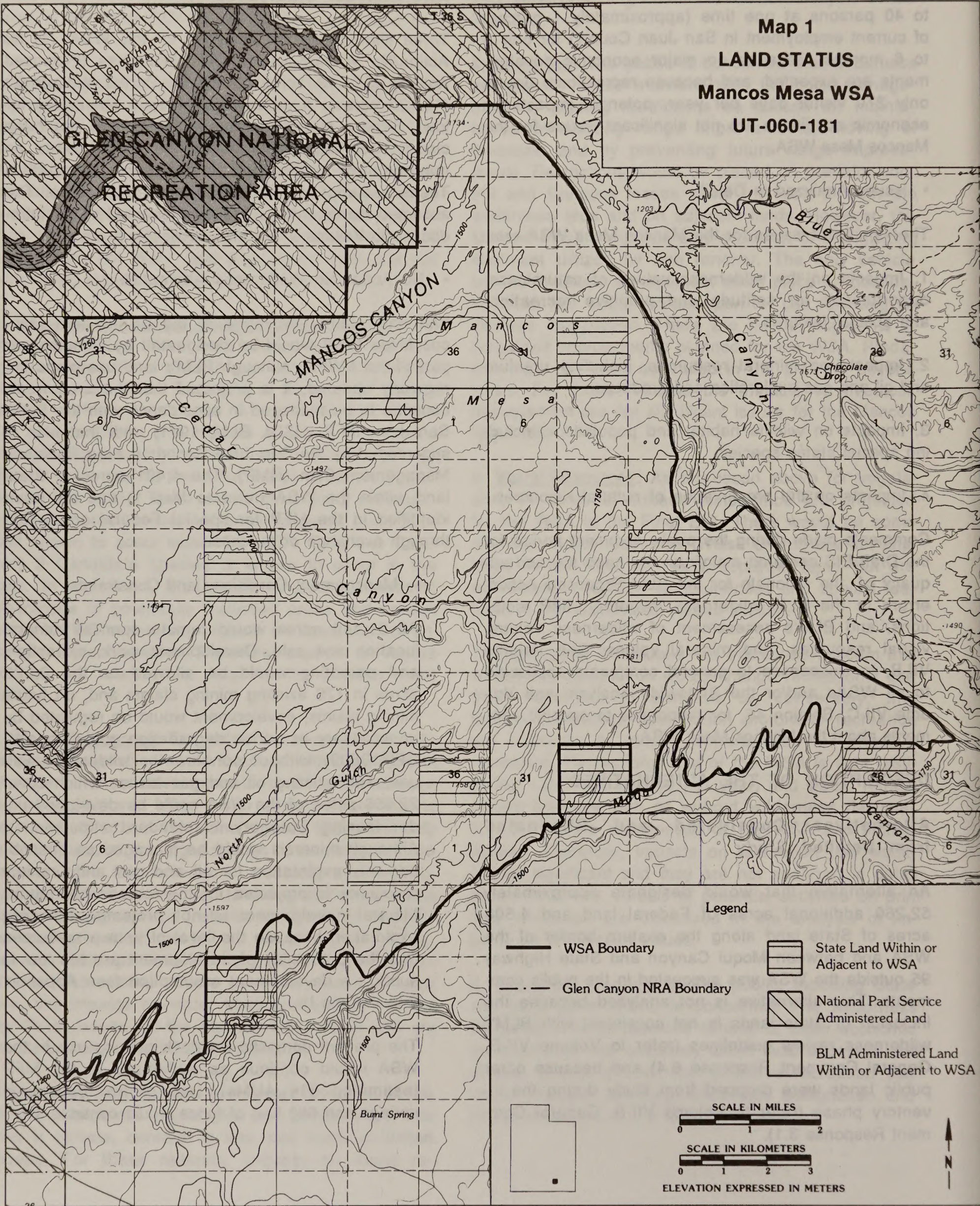
### Mancos Mesa WSA

### UT-060-181

T. 36 S.

T. 37 S.

T. 38 S.



## MANCOS MESA WSA

additional rangeland developments are planned in the WSA.

The entire WSA acreage including 25 miles of ways (trails) would be open to off-road vehicle (ORV) use. There is little or no ORV use in the area at present and use would remain low because of the remoteness of the area and limited access.

The entire WSA would be open to woodland product harvest. There is no harvest of forest products at the present time, nor is any expected because of the lack of access, scattered nature of the resource, and the remote location of the WSA.

- Action Scenario

It is projected that implementation of the No Action/No Wilderness Alternative would result in approximately 94 acres of surface disturbance in the foreseeable future. About 44 acres of surface disturbance will result from uranium exploration. This exploration will consist of construction of 15 to 20 miles of roads and drilling along these roads. Uranium exploration was conducted in the southeastern portion of the WSA in 1976 through 1979, and will occur there again in the future.

An additional 40 acres will be disturbed by oil and gas exploration in the WSA. Geophysical exploration will ultimately determine the location of the drill sites. Each location will disturb up to 10 acres for up to 5 miles of access roads and drill pad facilities.

Based on exploration activities typical of the area, it is assumed that 10 to 40 employees would be required at one time. Drilling activities would take 3 to 6 weeks. Uranium exploration would be under the unnecessary and undue guidelines of the 43 CFR 3809 regulations. Oil and gas exploration would be done according to the stipulations issued at the time of leasing (Category 1 or standard stipulations). The wilderness protection stipulation would be dropped and each drill site would be reclaimed following abandonment. Three to five years would be necessary for successful reclamation.

About 10 acres of disturbance is projected for construction of 5 miles of access roads to in-held State lands for mineral exploration purposes.

No rangeland, wildlife habitat, or watershed improvement projects are planned.

No disturbance is projected from ORV use. This is because the terrain and remoteness of the area limits access. It is projected that recreation use will increase over the current estimated use of 1,200 visitor days per year at a rate of 2 to 7 percent annually. Almost all of the use would continue to be primitive in nature.

- All Wilderness Alternative (Proposed Action)

With this alternative, all 51,440 acres of the Mancos Mesa WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character. The policy of the State is to reserve its position regarding exchange of in-held lands within any particular WSA (see Chapter 1 in Volume I). Based on this policy regarding exchange of State lands, it is assumed that State lands would remain under existing ownership. There are seven State sections (4,481 acres) within the WSA (refer to Map 1 and Appendix 3 in Volume I). No private or split-estate lands are located in the WSA. The figures and acreages given for this alternative are for Federal lands only.

- Management Conditions and Constraints

After wilderness designation, all 51,440 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the 3,520 acres in 176 mining claims that may be determined valid. Development would be governed by unnecessary or undue degradation guidelines (43 CFR 3809) with consideration given to wilderness values. Ten existing oil and gas leases covering 22,656 acres of the WSA would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown prior to wilderness designation. Although minerals would be managed as described above, only uranium exploration is projected following wilderness designation. Because of poor economic conditions and wilderness protection requirements, oil and gas exploration is not anticipated following wilderness designation. Uranium development is not projected following exploration because the level of known

# MANCOS MESA WSA

R. 13 E.

R. 14 E.

Map 2

ALL WILDERNESS ALTERNATIVE

Mancos Mesa WSA

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T. 38 S.



## MANCOS MESA WSA

resources and the probability of their development are too low to support a development assumption.

Present domestic livestock grazing would continue as authorized in the South San Juan MFP. The estimated 514 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of two developed springs and 660 feet fence would continue in the same manner as in the past based on practical necessity and reasonableness. However, no additional rangeland developments are planned.

The entire WSA area would be closed to ORV use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR 8560 provisions; or (2) occasional and short-term vehicular access approved by BLM for maintenance of approved rangeland developments. About 25 miles of existing vehicular ways (trails) would not be available for vehicular use except as indicated above. The approximately 1 mile of dirt road that borders the WSA and approximately 1 mile of cherry-stemmed road would remain open to vehicular use.

Harvest of forest products would not be allowed except for harvest of pine nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means for use in the wilderness.

- Action Scenario

It is projected that a total of 23 acres of surface disturbance would occur in the WSA following wilderness designation. About 13 acres of disturbance would result from uranium exploration activities as described for the No Action/No Wilderness Alternative, except on a smaller scale. It is assumed that 10 employees would be required for about 6 weeks to complete exploration.

About 10 acres of disturbance would result from access road construction to in-held state sections for mineral exploration purposes.

No rangeland, wildlife habitat, or watershed improvement projects are planned following wilderness designation.

No disturbance from ORV use is anticipated because of wilderness management restrictions,

terrain, and the remoteness of the area. Primitive recreation would increase over the current estimated use of 1,200 visitor days per year at a rate of 2 to 7 percent annually.

- Partial Wilderness Alternative

With this alternative, 46,120 acres of the Mancos Mesa WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to analyze as wilderness those portions of this WSA that have the best wilderness values. BLM believes that wilderness values are of a higher quality in areas where outstanding opportunities for solitude and/or primitive recreation exist, preferably in combination with special features. In forming this alternative, the portions of the WSA with outstanding opportunities for solitude and primitive recreation and special features were included where possible within a manageable boundary. The portion of the WSA with intrusions related to exploration of pre-FLPMA mining claims would not be designated wilderness. The 5,320 acres in the eastern portion of the WSA would be managed in accordance with the South San Juan MFP as described for the No Action/No Wilderness Alternative. The 46,120-acre area designated as wilderness would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) as described for the All Wilderness Alternative.

Because the policy of the State is to reserve its position regarding exchange of in-held lands within any particular WSA, it is assumed that State lands would remain under existing ownership. There are seven State sections (4,481 acres) in the portion of the WSA that would be designated wilderness. There are no private or split-estate lands within the Partial Wilderness Alternative area. The figures and acreages given for this alternative are for Federal lands only.

- Management Conditions and Conditions

The 46,120-acre wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of about 1,460 acres in 73 mining claims that may be determined to be valid. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) with consideration given to wilderness values. In the undesignated area, about 2,060 acres in 103 existing mining

# MANCOS MESA WSA

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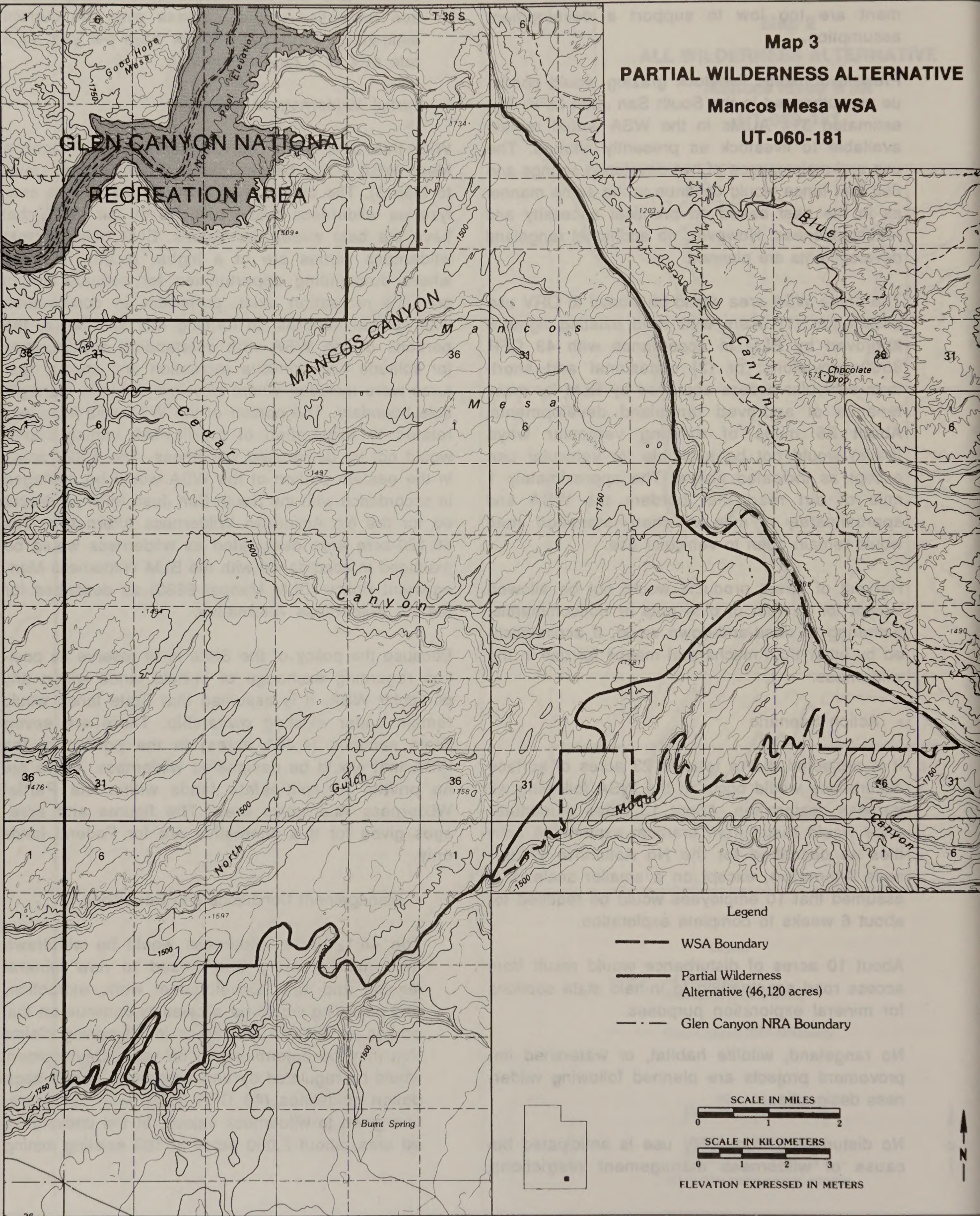
T. 38 S.

Map 3

PARTIAL WILDERNESS ALTERNATIVE

Mancos Mesa WSA

UT-060-181



## MANCOS MESA WSA

claims, as well as new valid mining claims, could be developed without wilderness considerations.

Ten existing oil and gas leases, covering the entire 22,656 acres, would be phased out upon expiration unless a find in commercial quantities is shown. The 5,320-acre area not designated wilderness would be open to mineral location, leasing, and sale. There are no mineral leases in this area at present. However, development of future oil and gas leases could occur without concern for wilderness values. The area not designated wilderness would be managed as oil and gas leasing Category 1 (standard stipulations). It is projected that the area designated as wilderness would be explored for uranium, but not for oil and gas, because of economic conditions and wilderness protection requirements. The nondesignated area would be explored for both uranium and oil and gas. Development is not projected following exploration because the level of known resources and the probability of their development is too low to support a development assumption.

Domestic livestock grazing would continue as authorized in the South San Juan MFP. The estimated 435 AUMs in the wilderness area would remain available to livestock as presently allotted. The existing fence (660 feet in length) and two spring developments could continue to be used and maintained in the same manner as in the past based on practical necessity and reasonableness. In the 5,320-acre nonwilderness area, grazing use of 79 AUMs would also continue as authorized in the MFP.

The 46,120-acre wilderness area would be closed to ORV use. The remainder of the unit would remain open to vehicular travel. About 19 of the 25 miles of existing vehicular ways (trails) in the WSA would be within the wilderness portion and would no longer be available for vehicular use except for purposes identified under the All Wilderness Alternative. There is little ORV use in the area at present and use in the nondesignated area would remain low because of the remoteness of the area.

Harvest of forest products in the wilderness area would not be allowed except for harvest of pine nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechan-

ical means for use in the wilderness. The area not designated wilderness would be open to woodland harvest, although none is expected because of the scattered nature of the resource, lack of access, and remoteness of the WSA.

Visual resources in the wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The area not designated as wilderness would be managed as Class II (5,320 acres), as currently set forth in the South San Juan MFP.

### • Action Scenario

It is projected that 22 acres of surface disturbance would occur in the designated portion of the WSA. This would result from 12 acres of uranium exploration activities as described for the All Wilderness Alternative. Ten acres would be disturbed by access road construction to in-held State sections for mineral exploration purposes. No rangeland, wildlife habitat, or watershed improvement projects are planned in the designated area following designation.

It is projected that approximately 10 acres would be disturbed in the nondesignated area as a result of uranium and oil and gas exploration. Six acres would be disturbed by uranium exploration activities while 4 acres would be disturbed by oil and gas exploration as described for the No Action/No Wilderness Alternative.

No rangeland, wildlife habitat, or watershed improvement projects are planned for the nondesignated area.

No surface disturbance from ORV activity is projected. This is because of wilderness management constraints, terrain, and remoteness of the area. It is projected that recreational use will increase over the current estimated use of 1,200 visitor days per year at a rate of 2 to 7 percent annually. Almost all of the use would be primitive in nature.

### Summary of Environmental Consequences

Table 1 summarizes the environmental consequences of alternatives analyzed in detail.

# MANCOS MESA WSA

Table 1  
Summary of Environmental Consequences

Resources	Alternatives	
	No Action/No Wilderness	Partial Wilderness (46,120 Acres)
Impacts on Wilderness Values	<p>Wilderness values would not be protected by wilderness designation, and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 94 acres of the WSA and indirectly reduced in quality on up to an additional 5,144 acres. The disturbance would be due to mineral exploration and from development of access to State in-holdings. Special features would not be significantly affected. Vehicular use of 25 miles of ways and new mining roads would continue to occasionally detract from opportunities for solitude and primitive recreation in the WSA. This alternative would not complement or enhance wilderness uses, values, and management of contiguous Glen Canyon NRA that is proposed for wilderness designation by the NPS.</p>	<p>Wilderness values would be preserved overall in the designated portion which is approximately 90 percent of the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 32 acres of the WSA, and would be indirectly reduced in quality on up to 2,572 acres of the WSA. The disturbance would be due to mineral exploration and from development of access to State in-holdings. Most of the impact would be in the designated area. Special features would be preserved overall. Use of vehicular ways and new roads in the nondesignated portion would occasionally detract from opportunities for solitude and primitive recreation in the WSA. This alternative would complement wilderness uses, values, and management of contiguous Glen Canyon NRA that is proposed for wilderness designation by the NPS.</p>



# MANCOS MESA WSA

**Table 1 (Continued)  
Summary of Environmental Consequences**

		Alternatives	
Resources	No Action/No Wilderness	All Wilderness (51,440 Acres) (Proposed Action)	Partial Wilderness (46,120 Acres)
Impacts on Mineral and Energy Exploration and Production	Implementation of the No Action/No Wilderness Alternative would not adversely affect mineral exploration or production because access, mineral leasing and mining claim location would not be restricted for preservation of wilderness values.	Opportunities for uranium and oil and gas exploration would be foregone. Loss of development potential would not be significant because of the low likelihood of development following exploration.	Opportunities for uranium and oil and gas exploration would be foregone because the area presently leased for oil and gas and with the highest potential for these resources would be in the designated area. Loss of development potential would not be significant. Potential for exploration for uranium would be foregone on 90 percent of the WSA.
Impacts on Wildlife and Populations	No long-term adverse impacts on habitat and populations of bighorn sheep, threatened, endangered, or sensitive animal species would occur because only a small portion of the habitat (0.2 percent of the WSA) would be temporarily affected and mitigation would be required.	Population levels would be the same as at present. Wildlife would be protected by reducing the potential for disturbance and activity within the WSA. Endangered, threatened, or sensitive species would be protected. Wildlife would benefit from preservation of solitude.	Populations levels would be the same as at present. Wildlife would be protected by reducing the potential for disturbance and activity on 90 percent of the WSA. Impacts on endangered, threatened, or sensitive species would not be significant.
Impacts on Cultural Resources	Minor impacts to cultural resources due to surface development or vehicular access. All archaeological sites would continue to be protected by existing laws. Cultural resource management would continue without regard for other wilderness values.	Cultural resources including 17 known sites would benefit from reduction of potential surface disturbance and elimination of vehicular use. Management of sites may be restricted in scope and execution in order to preserve other wilderness values.	Cultural resources on 90 percent of the WSA, including 16 of the 17 known sites, would benefit from reduction of potential surface disturbance and elimination of vehicular use. Management of sites may be restricted in order to preserve other wilderness values. Sites in the nondesignated portion would continue to receive protection under existing laws.

# MANCOS MESA WSA

## AFFECTED ENVIRONMENT

### Wilderness Values

- Size

The WSA contains 51,440 acres of public land and is of sufficient size to enhance the wilderness values present.

- Naturalness

Approximately 46,120 acres of this unit are free of the imprints of man's activity and meet the naturalness criteria for areas under wilderness review. The remaining 5,320 acres contain significant imprints and do not meet the naturalness criteria.

Range improvements on BLM lands include Potato Hole Spring and stock trail, Jacob's Spring, and a 1/8 mile section of fence. Impacts include relics of an old wooden watering tank at Jacob's Spring. The fencing is contiguous to the eastern boundary where a road exists. The impacts of the spring improvements are negligible.

Construction of 25 miles of roads associated with mineral exploration in the area required significant rock cutting and earthmoving. About 20 drill pads were constructed adjacent to the roads. The disturbed areas cover less than 0.25 acre per site. Partial revegetation and drifting sand obscure short sections of the roads and some of the drill pads. These imprints occurred during 1979 after the passage of FLPMA on pre-FLPMA mining claims. They were re-habilitated in part and closed. Currently, the roads are not accessible by four-wheel drive vehicles; however, motorcycle tracks are evident on some of the abandoned roads. The roads and drill pads can only be seen from the plateau high points in the southeast portion of the WSA. No other activities have taken place in the WSA since the BLM intensive wilderness inventory.

- Solitude

The deeply entrenched meandering canyons and small tributaries within the WSA afford outstanding opportunities for solitude. The winding and irregular canyon walls provide vertical isolation. Occasional pockets of riparian vegetation provide some screening in the canyon bottoms. On the mesa top, the sand dunes, steep slides, winding slickrock faces, bluffs, buttes, and other erosional features in combination with the low desert shrubs afford screening necessary for out-

standing opportunities for solitude. The vastness of the mesa enriches the sense of seclusion.

The roads in the southeast portion of the WSA are visible from the plateaus that they cross and high points along those plateaus. Only infrequent motorcycle use occurs on these roads. These conditions can be perceived to diminish solitude in the southeast portion of the unit.

Lake Powell is visible from high points in the northern and western portions of the WSA. Roads, uranium tailings, and exploration activities to the east of Red Canyon can be seen from various points along the rim of Red Canyon. The roads appear to receive very little use since mining is not currently active. These off-site influences produce a minimal impact to solitude due to the distances involved. Commercial airline traffic over the WSA occurs daily. The impact upon wilderness solitude is negligible due to the altitude of the air traffic. The WSA is within the flight pattern for aircraft from the Hite Landing Strip. Expansion of the landing strip as presently proposed would increase the frequency of low flying aircraft over Mancos Mesa.

Overall 90 percent (46,120 acres) of the WSA meets the outstanding solitude criterion for areas under wilderness review. The remaining 10 percent (5,320 acres) of the WSA in the southeast corner of the unit does not meet the criterion.

- Primitive and Unconfined Recreation

The opportunities for dispersed, undeveloped recreation within this WSA are excellent, being limited only by seasonal availability of water. The interesting sandstone formations within the extensive canyon and plateau systems offer excellent opportunities for hiking and exploration by backpackers, climbers, and horseback riders. Other outstanding opportunities include sightseeing, photography, and scientific and educational studies. The dissected landform on the mesa forms a barrier which necessitates circuitous routes between travel points.

Intrusions in the southeast corner of the WSA impact the primitive and unconfined recreation experience. The roads do provide the only access to the mesa, but tend to limit the primitive and unconfined recreation experience.

The outstanding backpacking and horseback riding opportunities within the canyons and on the plateaus

# MANCOS MESA WSA

allow 90 percent (46,120 acres) of this WSA to meet the criterion for outstanding primitive and unconfined recreation. The remaining 10 percent (5,320 acres) in the southeast corner of the WSA does not meet the criterion.

## • Special Features

The Mancos Mesa WSA contains archaeological, geologic, wildlife, and scenic values that were identified as special features during the BLM wilderness inventory.

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. There is the peregrine falcon, listed as endangered, that may use the WSA. There are eight animal species and one plant species that are considered sensitive that may occur in the WSA. The WSA has occasional sighting of desert big-horn sheep, which is a wildlife species associated with wilderness. Refer to the Vegetation and Wildlife Including Special Status Species sections for additional information.

## • Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the potential natural vegetation (PNV) type of blackbrush. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. The ecoregion and PNV types represented by this WSA are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

This WSA is not within a 5-hour drive from any standard metropolitan statistical area.

## Air Quality

The WSA has a Prevention of Significant Deterioration (PSD) Class II air quality classification under the provisions of the Clean Air Act, as amended. The nearest PSD Class I area is Capitol Reef National Park approximately 18 miles to the west.

The air quality is generally very good over the WSA. Visual range in the vicinity of the Mancos Mesa WSA averages between 100 and 132 miles during the summer (Aerocomp, 1984).

The closest air monitoring station to Mancos Mesa is 15 miles west at Bullfrog Marina. Particulate and sulfur dioxide concentrations are measured at Bullfrog. Only the short-term (24-hour) particulate standard has been exceeded at the Bullfrog station; the annual average is well below the standard at 60 micrograms per cubic meter for all three data years. The 24-hour violations were probably associated with conditions of high winds and blowing dust (resulting from the scarce vegetation and large areas of exposed sand).

Sulfur dioxide concentrations measured at Bullfrog Marina are low and well under the applicable ambient standards.

## Geology and Topography

The Mancos Mesa WSA is within the Canyonlands Section of the Colorado Plateau Physiographic Province, characterized by bare rock surfaces, plateaus, and steep-walled canyons.

The mesa is located on the gently dipping western flank of the Monument Upwarp and is composed of westward-tilted sedimentary beds of Permian to Jurassic age with Quarternary dune accumulations. The Wingate Formation is exposed in the bottom of Cedar Canyon. The Kayenta Formation overlies the Wingate and forms extensive benches and steep-ledged slopes over approximately one-fourth of the surface area. Above the Kayenta lies the Navajo Sandstone, which makes up the majority of the surface area in the WSA. The Carmel Formation overlies the Navajo Sandstone, appearing in three very small erosional remnants on the southern edge of the WSA.

Elevations range from 4,200 feet in the canyon bottoms to a high point of nearly 6,500 feet at the head of Cedar Canyon. Cedar Canyon and North Gulch serve as the drainage for the bulk of the surface of the mesa. The heads of several other canyons located within the Glen Canyon NRA are within the WSA boundary. The surface of Mancos Mesa dips slightly to the west and all of the canyons drain westward into Lake Powell.

The meandering canyon walls are characterized by nearly vertical sandstone cliffs separated by steep, rocky talus slopes from rim to canyon floor. The deepest portions of Cedar Canyon and North Gulch are about 800 feet deep and have an average depth of 400 feet within the WSA.

# MANCOS MESA WSA

## Soils

Shallow soils and rock outcrops predominate throughout the unit on the plateaus and in the canyons. The soils on the mesas and structural benches range from shallow to very deep loamy and sandy soils. The soils on the canyon slopes are shallow to very deep and some of the slopes are covered by talus. Very deep soils generally occur in concave slope positions and in basins. Soil characteristics and land types are shown on Table 2. The average rate of soil erosion is about 0.45 cubic yards per acre per year as shown on Table 3.

Table 2  
Soil Characteristics and Land Types

Soil Characteristics and Land Type	Percent of the Area	Acres	Estimated Rate of Erosion (cubic yards/acre/year)	
			Present Condition	Bare Soil Surface
Shallow to very deep stony soils on steep mountainsides	15	7,716	1	10
Rock Outcrop and rubbleland	45	23,148	0	0
Shallow and loamy soils on sloping benches and ridges	30	15,432	1	5
Deep and very deep loamy soils on gently sloping alluvial fans and valley floors	10	5,144	0.1	1
Totals	100	51,440		

Source: Hansen, 1985.

Soil salinity class estimates indicate that the area is nonsaline with an estimated average salinity production of 49 lb of salt per acre per year.

Seeding potential varies from suitable on 10 percent of the WSA where there are gentle slopes to unsuitable on 90 percent due to steep slopes, rock outcrops, sandy (droughty) and shallow soils.

## Vegetation Including Special Status Species

The vegetation of the Mancos Mesa WSA is classified as the blackbrush vegetation type for the entire 51,440 acres. Blackbrush communities are comprised of low growing plants that have an average height of 1 to 2 feet. Associated species include Mormon tea, yucca, winterfat, Indian ricegrass, curly grass, sandhill muhly, slenderbush eriogonum, scattered pinyon-juniper woodland, and single leaf ash. Vegetation in a few small areas near springs in the canyon bottoms

includes scattered cottonwood, oak, skunkbrush, and rabbitbrush. No acreage is classified as riparian in the WSA; however, there are isolated patches of riparian vegetation in canyon bottoms.

There are no known threatened or endangered plant species in the WSA. One Category 2 candidate species, *Erigeron kachinensis*, may occur in the WSA (see Appendix 4 in Volume I).

The Mancos Mesa WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The natural PNV type of this WSA is blackbrush.

## Water Resources

The Mancos Mesa WSA is within the Mancos and Cedar Canyon subbasins of the Upper Colorado River hydrologic subregion. These drainages lead directly into Lake Powell. There are no perennial streams in these drainages, all flows are a result of rain, snowmelt, and thunderstorms, and are ephemeral in nature. Livestock, wildlife, and recreationists utilize eight springs (two developed) and the natural rock tanks on Mancos Mesa. There are no water wells on Mancos Mesa. Since 1979, 12 reservoirs have been constructed on State in-held lands in the WSA.

The WSA is within Water Right Adjudication Area 99. The water is not fully appropriated (UDNRE, DWR, 1988). There is very little water development in this area because of its remoteness. Isolated springs may be open to appropriations not to exceed 0.015 cfs. Temporary and fixed time applications may exceed this limit.

The water quality standards for tributaries to Lake Powell are: Class 2B (protected for boating, water skiing, and similar uses); Class 3B (protected for warm water species of game fish and other warm water aquatic life); and Class 4 (protected for agricultural uses including irrigation of crops and stockwatering). Water quality of the springs is suitable for livestock use.

## Mineral and Energy Resources

The energy and mineral resource rating summary for the Mancos Mesa WSA is given in Table 4. See Appendix 5 in Volume I for explanation of the energy and mineral resource rating system.

# MANCOS MESA WSA

Table 3  
Erosion Condition

Erosion Class	Erosion Rate cubic yards/ acre/year	Annual Soil Loss Under Present Conditions			Annual Soil Loss if Disturbed		
		Percent of Area	Acres	Cubic Yards	Percent of Area	Acres	Cubic Yards
Very High	20	-	-	-	-	-	-
High	10	-	-	-	15	7,716	77,160
Medium	5	-	-	-	30	15,432	77,160
Low	1	45	23,148	23,148	10	5,144	5,144
Very Low	0.1	10	5,144	514	-	-	-
None	0	45	23,148	-	45	23,148	-
<b>Totals</b>		100	51,440	23,662*	100	51,440	159,464*

Source: Hansen, 1985.

Average annual soil loss in cubic yards per acre: 0.45 under present conditions; 3.1 if disturbed.

Table 4  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f3	c2	Between 10 and 50 million barrels of oil; between 60 and 300 billion cubic feet of gas
Copper	f2	c1	Less than 50,000 metric tons of contained copper
Uranium/Vandium	f3	c3	500-1,000 metric tons of uranium oxide

Source: SAI, 1982; USDI, BLM 1987a.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

The WSA could contain deposits of copper and vanadium which are currently listed as strategic and critical minerals (USDoD, 1988). Although listed as strategic, copper is relatively common and supplies currently exceed demand.

## • Leasable Minerals

There are no known deposits of any leasable minerals in the WSA. Currently, there are no active drilling, mining, or exploration activities for leasable minerals.

## • Oil and Gas

Mancos Mesa overlies two sedimentary sequences that are considered favorable for oil and gas production in southeast Utah. The mesa is situated

over the western edge of the Paradox Basin and above a 400-foot accumulation of Devonian strata and a 600-foot section of Mississippian strata that are oil and gas producers in the Four Corners region. Structural factors suggest that any accumulations of hydrocarbons present in these strata may be small.

The oil-rich strata of the Paradox Formation have been exposed along the San Juan River and the Colorado River in Cataract Canyon. If oil and gas were once accumulated in the Paradox in this area, there is good possibility that any reservoir pressure that existed has been released, allowing the oil and gas to drain away. This does not preclude the possibility of small accumulations in isolated stratigraphic traps within the Paradox Formation.

A few exploratory wells have been drilled in the vicinity of Mancos Mesa, which did have shows of oil and gas, but were abandoned without production. This drill hole data suggested that the WSA may contain a pinch out of the Permian White Rim Sandstone which could form a favorable stratigraphic trap for accumulations of oil and gas within the WSA. This type of pinch out could contain large hydrocarbon accumulations, as is the case at the Tar Sand Triangle in Elaterite Basin, which is estimated to contain as much as 16 billion barrels of oil. A well was drilled in the WSA on a State section (T. 37 S., R. 13 E., sec. 2) in 1987 to test this hypothesis. The White Rim Formation was not present in that hole, which suggests that the pinch out is located farther west. Therefore, any oil or gas accumulations in the White Rim

# MANCOS MESA WSA

Sandstone would be limited in extent to the western portion of the WSA.

Based on this discussion, the WSA is assigned an oil and gas favorability of f3. The size of the hydrocarbon accumulation in such an environment is anticipated to be between 10 and 50 million barrels of oil or between 60 and 300 billion cubic feet of gas. Based on the available information, the certainty of occurrence for oil and gas in the WSA is rated low (c2) (SAI, 1982).

With the current land use plan, all 51,440 acres of the WSA are in Category 1 (standard stipulations). There are presently ten post-FLPMA leases, covering 22,656 acres in the WSA.

- Locatable Minerals

At present, there are 176 mining claims in the WSA covering 3,520 acres.

- Uranium, Vanadium, and Copper

Uranium, with copper and vanadium as by-products, is the only known locatable mineral that may occur in the WSA. Uranium is commonly found in ancient stream channels in the Shinarump Member of the Chinle Formation through southeastern Utah. The Shinarump underlies the entire WSA at depths of less than 1,000 feet from the top of the mesa.

Although the WSA is not included in an organized mining district, there has been production from the immediate area, and the White Canyon Mining District is about 10 miles to the northeast. White Canyon has been one of the most productive districts to produce uranium and vanadium from the Chinle and deposits range in size from a few metric tons to 800,000 metric tons at a grade of 0.25 percent uranium oxide (USDI, USBM, 1988b).

On the basis of the discussion above, the WSA is assigned a uranium/vanadium favorability of f3 (containing between 500 and 1,000 metric tons of uranium oxide). The certainty that deposits occur in the WSA is moderate (c3). The favorability rating for copper (f2) indicates potential for small deposits, with a very low (c1) certainty rating (SAI, 1982).

- Salable Minerals

The salable minerals within the WSA have little or no commercial potential, based on the poor quality and the remote location of the material. These deposits are not unique or economically significant due to the presence of ample similar materials outside the WSA.

## Wildlife Including Special Status Species

The Mancos Mesa WSA is managed in accordance with the White Canyon-Red Canyon Habitat Management Plan. No habitat improvements have been identified for Mancos Mesa and there are no existing wildlife developments.

Desert bighorn sheep are occasionally sighted on Mancos Mesa and all of the 51,440-acre WSA has been designated as crucial habitat. Mancos Mesa is in the UDWR South San Juan Herd Unit 701. A few mule deer utilize the area. The WSA is within UDWR Deer Herd Management Unit 31B.

Deer mice, whitetail antelope squirrel, cottontail rabbit, and western pipitrel utilize the area. Common raven, redtail hawk, black throated sparrow, canyon wren, violet-green swallow, and white throated swift are the most abundant bird species. Gopher snakes, side-blotched lizards, northern whiptails, leopard lizards, and desert spiny lizards are also found within the WSA.

Prairie falcon and possibly the endangered peregrine falcon are thought to be in this area. No eyries have been located. The golden eagle, a BLM sensitive species, is found in the WSA. Other special status species that could occur in the WSA are six Category 2 candidate species. These are the Great Basin Silver-spot butterfly, ferruginous hawk, southern spotted owl, western yellow-billed cuckoo, long-billed curlew, and white-faced ibis (see Appendix 4 in Volume I). The chuckwalla, which has restricted habitat in Utah, has been reported but not confirmed in Cedar Canyon. The chuckwalla is an UDWR sensitive species. No acres are identified as critical habitat.

## Forest Resources

The Mancos Mesa WSA is a desert-type blackbrush environment with occasional scattered pinyon pine and juniper trees. Due to the scattered nature of this resource, remoteness of the area, and lack of access, harvest of forest resources has not occurred in the WSA and is not likely in the foreseeable future.

# MANCOS MESA WSA

## Livestock and Wild Horses/Burros

The Mancos Mesa WSA is within the Lake Canyon Grazing Allotment which is managed under an Allotment Management Plan. Current livestock use in the WSA is about 128 cattle from October 6 to June 5 each year (514 AUMs). Table 5 summarizes total allotment grazing use.

Range improvements on BLM-administered lands in the WSA include two developed springs and a 1/8 mile section of fence. Improvements on in-held State sections include 12 small reservoirs. When they are passable, the roads on the east border of the WSA are used by the livestock permittee and BLM in grazing management.

There are no range developments proposed for the WSA. Vegetation land treatments such as chaining or plowing are not feasible due to shallow soil depth.

There are no wild horses or burros within the WSA.

Predator control was not conducted during the 1986 to 1987 period in the grazing allotments that comprise the Mancos Mesa WSA (USDA, APHIS, 1988).

## Visual Resources

The Mancos Mesa WSA is in a VRM Class II area (51,440 acres). Class B scenery occupies approximately 90 percent (46,300 acres) of the WSA and Class C scenery occupies 10 percent (5,140 acres). Refer to Appendix 7 in Volume I for a description of the BLM VRM rating system.

The sensitivity level rating indicates the relative degree of user interest in visual resources and concerns for changes in the existing landscape character. The WSA is a low sensitivity area.

## Cultural Resources

A total of 17 archaeological sites have been recorded in the WSA (USDI, BLM, 1988).

Six of these sites are structural sites located in alcoves or rockshelters. All of them contain one or more structures made of dry laid sandstone masonry and most of them have associated artifact scatters. All six of these sites are Anasazi in origin and are located in the canyons of the WSA. The remaining sites are prehistoric, surface artifact scatters. Some contain lithics or ceramics only while other contain both types of artifacts. The majority of the artifact scatter sites are located on the mesa tops in unconsolidated eolian deposits and are attributed to Anasazi occupation of the region. None of these recorded sites have been evaluated for eligibility for the National Register of Historic Places. No sites in the WSA have been nominated for the register.

Three inventories for mineral exploration clearances have been conducted within the unit. All of these surveys were linear in nature, thus, no estimates of site density may be made on the basis of them. However, based on estimates from similar settings in the area, it is expected that up to 1,206 sites would be located in the WSA of which 804 could be eligible for the National Register. Most of these sites would probably be surface scatters of artifacts and rock-shelter sites with masonry structures of Anasazi origin.

## Recreation

For the most part, the inaccessibility of Mancos Mesa has discouraged recreationists. Only the most ardent of back country enthusiasts attempt the steep trails leading onto Mancos Mesa. Water is found in limited locations on the mesa top. The exception would be during periods of rainfall when the natural rock tanks would provide a water source.

Table 5  
Livestock Grazing Use Data

Allotments	Total Acres	Acres in ISA*	Total AUMs	Number of AUMs in ISA	Number and Kind of Livestock	Season of Use	Number of Operators
Lake Canyon	610,800	51,440	4,896	514	600 Cattle 12 Horses	10/06-06/05	1

Sources: BLM File Data.

# MANCOS MESA WSA

A uranium exploration road was built in 1976 to provide temporary access out of Moki Canyon to the top of Mancos Mesa. At the present time, the road is impassable to all motorized vehicles except trail or motorbikes. BLM has plans to restore the road to new natural conditions. No recorded information is available as to numbers of private recreational users in the area. Some use does occur from the western boundary by visitors to Lake Powell. Recreational activities include hiking; climbing; backpacking; horseback riding; sightseeing for botanical, geological, zoological, or archaeological features; and photography.

In recent years, Griffith Center (based in Colorado) has used Mancos Mesa and Cedar Canyon as one of its hiking areas for organized groups. They average two trips a year lasting 14 days per trip, with 12 persons per trip, accounting for 168 visitor days.

Although Mancos Mesa is in a designated bighorn sheep hunting unit, no information is available on bighorn sheep hunting in the WSA. Some mule deer hunting may have occurred on Mancos Mesa in the past. The WSA is in a limited entry, buck only, area that covers the southwest portion of San Juan County. Only 440 permits were issued for the entire hunting area in 1988.

Total annual recreation use in the Mancos Mesa WSA is estimated at about 1,200 visitor days a year, including the commercial group activities that comprise about 600 visitor days of the existing use. Almost all recreational use is primitive in nature.

## Land Use Plans

The WSA is in the BLM San Juan Resource Area and is managed according to the South San Juan MFP (USDI, BLM, 1971). The San Juan RMP will replace the MFP. Neither the MFP or RMP address wilderness designation. However, wilderness designation is part of the multiple-use concept. The BLM land use plan is linked to the Statewide Wilderness EIS through analysis of the present plan as the No Action/No Wilderness Alternative.

The Glen Canyon NRA forms the north and west boundaries of the WSA. The NPS has proposed 41,700 acres of lands in the Glen Canyon NRA contiguous with Mancos Mesa for the Moki-Mancos Mesa wilderness.

The Mancos Mesa WSA is composed primarily of public land with both the surface and subsurface managed

by BLM. However, there are seven sections (4,481 acres) of State-owned surface and subsurface. The current policy of the State is to maximize economic returns from State lands and to reserve its position regarding exchange of in-held lands (See Chapter 1 in Volume I). In 1986, the Utah State Legislature passed S.C.R. No. 1 opposing any additional wilderness designation in Utah and urging that State lands not be exchanged out of wilderness areas. The 4,481 acres of State land are under lease for grazing and oil, gas, and hydrocarbons. Grazing is the only activity on these lands at present (UDNRE, DSLF, 1988).

The San Juan County Master Plan (Planning and Research Associates, 1967) emphasizes multiple use of public lands and zones the WSA as open range and forest land. However, the policy of the San Juan County Commission is to oppose any legislative or administrative designations of wilderness in the County (San Juan County Commission, 1980). The commission has also endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah.

There are no existing land use rights-of-way issued by BLM in the WSA. Access to the WSA is provided by Red Canyon Road, which forms the east boundary, and a dirt road on the south. Both of these roads are maintained by San Juan County.

## Socioeconomics

### • Demographics

The Mancos Mesa WSA is located in San Juan County approximately 50 miles west of Blanding, Utah.

Between 1970 and 1980, the population of San Juan County was fairly static and grew by less than a 2 percent annual growth rate. The 1985 population was 12,500. Since 1983, the county's population has declined by approximately 500 (USDI, BLM, 1987b). The two largest communities in the county are Blanding, Utah (1980 population 3,118) and Monticello, Utah (1980 population 1,929). Approximately 40 percent of the county's population resides in these communities. Table 6 presents the baseline and projected population data for San Juan County.

Population projections for the county indicate that the number of people living in San Juan County in the year 2010 will be about 15,000 for about a 21 percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).



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Table 6  
Baseline and Projected Population and Employment Growth  
San Juan County

	1980	1990	2000	2010
Population	12,400	12,900	12,900	15,00
Employment	3,980	3,800	4,300	5,100

Source: Utah Office of Planning and Budget, 1987.

The major racial groups are caucasian (52.4 percent) and American Indians (45.7 percent). About 4 percent of the Navajo reservation's population live in San Juan County (USDI, BLM, 1987b).

San Juan County is the largest county in Utah, comprising 5,045,760 acres or about 9.6 percent of the State's acreage. Approximately 86 percent of the county is administered by the Federal Government: 41 percent by BLM, 24 percent by BIA in conjunction with the Navajo tribe, and 20.9 percent by other Federal agencies. About 6 percent is in State ownership and about 8.1 percent is privately owned (U of U, BEBR, 1982; and USDI, BLM, 1987b).

## • Employment

Table 6 shows the baseline and projected total employment for the county to the year 2010. The government sector (Federal, State, and local) is the most important in terms of employment in the San Juan County economy. In 1987, mining made up about 16.5 percent of the total employment in the county. Tourism also generates a significant number of jobs (USDI, BLM, 1987b).

Unemployment is presently high, approximately 10 percent.

San Juan County is part of the Southeast Multi-County District (MCD). Table 7 shows the baseline (1980) and projected employment by source for the MCD to the year 2010.

In 1980 the leading employment sectors for the MCD were mining (28 percent), government (18 percent) and trade (15 percent). It is projected that by the year 2010 employment will increase by about 27 percent, services to 18 percent, trade to 17 percent, and government to 15 percent of the total MCD. The mining, agriculture, and construction sectors will decline (Utah Office of Planning and Budget, 1987).

Table 7  
Southeast Multi-County District  
Employment<sup>a</sup>

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,800	1,500
Mining	499	300	300	400
Construction	1,308	1,700	2,300	3,100
Manufacturing	1,498	2,000	2,600	3,300
Transportation, Utilities	1,006	1,300	1,800	2,500
Trade	4,120	6,800	8,800	11,200
Finance, Insurance, Real Estate	785	1,100	1,400	1,800
Services	2,184	5,100	6,900	8,900
Government	4,816	5,800	8,500	8,100
Nonfarm Proprietors	<u>2,386</u>	<u>3,100</u>	<u>3,500</u>	<u>4,700</u>
Totals	20,212	28,900	35,700	45,500

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Beaver, Garfield, Iron, Kane, and Washington Counties.

## • Sales and Revenues

Activities in the WSA that could be of any local economic consequence include mining claim assessment, livestock production, and dispersed nonmotorized recreation. Table 8 summarizes the local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

There are 176 mining claims with current assessment work in the WSA. Regulations require a \$100 expenditure for labor and improvements per claim to keep the claim current. Some of these expenditures would probably be made within the local economy.

Table 8  
Local Sales and Federal Revenues

Source	Annual Local Sales <sup>a</sup>	Annual Federal Revenues
Oil and Gas Leases	0	\$45,312
Mining Claim Assessment	\$17,600	0
Mineral Production	0	0
Livestock Grazing	\$10,280	\$ 792
Recreational Use	<u>\$ 4,920</u>	<u>\$ 1,000</u>
Total	\$32,800	\$47,104

Sources: USDI, BLM File Data; Appendix 9 in Volume I.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

One livestock operator has grazing privileges in the WSA. Based on the consumption of 514 AUMs of forage by livestock, it is estimated that the Mancos Mesa WSA accounts for \$10,280 of livestock sales, including \$2,570 of the ranchers' returns to labor and investment.

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Although there is desert bighorn sheep habitat in the WSA, there is little to no private or commercial hunting within the WSA itself and, therefore, the WSA accounts for few, if any, hunting-related local expenditures. Other recreation use within the WSA is low. The actual amount of income generated locally from recreational use in the Mancos Mesa WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that Statewide average local expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for the WSA is estimated as about 1,200 visitor days per year, for an estimated local income of \$4,920.

An estimated 600 visitor days of recreation use are attributable to commercial outfitters. This use results in an estimated \$30,000 annual income to non-local business and \$1,000 annually in Federal revenues.

The WSA generates revenues to the Federal Treasury from two other sources: grazing and mineral leasing. Within the WSA, 22,656 acres are currently leased for oil and gas. At \$2 per acre, this generates about \$45,312 annually. Half of this, or about \$22,656, is allocated back to the State of Utah. The State then re-allocates these revenues to various funds, the majority of which are related to energy development. The grazing capacity of the WSA is about 514 AUMs. Based upon 514 AUMs of forage consumed by livestock in the WSA and a grazing fee of \$1.54, the WSA annually accounts for \$792 of grazing fee revenues to the Treasury. Half of this is allocated back to the local BLM District for the construction of range projects in the region.

### ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. The analysis is based on the BLM management actions and anticipated activities presented in the Introduction to Volume V and the Description of the Alternatives for the Mancos Mesa WSA.

#### No Action/No Wilderness Alternative

- Impacts on Wilderness Values

Because the WSA would not be designated wilderness under this alternative, the identified wilderness values would not receive the degree of protection afford-

ed by application of the Wilderness Management Policy. Wilderness values in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities (i.e., VRM Class II management on the entire 51,440 acres.)

In the foreseeable future, disturbance of approximately 94 acres from uranium and oil and gas exploration would result in a direct loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas. Ten of the acres of disturbance would be for access to State in-holdings. Special features, including archaeological and scenic features, endangered and special status species, and wildlife associated with wilderness, would not be significantly affected because the disturbance would be only about 0.2 percent of the WSA and would generally not be located where the special features are located. Appropriate measures would be taken to protect endangered and special status species and cultural values prior to any surface-disturbing activity, and negative impacts to these values would not be significant. Refer to the Cultural Resources and Wildlife Including Special Status Species sections for more information.

During the period of activity, the visual and audible disturbance from mineral exploration and road development would reduce the quality of opportunities for solitude and primitive recreation not only on directly disturbed areas but also indirectly on adjacent portions of the WSA. As much as 10 percent (5,144 acres) of the WSA would be so affected in the foreseeable future.

Because future vehicular use would generally be limited by terrain to existing vehicular ways and new mining roads, and because of the area's remoteness, no additional disturbance from ORV activity is anticipated in the future. Vehicular use of existing ways and future mining roads would continue to occasionally detract from opportunities for solitude and primitive recreation.

The 2 to 7 percent increase in visitor use that would occur would not be expected to reduce wilderness values because the additional use would be largely primitive in nature and the WSA is large enough to incorporate the additional use adequately.

Overflights would continue to be an occasional annoyance that would detract from opportunities for solitude and primitive recreation in the WSA.

## MANCOS MESA WSA

The extent that disturbance would occur on Federal lands and State in-holdings over the long term and, therefore, the long-term loss of wilderness values that would occur is not accurately known. Losses would occur, however, as intrusions increase.

This alternative would not complement and enhance wilderness uses, values, and management of the contiguous portion of Glen Canyon NRA that is proposed for wilderness designation by the NPS.

**Conclusion:** Wilderness values would not be protected by wilderness designation and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 94 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 5,144 acres of the WSA. Special features, including archaeological and scenic features, endangered and special status species, and wildlife associated with wilderness, would not be significantly affected.

- Impacts on Mineral and Energy Exploration and Production

The WSA would remain open to exploration and development of mineral and energy resources without consideration of wilderness values. Therefore, mineral and energy resources would not be affected by the No Action/No Wilderness Alternative.

**Conclusion:** Implementation of the No Action/No Wilderness Alternative would not adversely affect mineral exploration or production.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative, wildlife would be adversely affected by possible surface-disturbing activities on up to 94 acres or about 0.2 percent of the WSA. Surface-disturbing activities could possibly occur at scattered locations within the 51,440 acres of crucial desert bighorn sheep habitat. Adverse impacts would be short term while work was ongoing, projected for up to 6 weeks. Increased disturbance is not expected following exploration because roads would be closed and rehabilitated to the extent possible. Deer and mobile nongame animals would be dispersed from the area for the lifetime of these activities. Some loss of nongame species would result from exploration activities. These losses would not be significant with only 0.2 percent of the WSA being involved. The endan-

gered peregrine falcon (thought to occur in this area) would avoid the disturbed area. Before authorizing surface-disturbing activities (94 acres potential), BLM would conduct site-specific clearances of the potentially disturbed areas. If any threatened or endangered species would be affected, BLM would initiate consultation with the FWS under provisions of the Endangered Species Act (see Appendix 4 in Volume I). Appropriate mitigating measures such as avoidance of sensitive areas, would be applied. Because necessary mitigation measures would be taken, and disturbance would affect only a small portion of the habitat, the viability of populations of threatened, endangered, or other special status species would be preserved with the No Action/No Wilderness Alternative.

**Conclusion:** No long-term adverse impacts to habitat and populations of bighorn sheep, threatened, endangered, or other special status animal species would occur.

- Impacts on Cultural Resources

In the foreseeable future, 94 acres of surface development due to minerals exploration is expected. Some inadvertent damage to cultural resources may occur as a result of these activities and information could be lost. The unit would remain open to mineral location and leasing, but development is not projected. All sites in the WSA would continue to be protected under existing State and Federal antiquities laws and appropriate inventory and mitigation procedures would precede any surface disturbance.

The unit would remain open to ORV activity and general vehicular access. Currently, there is little vehicular traffic in the WSA and no increases are expected in the future due to topographic constraints. Thus, little impact to cultural resources is expected due to continued vehicular access.

Under this alternative, archaeological sites would be subject to standard cultural resource management procedures (Neumann and Reinburg, 1988). Stabilization, interpretation, and excavation could proceed without the restrictions of wilderness values maintenance.

**Conclusion:** Minor impacts to cultural resources would result from surface development or vehicular access. All archaeological sites would continue to be protected by existing laws. Cultural resource management would continue without regard to wilderness management.

## MANCOS MESA WSA

### All Wilderness Alternative (Proposed Action) (51,440 Acres)

#### • Impacts on Wilderness Values

Designation and management of all 51,440 acres as wilderness would contribute to the preservation of the wilderness values in the Mancos Mesa WSA. The potential for surface-disturbing activities would be reduced through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness and opportunities for solitude and primitive recreation would be protected on approximately 46,120 acres that meet and 5,320 acres that do not meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA, including archaeological and scenic features, endangered and special status species, and wildlife associated with wilderness, would also be protected.

Although protected, complete preservation of wilderness values would not be assured because of the existence of valid existing rights. In the foreseeable future, disturbance of up to 23 acres is anticipated from exploration of valid uranium mining claims in the southeastern portion of the WSA and from providing access to in-held State sections for purposes of mineral exploration. Wilderness values of naturalness and opportunities for solitude and primitive recreation would be directly lost on the disturbed areas. Opportunities for solitude and primitive recreation would also be indirectly reduced in quality on adjacent portions of the WSA during the period of activity. As much as 3 percent (1,543 acres) of the WSA would be so affected. Special features would not be significantly affected because the direct disturbance would be minor involving about 0.05 percent (23 acres) of the WSA and the disturbance would not generally be located where the special features are located. In addition, appropriate measures would be taken to protect endangered and special status species prior to any surface-disturbing activity, and negative impacts that would occur to these species would not be significant. Refer to the Cultural Resources and Wildlife Including Special Status Species sections for more information. Mitigation to protect wilderness values would be applied, but loss of wilderness values would be allowed if development involving valid existing rights could not be otherwise achieved. All in all, the disturbance would not be substantially noticeable in the area as a whole.

Vehicular use of existing ways would generally cease with ORV closure, improving opportunities for solitude and primitive recreation.

Over the long term there would be no potential for loss of wilderness values due to development of new leases and mining claims. The potential for long-term development of existing mining claims and State in-holdings is not known but would be less with this alternative than with No Action/No Wilderness due to application of mitigation that would protect wilderness values subject to valid existing rights.

The 2 to 7 percent increase in visitor use that would occur would be primitive in nature and would be managed so as to not result in loss of wilderness values.

Overflights would continue to be an occasional annoyance that would detract from opportunities for solitude and primitive recreation in the WSA.

This alternative would complement and enhance wilderness uses, values, and management of the contiguous portion of Glen canyon NRA that is proposed for wilderness designation by the NPS.

Conclusion: Wilderness designation would preserve wilderness values overall in the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 23 acres, and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 1,543 acres. Special features, including archaeological and scenic features, endangered and special status species, and wildlife associated with wilderness, would be preserved.

#### • Impacts on Mineral and Energy Exploration and Production

##### • Leasable Minerals

Existing post-FLPMA leases (22,656 acres) could be developed subject to the wilderness protection stipulations issued at the time of leasing. It is unlikely that existing leases would be developed or a showing of commercial quantities made prior to their expiration dates, and expired leases would not be reissued. No new leasing would be allowed.

Exploration for and development of a potential resource of less than 10 million barrels of oil and less than 60 billion cubic feet of natural gas would be foregone under this alternative. However,

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because development of oil and gas is not anticipated even with the No Action/No Wilderness Alternative, it is concluded that only oil and gas exploration potential would be foregone.

- Locatable Minerals

Approximately 3,520 acres within the WSA have mining claims, principally for uranium. The potential exists for 500 to 1,000 metric tons of uranium oxide. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines, with consideration given to wilderness values. It is projected that some of the mining claims are valid and that uranium exploration would occur following designation.

It is unlikely that development would occur in the foreseeable future, even without wilderness designation. Therefore, the designation of the Mancos Mesa WSA as wilderness would not result in a significant loss of uranium recovery.

Conclusion: Opportunities for uranium and oil and gas exploration would be foregone. Loss of development potential would not be significant.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative, some wildlife could benefit due to the preservation of solitude. Populations would remain low because water is a limiting factor for wildlife in this WSA.

Bighorn sheep may migrate into the area, but their numbers would remain low due to the limited availability of water. Wilderness designation would protect all but 23 of the 51,440 acres of crucial yearlong desert bighorn sheep habitat identified in the WSA.

There are no wildlife-related vegetation treatments or facilities planned within the WSA; therefore, habitat conditions would remain essentially unchanged in the future. This would be similar to the No Action/No Wilderness Alternative except there would be 71 acres less habitat disturbance from mineral activities.

The 23 acres of disturbance due to exploration of locatable mineral resources could impact wildlife popu-

lations in the same manner, but at a lesser magnitude than the No Action/No Wilderness Alternative.

Peregrine falcon habitat would remain the same in much of the WSA, except on those 23 acres of mineral disturbance. This area would be avoided by the species. Because necessary measures would be taken to protect this species (as well as other special status species), as described for the No Action/No Wilderness Alternative, these species would not be significantly affected by wilderness designation but would benefit from solitude and reduction of potential surface disturbance.

Conclusion: Population levels would remain the same as at present. Wildlife would be protected by reducing the potential for disturbance and activity within the WSA. Impacts on endangered, threatened, or other special status species would not be significant.

- Impacts on Cultural Resources

Only 23 acres of mineral surface disturbance are expected with this alternative and most vehicular access would be eliminated within the boundaries of the WSA. Very few intentional or unintentional impacts to cultural resources would occur under this alternative.

As recreational use of the unit increases in the future, site vandalism and collection of small transportable objects may increase. However, due to the lack of vehicular access, collection of large artifacts and illegal excavation of sites may decrease. If sites containing valuable artifacts or specific features are present in the WSA, the increased inaccessibility of wilderness designation may encourage large scale commercial looting. The rockshelters and Anasazi structural sites in the WSA may meet these requirements (Wylie, 1988). The protection of cultural resources from all ORV activity, vehicular access, and surface development would, however, probably outweigh any increases in vandalism due to increased recreational use.

All cultural resource management procedures would be subject to the restrictions of wilderness designation (Neumann and Reinburg, 1988). Access to sites for stabilization, interpretation, or excavation may be limited or denied.

Conclusion: Cultural resources, including 17 known sites, would benefit from reduction of potential surface disturbance and elimination of vehicular use.

## MANCOS MESA WSA

Management may be restricted in scope and execution due to wilderness designation.

### Partial Wilderness Alternative (46,120 Acres)

#### • Impacts on Wilderness Values

Wilderness designation of 46,120 acres would contribute to preservation of the area's wilderness values. Protection in the designated area would include management under VRM Class I which generally allows for only natural ecological change, ORV closure including closure of 19 miles of ways, and closure to future mineral leasing and location. Naturalness and opportunities for solitude and primitive recreation would be preserved on 46,120 acres that meet and 5,320 acres that do not meet the standards.

Approximately 46,120 acres of desert bighorn sheep crucial habitat would be protected. Sixteen of the seventeen recorded cultural sites and a majority of the estimated 1,206 potential sites would receive additional protection from wilderness designation, as would the area's scenic features and endangered and threatened species.

In the foreseeable future, loss of naturalness and opportunities for solitude and primitive recreation due to allowable surface disturbance from mineral exploration and from developing road access to in-held State sections would occur on up to 22 acres within the designated portion and on up to 10 acres within the nondesignated portion. Special features would be preserved because direct disturbance would involve only 0.06 percent of the WSA and development is not generally expected in areas where special features are located. In addition appropriate measures would be taken to protect endangered and special status species and cultural values prior to any surface-disturbing activity. Refer to the Cultural Resources and Wildlife Including Special Status Species sections for further analysis.

Sights and sounds from foreseeable development would reduce opportunities for solitude and primitive recreation on areas adjacent to the disturbed areas, including up to an additional 2,572 acres of the WSA. Most of this type of impact would be in the designated area.

Elimination of ORV use in the designated area would improve opportunities for solitude and primitive recreation overall in the WSA although vehicular use of 6

miles of ways and new roads developed for mineral exploration in the nondesignated area would continue to detract from these opportunities during the period of activity.

The 2 to 7 percent annual increase in visitor use that would occur would be largely primitive in nature, and would not affect wilderness values.

Overflights would continue to be an occasional annoyance that would detract from opportunities for solitude and primitive recreation in the WSA.

The extent that disturbance would occur on Federal lands and State in-holdings over the long term, and, therefore the long-term loss of wilderness values that would occur is not accurately known. It would be less than with the No Action/No Wilderness Alternative due to application of mitigation in the designated area that would limit development subject to valid existing rights.

This alternative would complement and enhance wilderness uses, values, and management of the contiguous portion of Glen canyon NRA that is proposed for wilderness designation by the NPS.

Conclusion: Wilderness values would be preserved overall in the designated portion which is approximately 90 percent of the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 32 acres of the WSA, and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 2,572 acres. Most of the impact would be in the designated area. Special features, including archaeological and scenic features, endangered and special status species, and wildlife associated with wilderness, would be preserved overall.

#### • Impacts on Mineral and Energy Exploration and Production

##### • Leasable Minerals

The part of the WSA that would be designated wilderness would be placed in Category 4 status with no new leasing. All of the existing oil and gas leases would be in the area that would be designated wilderness. The potential oil and gas resources are thought to be in the western part of the WSA that would be designated. Therefore, the Partial Wilderness Alternative would affect oil and gas

## MANCOS MESA WSA

exploration and production the same as the All Wilderness Alternative.

- Locatable Minerals

Approximately 1,460 acres in 73 mining claims are within the area that would be designated wilderness. Development work, extraction, and patenting could continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. It is projected that some exploration would take place following designation.

If the potentially recoverable minerals are not found as a result of limited exploration on mining claims filed prior to designation, the potential for exploration for an undetermined portion of the estimated 500 to 1,000 metric tons of uranium would be foregone. After designation, all of the 46,120 acres (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981). The 5,320 acres not designated wilderness would remain open to mineral location exploration and development. Mineral and energy exploration and production opportunities would not be affected in this area.

It is unlikely that development would occur following exploration. Therefore, this alternative would not result in a significant loss of uranium recovery.

Conclusion: Opportunities for uranium and oil and gas exploration would be foregone. Loss of development potential would not be significant.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

Because 90 percent of the wildlife habitat in the WSA would be designated wilderness, the projected impacts of the Partial Wilderness Alternative would be the same as described for the All Wilderness Alternative.

With this alternative, some wildlife could benefit due to the preservation of solitude. Populations would remain low because water is a limiting factor for wildlife in this WSA.

Bighorn sheep may migrate into the area, but their numbers would remain low due to the limited availability of water.

There are no wildlife-related vegetation treatments or facilities planned within the WSA; therefore, habitat conditions would remain essentially unchanged in the future. This would be similar to the No Action/No Wilderness Alternative except there would be 62 acres less habitat disturbance from mineral activities.

The 32 acres of disturbance due to exploration of locatable mineral resources could impact wildlife populations in the same manner, but at a lesser magnitude than the No Action/No Wilderness Alternative.

Peregrine falcon habitat would remain the same in much of the WSA, except on those 32 acres of mineral disturbance. This area would be avoided by the species. Because necessary measures would be taken to protect this species (as well as other special status species), as described for the No Action/No Wilderness Alternative, these species would not be adversely affected by wilderness designation but would benefit from solitude and reduction of potential surface disturbance.

Conclusion: Population levels would remain the same as at present. Wildlife would be protected by reducing the potential for disturbance and activity on 10 percent of the WSA. Impacts on endangered, threatened, or other special status species would not be significant.

- Impacts on Cultural Resources

Sixteen of the recorded sites are located in the designated portion and would receive protection under wilderness management. Minimal surface disturbance is expected in the short term and the entire designated portion would be closed to mineral location and leasing. The 46,120 acres composing the wilderness area would be closed to all vehicular access; thus, recorded and unrecorded sites would be protected from any potential damage due to vehicular traffic.

The remaining three recorded sites and all unrecorded sites in the nondesignated portion would be protected by existing Federal and State antiquities laws. The nondesignated area would remain open to mineral location and leasing, but degree and potential impacts to cultural resources are unknown. Only 10 acres of surface disturbance is expected in the short term. Any development would be preceded by appropriate inventory and mitigation procedures.

# MANCOS MESA WSA

**Conclusion:** Sixteen of the 17 recorded sites would receive protection from wilderness designation under this alternative. Sites in the nondesignated portion would continue to receive protection under existing laws.



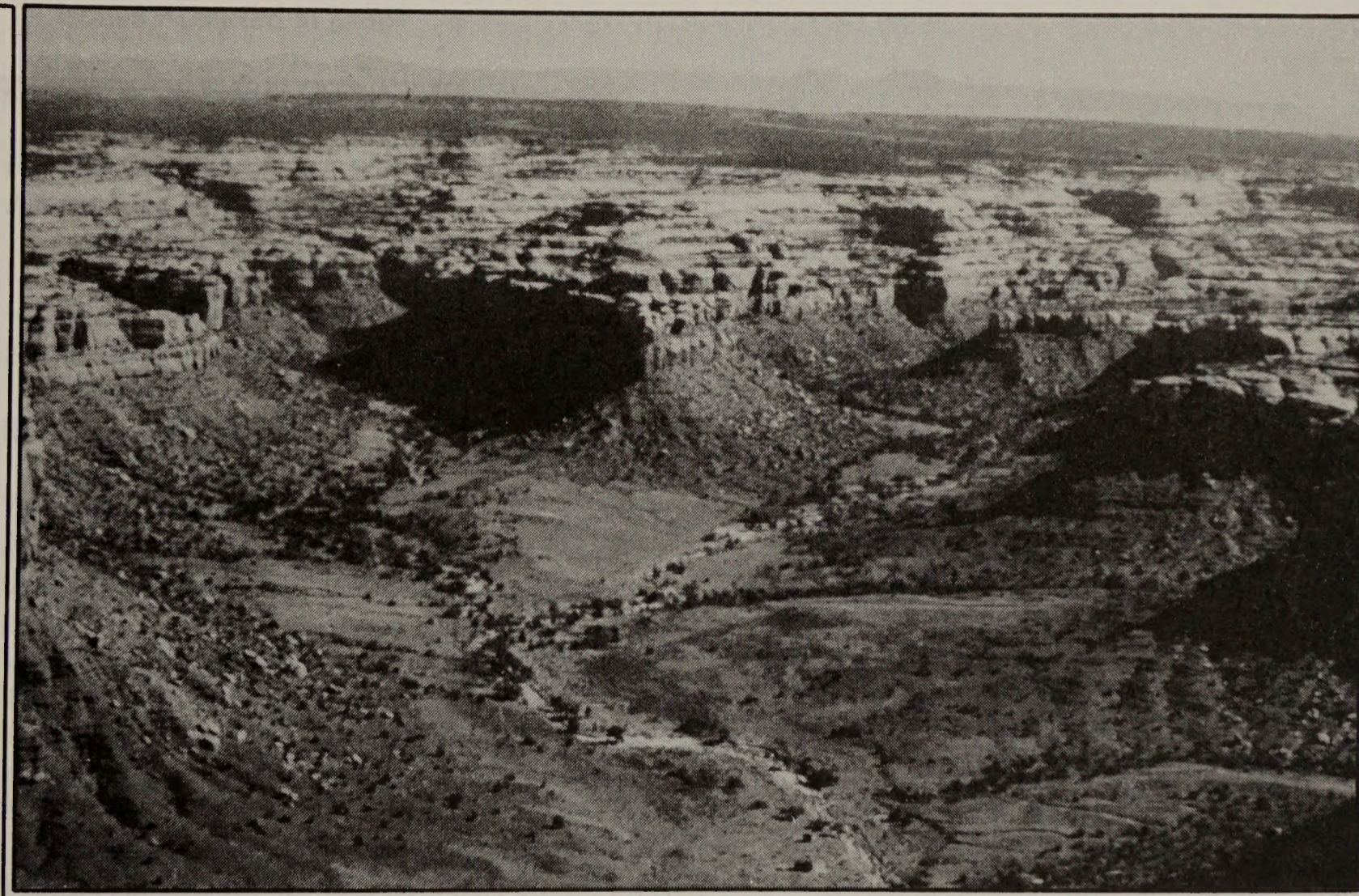
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# Grand Gulch Complex



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# GRAND GULCH ISA COMPLEX

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# GRAND GULCH ISA COMPLEX

## INTRODUCTION

### General Description of the Area

The Grand Gulch Instant Study Area (ISA) consists of the existing Grand Gulch Primitive Area (37,580 acres). Contiguous with that area are the Pine Canyon WSA (10,890 acres), Bullet Canyon WSA (8,520 acres), Sheiks Flat WSA (3,140 acres), and Slickhorn Canyon WSA (45,390 acres). The ISA and the four WSAs total 105,520 acres of public land. For ease of reference, the entire area is referred to in this document as the Grand Gulch Complex, ISA Complex, or ISA. Variations in reported acreage between this document and the BLM Intensive Wilderness Inventory (USDI, BLM, 1980) are due to recomputations for more accurate measurement methods in this EIS. Four State sections (2,400 acres) are within the boundaries but not included in the ISA Complex. The unit is located in San Juan County, Utah, about 45 miles west-southwest of Blanding.

Generally the ISA Complex is bounded by the historic Hole-in-the-Rock Trail on the north, the Glen Canyon NRA on the south, and a combination of roads and legal subdivisions on the east and west. This forms a configuration that is about 19 miles north to south and 16 miles east to west. The excluded cherry-stemmed Polly's Mesa loop road intrudes into the center of this configuration. The land enclosed in the loop is not part of the ISA Complex.

The ISA Complex is composed of three major canyons: Grand Gulch, Slickhorn, and John's, along with their tributaries and sloping mesas.

Grand Gulch itself meanders over 53 miles to cover a distance of perhaps 21 air miles. It is a major tributary canyon of the San Juan River. The creek bed is 400 to 600 feet deep, enclosed by sheer red rock cliffs, overhangs, arches, knobs, and alcoves. Ancient Indian cliff dwellings are tucked among ledges on the cliffs, and pictographs are found in numerous places within the canyon system.

The desert canyon system in the Grand Gulch Complex creates a network of canyons over 190 miles in total length. Some of these canyons rival Grand Gulch in depth. Grand Gulch is joined by Kane Gulch near its head. Also grouped near the head along the next several miles are Long, Todie, Coyote, and Sheiks Canyons. Bullet Canyon, a major canyon with cliff dwellings

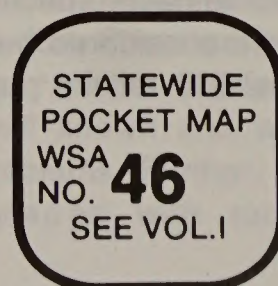
and a popular hiking route into Grand Gulch, enters a few miles south of Sheiks Canyon. Where Bullet meets Grand Gulch, both canyons are nearly 600 feet deep and only 0.5 mile wide. In the next 16 miles Grand Gulch is joined by seven tributaries, each offering interesting exploring possibilities to recreationists. The most significant of these canyons is Polly's Canyon, which enters the Gulch at Polly's Island. The walls of this canyon are sheer, sometimes overhanging in the lower few miles, terraced near the junction of its two forks. They narrow considerably in the upper forks before finally reaching the plateau of Polly's Mesa.

Below the junction with Collins Canyon, Grand Gulch is joined by a maze of at least 10 unnamed canyons.

Slickhorn Canyon is about 9 miles long through the unit, continuing 3 miles through Glen Canyon NRA to the San Juan River. It is over 700 feet deep at the Glen Canyon NRA boundary and 400 feet deep in the upper ends. The canyon is narrow throughout its entire length, with sheer sandstone walls in places and broken walls with only short vertical faces in other areas. Boulders, cottonwoods, and scrub oak are found in the narrow meandering canyon bottom.

The complex of drainages in the upper half of John's Canyon contrasts sharply with the wide open valley of lower John's Canyon. The upper canyons are narrow with pinyon pine, juniper, oak, shrubs, slick-rock, and some pouroffs.

Annual precipitation ranges from 8 inches to 14 inches in the ISA Complex. January, May, and June are the driest months. July, August, and December are the wettest months. Annual total snowfall ranges from 10 to 40 inches. The intense rainfalls and large expanses of slickrock in the ISA Complex produce rapid runoff and flash floods. Depending on elevation, the average annual temperature is 51 to 57 degrees Fahrenheit (F); the average annual low temperature is 37 to 43 degrees F and the average annual high temperature is 65 to 71 degrees F.



# GRAND GULCH ISA COMPLEX

## Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume V, the following changes specific to the WSA have been made since publication of the Draft EIS.

1. Small portions of the boundary of the WSA have been redrawn to correct errors in the Draft EIS maps. Changes include the additions of cherry-stemmed roads in T 39 S., R. 16 W. and R. 17 W.; and slight adjustments to the boundary in T. 40 S., R. 18 E., sec. 32; and T. 39 S., R. 17 E., sec. 8. These changes are minor and did not require acreage adjustments because acreage calculations were based on the boundaries as shown in the BLM wilderness inventory document and Final EIS.

2. The number and type of existing and proposed rangeland developments reported in the Draft EIS was in error. Revisions have been made.

3. The anticipated surface disturbance presented in the Draft EIS (4,765 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities projected to be feasible within the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of surface disturbance estimates from the 4,765 acres reported in the Draft EIS to 1,684 acres of surface disturbance for the Final EIS. Approximately 1,660 acres of the projected disturbance would be burning or chemical treatment of vegetation reseeding and without physical destruction of 3 soil horizons.

## Specific Issues Identified Through Scoping and Public Comment

### • Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume V (i.e., impacts on air quality, geology and topography, water rights, and land use plans and policies), the following issues or impacts specific to the Grand Gulch ISA Complex were considered but are not analyzed in detail in the Final EIS for the reasons described below).

1. Soils: The public is concerned that without wilderness designation future activities in the ISA Complex would result in soil disturbance and increases in soil erosion and loss of soil fertility. Because the disturbance estimate for the WSA has been reduced from 4,765 acres to 24 acres in the Final EIS, only less than 0.03 percent of the WSA would be disturbed and reclamation would be required.

Perennial streams or other natural water sources are lacking in the WSA. Therefore, there would not be secondary impacts to water quality and sediment yield from the WSA would not increase. Therefore, impacts on soils are not a significant issue for the Grand Gulch ISA.

2. Water Resources: The public is concerned that wilderness designation would interfere with development of existing water rights and that future developments could also increase sediment yield and affect water quality. There are no perennial streams in the ISA Complex and disturbance of soil would occur on only 24 acres. Potential water uses include livestock, recreation and wildlife, and these uses would be compatible with wilderness management. Therefore, impacts on water uses and quality are not significant issues for the Grand Gulch ISA Complex and they are not discussed in detail in the Final EIS.

3. Vegetation Including Special Status Species: Estimates of surface disturbance without wilderness designation have been revised downward from the 4,765 acres reported in the Draft EIS to 24 acres of soil disturbance and 1,660 acres of controlled burn or chemical treatment of previously railed and seeded sagebrush communities that are being reinvaded by sagebrush. Given this new scenario, the impacts of direct disturbance of vegetation would be reduced and would not be significant with any of the alternatives (less than 0.01 percent of the ISA Complex). The natural vegetation in the areas proposed for vegetation treatments have already been disturbed. There are no threatened, endangered, or proposed threatened or endangered plant species known to occur within the ISA Complex. The other special status plant species that may occur grow in pinyon-juniper woodland and black brush communities or in alcoves and hanging gardens that would not be affected by vegetation treatments. In any event, BLM would conduct site-specific clearances of potentially disturbed areas and consult with the FWS concerning impacts on threatened or endangered plant species. Therefore, impacts on vegetation are not analyzed in detail for the Grand Gulch ISA Complex.

# GRAND GULCH ISA COMPLEX

4. Forest Resources: The Navajo Indian Tribe has expressed concern that prohibition of firewood cutting on Cedar Mesa would adversely affect the availability of fuel wood for the reservation. The Grand Gulch ISA Complex is estimated to contain about 12,200 cords of firewood. However, the area produces less than 20 cubic feet of firewood per acre and 34 percent of the ISA Complex is already closed to firewood harvest by the South San Juan MFP. Additionally, the bulk of the fuelwood for the reservation comes from the National Forest above the BLM WSAs on Cedar Mesa. Only minimal firewood or other forest products have been harvested from the WSA, mainly along Highway 126 and the Polly's Pasture cherry-stemmed road where there is easy access. For these reasons, impacts on forest resources are not significant issues for analysis in the Final EIS.

5. Visual Resources: As discussed above, only 24 acres of new surface disturbance are projected for the ISA Complex in the Final EIS. This level of disturbance (less than .03 percent of the area) would not significantly alter visual resources. The proposed 1,660 acres of burn and chemical treatment of vegetation would be in existing chainings, but would be noticeable. Impacts would be in VRM Class III areas and management objectives would be met. Because impacts on visual resources would mainly affect the wilderness value of naturalness, impacts on visual resources are not addressed in the Final EIS as a separate topic, but are addressed as part of the analysis of naturalness and special features in the Wilderness Values sections.

## • Issues Analyzed in Detail

The significant issues for the Grand Gulch ISA Complex are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on mineral exploration and production.
3. Impacts on wildlife habitat and populations including special status species.
4. Impacts on livestock management, including opportunities for rangeland developments.
5. Impacts on the preservation of cultural resources.

6. Impacts on recreational use.

7. Impacts on local economic conditions.

Comments made during the public comment period for the Draft EIS centered mainly on:

1. The adequacy of BLM wilderness inventory.
2. The incorporation of State lands into the ISA Complex.
3. BLM's ratings of hydrocarbon and other mineral potentials in the ISA.
4. The analysis of impacts on livestock grazing.
5. The affect of wilderness designation on cultural resource management.
6. The management of the land inside the Polly Pasture loop road.
7. Compatibility of wilderness designation and recommended wilderness in the Glen Canyon NRA.
8. Inconsistency in the treatment of roads and ways.
9. Mapping errors and inconsistencies in BLM maps of the area.

See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 46, for responses to specific comments about Grand Gulch.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated From Detailed Study

During scoping and public comments, three additional alternatives were suggested. Two would have expanded the boundary on the west side of the Grand Gulch ISA Complex to add between 25,600 and 30,600 acres to the Complex. The other suggestion would have focused an alternative on important archaeological values in the area. The two added acreage alternatives were not analyzed in detail because the west boundary of the ISA Complex (which is the same as the west boundary of the existing Grand Gulch Primitive Area) is well known and well marked, with few management problems. Further, the area west of the boundary is scarred with roads and trails and,

# GRAND GULCH ISA COMPLEX

therefore, lacks wilderness characteristics. The second suggestion was also not adopted because archaeological values of potential National Register quality are found throughout the entire region. It would not be possible to develop an alternative based solely on archaeological values. However, impacts on cultural resources are considered as an issue for alternatives that are analyzed.

## Alternatives Analyzed

Three alternatives are analyzed for this ISA Complex: (1) No Action/No Wilderness; (2) All Wilderness (Proposed Action) (105,520 acres); and (3) Partial Wilderness (37,580 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case. The analysis assumptions presented in the Introduction to Volume V are also applicable.

### • No Action/No Wilderness Alternative

With this alternative, none of the 105,520-acre Grand Gulch ISA Complex would be designated by Congress as part of the NWPS. Although BLM's land use plans are regularly updated, it is assumed that the area would continue to be managed in accordance with the South San Juan MFP (USDI, BLM, 1971). That plan will be superseded by the San Juan RMP in the future. However, the San Juan RMP is under protest. Therefore, the final provisions of the plan and the date of completion are unknown.

The Grand Gulch primitive area is currently withdrawn from disposal, mining claim location, and surface use and occupancy.

The four sections (2,400 acres) of State land within the ISA Complex (refer to Map 1) has not been identified in the MFP for special Federal acquisition through exchange or purchase.

### • Management Conditions and Constraints

About 67,940 acres of the ISA Complex would remain open to mineral location and sale. The Grand Gulch Primitive Area (37,580 acres) would remain closed to mineral location and sale. No mining claims are located in the ISA Complex. Development work, extraction, and patenting would be allowed on future mining claims and would be regulated by unnecessary or undue degradation regu-

lations (43 CFR 3809) without concern for wilderness values. Because there is little or no potential for locatable minerals, development of mining claims is not expected. Eight existing post-FLPMA oil and gas leases (1,060 acres) could be developed under stipulations issued at time of leasing. Future leases could be developed under leasing Category 2 (special stipulations) on 41,172 acres and Category 3 (no surface occupancy) on 15,165 acres. Some 49,183 acres (including the 37,580-acre Grand Gulch Primitive Area) would be closed to oil and gas leasing (Category 4). Although minerals would be managed as described, only limited oil and gas exploration activities are expected in the foreseeable future. Development of oil and gas or other resources is not projected because the level of known resources and their probability of development are too low to support a development assumption (refer to Appendix 6 in Volume I).

The present domestic livestock grazing use (estimated 1,930 AUMs) in the ISA Complex would continue as authorized. Access to and use of fourteen reservoirs, three seedings totaling 1,900 acres, four spring developments, and 5 miles of fence would continue. Proposed rangeland developments, three spring developments, and 2.5 miles of water pipeline would be allowed without wilderness considerations. Approximately 1,660 acres of planned controlled burning and chemical treatment to maintain and improve existing seedings would also be allowed outside the existing Grand Gulch primitive area.

About 67,940 acres of the ISA Complex, including 15 miles of vehicular ways, would be open to ORV use. The Grand Gulch Primitive Area (37,580 acres), including 15 miles of vehicular ways, would remain closed to ORV use. ORV use is not expected to increase significantly in the open area because of restrictive terrain.

About 67,940 acres of the ISA Complex would be open to woodland product harvest. The 37,580 acres in the Grand Gulch Primitive Area would remain closed to woodland harvest. There is minimal harvest of forest products at the present time along access routes, and this would continue in the future. Increased use is not expected because of the better availability of firewood on other areas near the WSA.

The area would continue to be managed under VRM Class I on 37,580 acres, Class II on 20,140



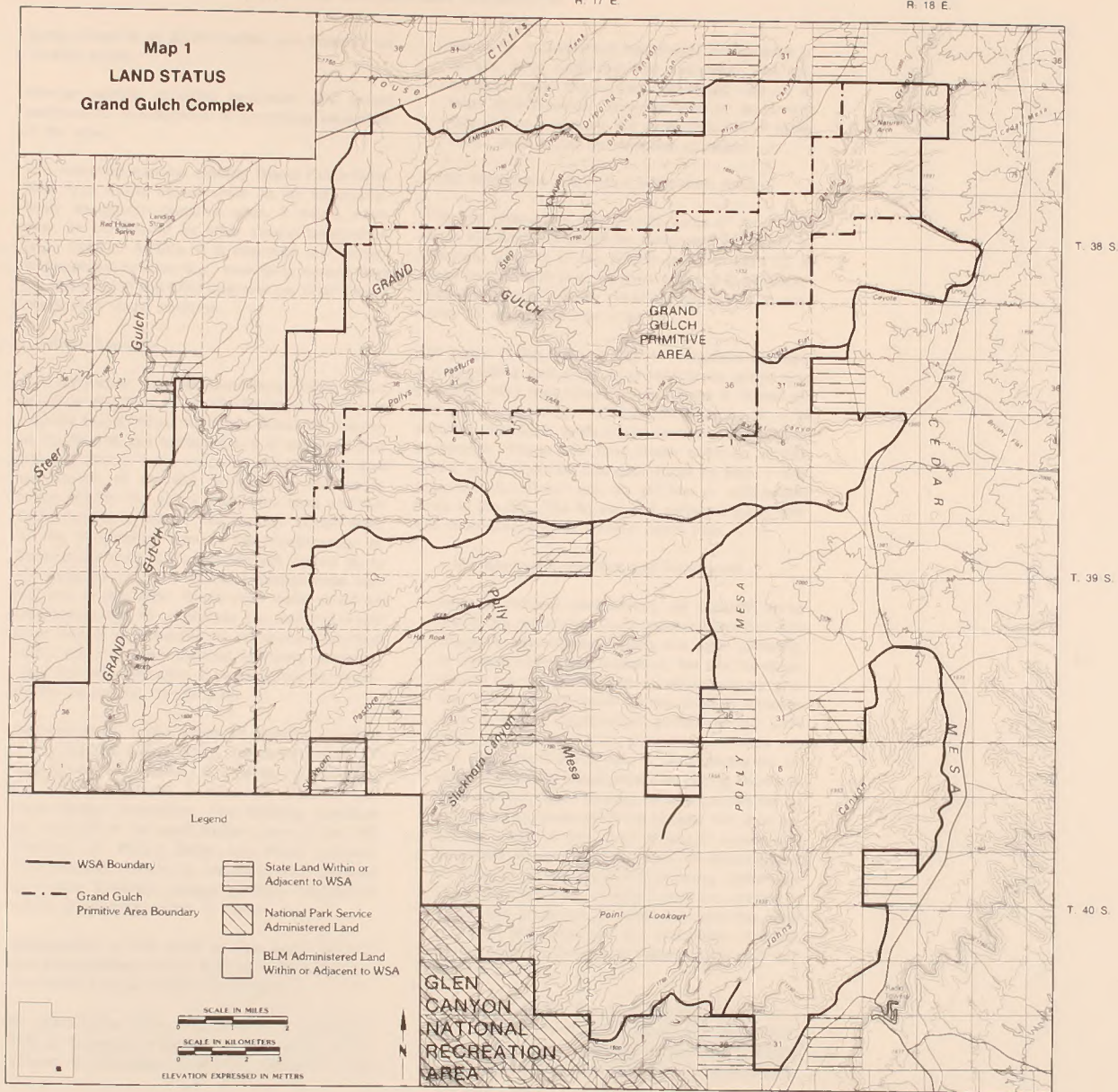
# GRAND GULCH COMPLEX

R. 16 E

R. 17 E

R. 18 E

**Map 1**  
**LAND STATUS**  
**Grand Gulch Complex**



T. 38 S.

T. 39 S.

T. 40 S.



# GRAND GULCH ISA COMPLEX

acres, Class III on 32,400 acres, and Class IV on 15,400 acres.

Ranger patrols, including helicopter use, would continue for the purpose of controlling vandalism in the area.

It is assumed that the existing Grand Gulch Primitive Area would not continue as an administratively designated primitive area. It would, however, be considered for other special designation (e.g., ONA or ACEC). It is assumed that current management actions (e.g., closure to mineral leasing and location and ORV use) and the VRM Class I designation would continue.

- Action Scenario

It is projected that approximately 1,684 acres would be disturbed in the ISA Complex in the foreseeable future. About 20 acres would be disturbed by oil and gas exploration. It is assumed that two exploratory wells would be drilled in the eastern portion of the ISA Complex in accessible areas outside the existing primitive area and the major canyon systems. The location of drill sites will be determined through the interpretation of geophysical data. Each location will disturb up to 10 acres for up to 4 miles of access road and drill pad construction. Exploration wells would employ average of 10 employees per well and would take from 3 to 6 months to complete. Disturbed areas would be rehabilitated following abandonment and approximately 2 years would be required for successful revegetation.

Approximately 1,660 acres of existing seeding that are being reinvaded by sagebrush would be maintained by controlled burning or chemical (herbicide) treatment in order to improve livestock forage production. The existing seedings are located in the southeastern part of the ISA Complex on Polly's Mesa and Point Lookout. Treated areas would be reseeded with grasses and other livestock forage species. Vegetation would re-establish within 2 years.

Construction of 2.5 miles of new water pipeline and three planned spring developments would disturb about 4 acres of the ISA Complex.

No disturbance from ORV activity is projected. This is because vehicular activity would be restricted to 15 miles of existing vehicular ways

either by management constraints or because of terrain. It is projected that recreation use will increase over the current estimated use of at least 22,800 visitor days per year at an annual rate of 2 to 7 percent. No more than 100 of these visitor days would be vehicular in nature.

- All Wilderness Alternative (Proposed Action)

With this alternative, all 105,520 acres of the Grand Gulch ISA Complex would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character.

The policy of the State of Utah is to reserve its position regarding exchange of in-held lands within any particular WSA (see Chapter 1 in Volume I). Based on this policy regarding exchange of State lands, it is assumed that State lands would remain under existing ownership. There are four State sections (2,400 acres) within the ISA Complex (refer to Map 1 and Appendix 3). There are no private or split-estate lands in the ISA. The figures and acreages given with this alternative are for Federal lands only.

- Management Conditions and Constraints

After wilderness designation, all 105,520 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Currently, no mining claims are located in the ISA Complex. Should any be located prior to wilderness designation, developments would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) with consideration given to wilderness values. Because there is little or no potential for locatable minerals, development of mining claims is not expected. Eight existing oil and gas leases involving 1,060 acres would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown. Exploration or development of minerals is not expected following wilderness designation because existing leases are subject to wilderness protection requirements and the level of known resources and this probability of these development are too low to support a development assumption.

Present domestic livestock grazing would continue as authorized in the South San Juan MFP. The estimated 1,930 AUMs in the ISA Complex would remain available to livestock as presently

## GRAND GULCH ISA COMPLEX

allotted. Use and maintenance of 14 reservoirs, three seedings totaling 1,900 acres, four spring developments, and 5 miles of fence would continue in the same manner as in the past based on practical necessity and reasonableness. It is assumed that the proposed 2.5 miles of water pipeline and three spring developments would be designed and installed consistent with wilderness protection criteria. The approximately 1,660 acres of planned controlled burn and chemical treatment would not be allowed following wilderness designation. It is assumed that maintenance of existing seedings would be restricted to use of hand tools and equipment.

The entire ISA Complex would be closed to ORV use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR 8560 provisions; or (2) for occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. About 30 miles of existing vehicular ways in the ISA Complex would not be available for vehicular use except as indicated above. The approximately 23 miles of paved and unpaved roads and trails that border the ISA Complex and approximately 5 miles of cherry-stemmed roads would remain open to vehicular use.

Ranger patrols, including use of helicopters, would be addressed in a Wilderness Management Plan. It is assumed that such use would be continued in the wilderness area for the purpose of controlling vandalism.

Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means for use in the wilderness.

Visual resources would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

- Action Scenario

Approximately 4 acres of disturbance are projected following wilderness designation for three spring developments and construction of 2.5 miles of small diameter water pipeline.

No disturbance is projected for ORV use because such use will be eliminated by management constraints as well as by terrain.

It is projected that primitive recreation use will increase over the current estimated use of at least 22,800 visitor days per year at an annual rate of 2 to 7 percent.

- Partial Wilderness Alternative

With this alternative, 37,580 acres of the Grand Gulch ISA Complex would be designated as wilderness (refer to Map 3). The objective of this alternative is to analyze the option of designating only the existing BLM Grand Gulch Primitive Area. The remaining 67,940 acres in the ISA Complex would be managed in accordance with the South San Juan MFP, as described for the No Action/No Wilderness Alternative. The 37,580 acres designated as wilderness would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560), as described in the All Wilderness Alternative. No State or private lands are located in the area that would be designated wilderness with this alternative. The figures and acreages given for this alternative are for Federal lands only.

- Management Conditions and Constraints

The 37,580-acre wilderness would continue to be closed to mineral entry, leasing, and sale. There are no mining claims or leases located in the area. The 67,940 acres not designated wilderness would be open to mineral location and sale. Development work, extraction, and patenting of future mining claims (none currently exist) could occur. Because there is little or no potential for locatable minerals in the WSA, development of claims is not expected. Development of eight existing oil and gas leases (1,060 acres) and future leases could occur without concern for wilderness values. The area not designated wilderness would be managed as oil and gas leasing Category 2 (special stipulations) on 41,172 acres and Category 3 (no surface occupancy) on 15,165 acres. Approximately 11,603 acres would be in Category 4 (no leasing). Although minerals would be managed as described, only limited oil and gas exploration is projected for the nondesignated area. Development of oil and gas or other minerals is not projected because the level of known resources and the probability of their development is too low to support a development assumption.

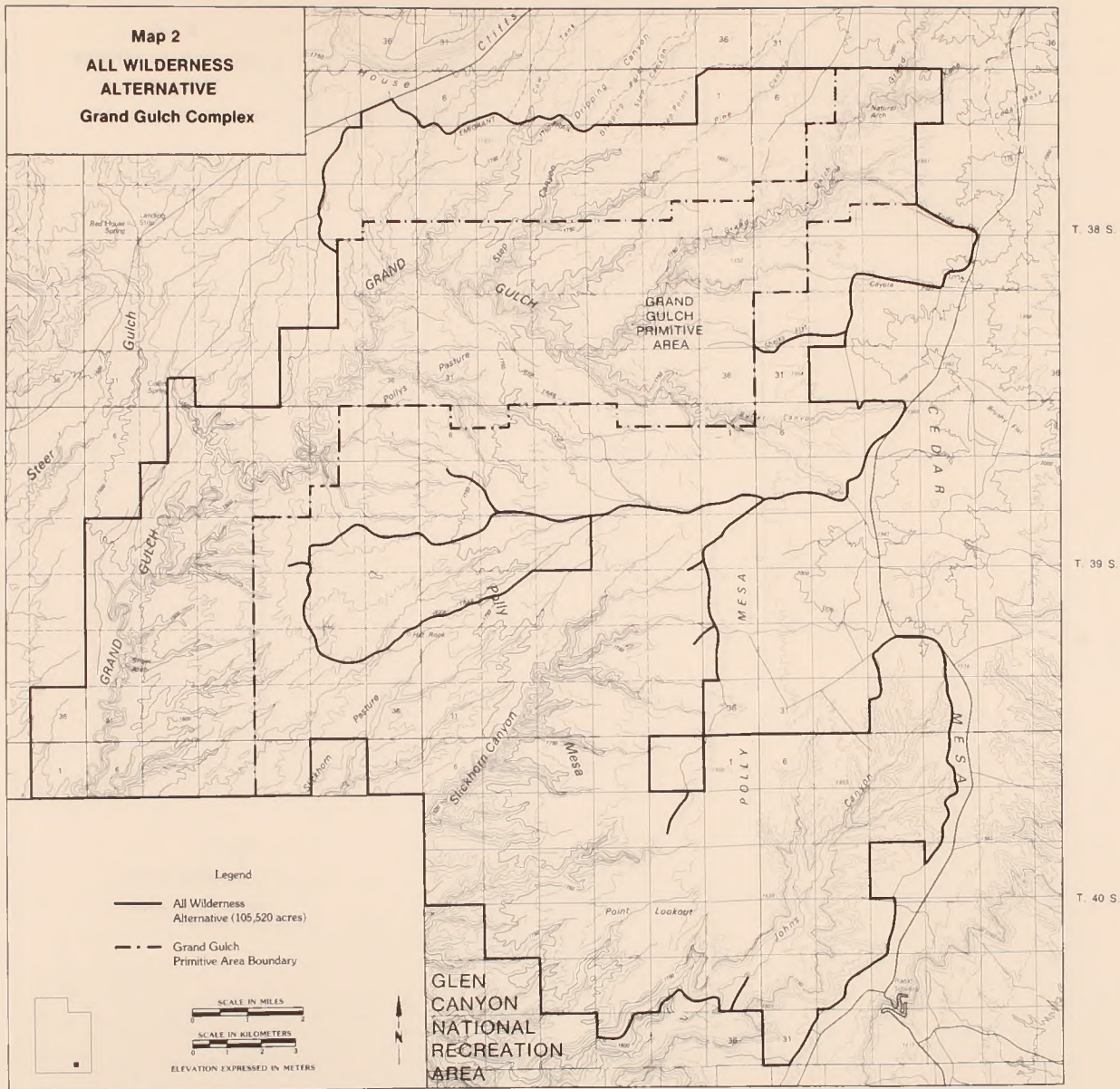
# GRAND GULCH COMPLEX

R 16 E

R 17 E

R 18 E

**Map 2**  
**ALL WILDERNESS**  
**ALTERNATIVE**  
**Grand Gulch Complex**



T. 38 S

T. 39 S

T. 40 S



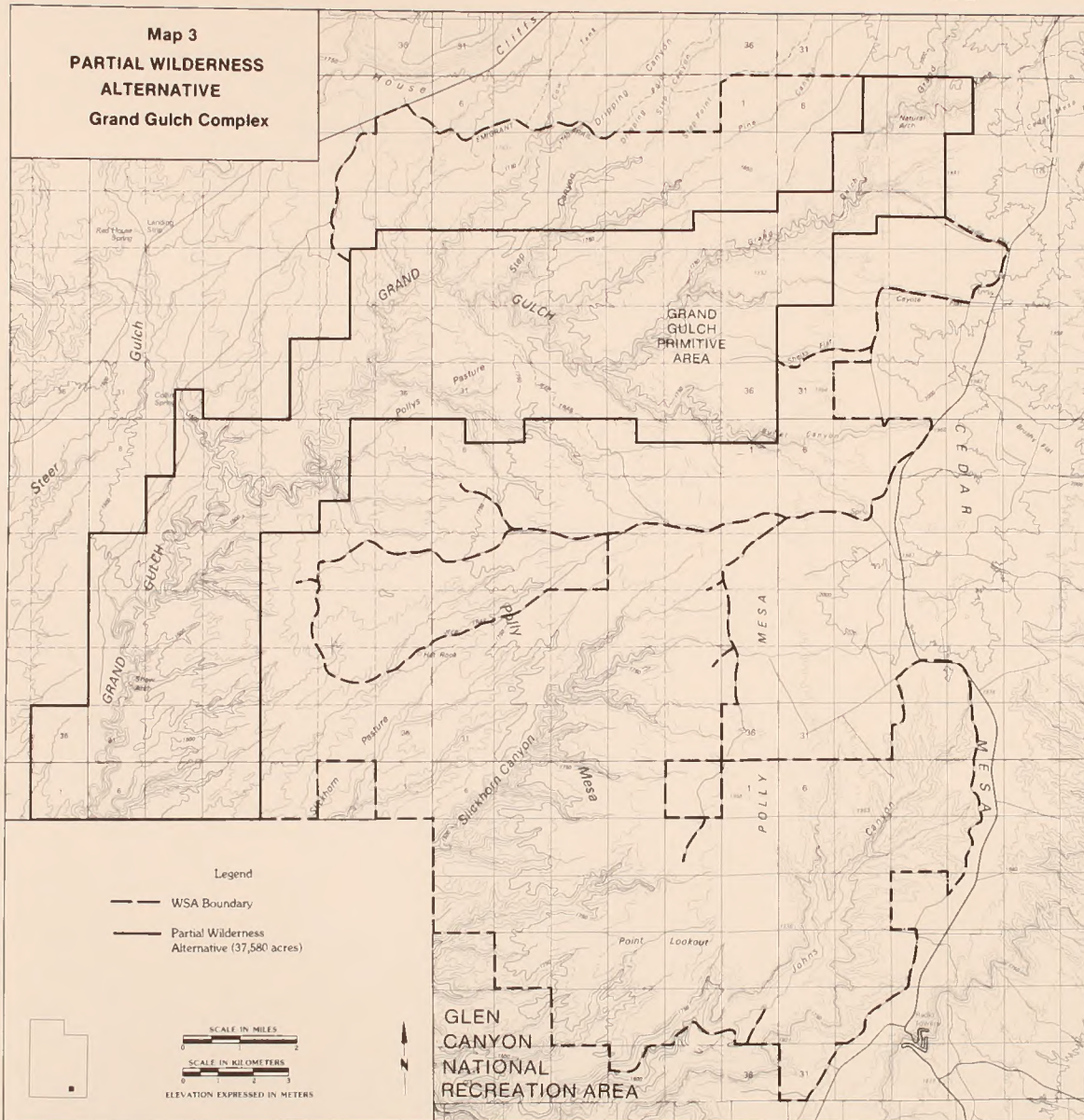
# GRAND GULCH COMPLEX

R. 16 E

R. 17 E

R. 18 E

## Map 3 PARTIAL WILDERNESS ALTERNATIVE Grand Gulch Complex



T. 38 S.

T. 39 S.

T. 40 S.





# GRAND GULCH ISA COMPLEX

Domestic livestock grazing would continue as authorized. The estimated 503 AUMs of use in the wilderness area would continue. In the wilderness portion there are one existing reservoir, one existing spring development, and 0.3 mile of fence that could continue to be used and maintained in the same manner as in the past based on practical necessity and reasonableness. It is assumed that 0.3 mile of pipeline proposed in this area would be designed and installed consistent with wilderness protection criteria. In the 67,940-acre nonwilderness area, current grazing use of an estimated 1,427 AUMs and maintenance of existing improvements would also continue as authorized. The 1,660 acres of proposed vegetation treatments, the proposed three spring developments and 2.2 miles of pipeline would be allowed without wilderness considerations.

The 37,580-acre wilderness would continue to be closed to ORV use. The remainder of the unit would remain open to vehicular travel. About 15 miles of existing vehicular ways within the wilderness portion would continue to be closed to vehicular use except for purposes identified under the All Wilderness Alternative. The undesignated area would remain open to vehicular use. The 15 miles of ways in this portion could continue to be used for motorized access. Use of ORVs in this area is not expected to increase significantly because of restrictive terrain. It is assumed that ranger patrols, including helicopter use, would continue in the wilderness area to control vandalism of cultural resources.

Harvest of forest products in the wilderness area would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means for use in the wilderness. The area not designated wilderness would be open to woodland harvest. There is minimal harvest in the vicinity of access roads and this use would likely continue.

Visual resources in the wilderness area would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The area not designated as wilderness would be managed as VRM Class II on 20,140 acres, Class III on 32,400 acres, and Class IV on 15,400 acres.

## • Action Scenario

It is projected that with the Partial Wilderness Alternative there would be about 1 acre of surface disturbance in the designated area associated with construction of 0.3 miles of a small diameter water pipeline.

Approximately 1,683 acres would be disturbed in the nondesignated portion of the WSA in the foreseeable future. About 20 acres would be disturbed by oil and gas exploration as discussed for the No Action/No Wilderness Alternative. It is projected that two exploratory wells would be drilled in accessible areas in the eastern portion of the ISA Complex outside the major canyon systems where the area is open to surface occupancy. The location of the drill sites will be determined through the interpretation of geophysical data. Exploration would employ an average of 10 employees and would take from 3 to 6 months to complete. Disturbed areas would be rehabilitated following abandonment and approximately 2 years would be required for successful revegetation.

Approximately 1,660 acres of existing seeding that are being reinvaded by sagebrush would be maintained by controlled burning or chemical (herbicide) treatment in order to improve livestock forage production. The existing seedings are located in the southeastern part of the nondesignated area on Polly's Mesa and Point Lookout. Treated areas would be reseeded with grasses and other livestock forage species. Vegetation would reestablish within 2 years.

Construction of 2.2 miles of new water pipeline and three planned spring developments would disturb about 3 acres of the nondesignated area.

No disturbance is projected from ORV activity. This is because ORV activity would be restricted to 15 miles of existing vehicular ways either by management constraints or by terrain.

Recreation use is projected to increase over the current estimated annual 22,800 visitor days of use at an annual rate of 2 to 7 percent. No more than 100 of these visitor days would be vehicular in nature.

# GRAND GULCH ISA COMPLEX

## Summary of Environmental Consequences

Table 1 summarizes the environmental impacts of the alternatives analyzed in detail.

## AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

### Wilderness Values

#### • Size

The ISA Complex, at 105,520 acres (Grand Gulch, 37,580 acres; Pine Canyon, 10,890 acres; Bullet Canyon, 8,520 acres; Sheiks Flat, 3,140 acres; and Slickhorn Canyon, 45,390 acres), is of such size as to enhance the wilderness values present. The ISA Complex is approximately 19 miles north to south and approximately 16 miles east to west.

#### • Naturalness

Imprints of man within the ISA Complex are mostly limited to rangeland developments (such as fences, livestock reservoirs, developed springs, and vegetation treatments) and vehicle ways. Major imprints were excluded by boundary adjustments during the BLM Intensive Wilderness Inventory. Those remaining imprints, including five reclaimed oil and gas test well sites, are not substantially noticeable within the ISA Complex as a whole.

Very few imprints of human activities are present in the Grand Gulch ISA. These are limited to some trail improvements in the side canyons, a number of closed ways on the plateaus, a few trail signs, and two portable radio repeater installations. There has also been stabilization of ruins at some cultural sites. These imprints are discussed below.

1. A way beyond Collins Spring trailhead parking area, 5.5 miles in length, travels along the southwest rim of Grand Gulch. This way goes over slickrock and

cuts through blackbrush. The way is visible from high points near it.

2. A way leading to an old seismic line is 1.75 miles long. This way is cut through desert shrub vegetation and so is noticeable only from an airplane or when traveling upon the way. The shrubs effectively screen the way from being noticed from the ground at a distance of 25 feet or more.

3. A way just north of way No. 2, extending 1.5 miles into the unit, is probably associated with past seismic work. Portions of the way may actually be the seismic line. The first part of this way, as it passes through rolling grassland, is noticeable in the area. Toward the end of the way, it becomes less used and less noticeable.

4. From a reservoir, a way extends 2 miles into the unit, ending at Grand Gulch rim. The way winds among pinyon-juniper along the rim of Coyote Canyon. Cryptogamic soil has started to return to sections of the tracks, and in places the way is difficult to find.

5. From Sheiks Flat, a way extends 2 miles into the unit, ending on Bullet Canyon rim. This was once a constructed way, but now is deteriorated to two-wheel tracks through the sage and pinyon-juniper. It is especially unnoticeable where it leaves the Sheiks Flat road.

6. Hardscrabble Way travels across northern Polly's Pasture for 2 miles to a small side canyon of Grand Gulch. Past the reservoir, this way is very seldom used; in places only one-wheel track is maintained by the passage of livestock.

7. On southern Polly's Mesa is a way leading to Government Trail which passes 0.75 mile through the unit. This way is similarly maintained by the passage of livestock and hikers.

Trail improvements in three locations were completed in the ISA Complex during the 1950s and 1960 by blasting of short sections of slickrock.

Collins Spring Canyon blasting is the most substantial, involving 75 feet of trail across slickrock around a pourover. The blasting at Kane Gulch and Government Trail is not evident to most hikers.

Other imprints are one reservoir in Section 32, just off Hardscrabble Way, and old seismic lines and spots near the ways in the western part of the unit.

# GRAND GULCH ISA COMPLEX

Table 1  
Summary of Environmental Consequences

		Alternatives	
Resources	No Action/No Wilderness	All Wilderness (105,520 Acres) (Proposed Action)	Partial Wilderness (37,580 Acres)
Impacts on Wilderness Values	Wilderness values would not be protected by wilderness designation and loss would increase as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 1,684 acres and indirectly reduced in quality on up to an additional 4,220 acres. The disturbance would be due to oil and gas exploration, vegetation treatments, and rangeland projects. Wilderness special features would not be significantly affected because of the relatively small area disturbed and required mitigation.	Wilderness designation would preserve wilderness values overall throughout the ISA. Naturalness and opportunities for solitude and primitive recreation would be directly and indirectly reduced in quality on much less than 1 percent (about 4 acres of direct disturbance and 10 acres of indirect disturbance) of the ISA by development of rangeland projects. Wilderness management criteria would be met and no wilderness values would be lost.	Implementation of this alternative would result in the same impacts as the No Action/No Wilderness Alternative.
Impacts on Mineral and Energy Exploration and Production	Exploration for oil and gas would be foregone on 61 percent of the ISA. There likely would not be a significant loss of oil and gas or other mineral production because of low probabilities of development.	The potential for oil and gas exploration would be foregone. This would not result in a significant loss of oil and gas recovery. Because mineral production is not currently occurring and the area has no known potential for locatable minerals, implementation of this alternative would not result in a significant impact to locatable mineral recovery.	With this alternative, impacts would be the same as for the No Action/No Wilderness Alternative.

# GRAND GULCH ISA COMPLEX

**Table 1 (Continued)  
Summary of Environmental Consequences**

		<u>Alternatives</u>	
<u>Resources</u>	<u>No Action/No Wilderness</u>	<u>All Wilderness (105,520 Acres) (Proposed Action)</u>	<u>Partial Wilderness (37,580 Acres)</u>
Impacts on Wildlife Habitat and Populations	Implementation of the land treatment and water development would increase wildlife diversity, populations, forage, and ecotones. Oil and gas exploration would displace some wildlife species on less than 1 percent of the ISA during the lifetime of these projects. Adverse impacts on endangered, threatened, or other special status species would not be significant because of required mitigation and the small area of projected disturbance. Bighorn sheep habitat would not be affected.	Wilderness designation would protect wildlife habitat from disturbance and maintain present wildlife populations through the preservation of solitude. Opportunities to provide vegetation, diversity, and additional forage that would benefit big game and certain nongame species would be precluded.	Impacts would be the same as with the No Action/No Wilderness Alternative because administration of the area and projected and planned activities would be the same for both alternatives. However, the primitive area would receive statutory rather than administrative protection of wilderness values. The statutory designation would be much less subject to change in the future.
Impacts on Livestock Management	Few, if any, changes in livestock use or management techniques are expected with this alternative. Livestock management would not be affected by the No Action/No Wilderness Alternative because present access and management would continue.	Wilderness designation would result in an inconvenience and slightly increased cost of management for eight livestock operators. The potential for increases in forage production (390 AUMs) through vegetation treatment would be foregone.	Impacts would be the same as with the No Action/No Wilderness Alternative because administration of the area and projected and planned activities would be the same for both alternatives. However, the primitive area would receive statutory rather than administrative protection of wilderness values. The statutory designation would be much less subject to change in the future.

# GRAND GULCH ISA COMPLEX

Table 1 (Continued)  
Summary of Environmental Consequences

Resources	Alternatives	
	No Action/No Wilderness	All Wilderness (105,520 Acres) (Proposed Action)
Impacts on Cultural Resources	<p>Projected surface disturbance may damage significant cultural resources, however, impacts are expected to be minimal because most of the anticipated disturbance would be in previously disturbed areas. All sites in the unit would continue to receive protection under existing laws. Portions of the unit would continue to be open to vehicular access which may cause some secondary impacts. Vandalism may increase due to the attractive nature of the resources present. Cultural management would continue without regard to protection of wilderness values.</p>	<p>Sites would be protected from most intentional and unintentional damage. Increased recreational use and/or increased inaccessibility may increase certain types of vandalism, but the benefits of protection from disturbance and ORV use would probably outweigh potential losses. Cultural resource management practices may be restricted in order to protect other wilderness values.</p> <p>Impacts would be the same as with the No Action/No Wilderness Alternative.</p>
		Partial Wilderness (37,580 Acres)

# GRAND GULCH ISA COMPLEX

Table 1 (Continued)  
Summary of Environmental Consequences

Resources	Alternatives	
	No Action/No Wilderness	All Wilderness (105,520 Acres) (Proposed Action)
Impacts on Recreation	<p>Opportunities for primitive recreation would not be significantly reduced by surface disturbing activities because protected disturbance would be small in proportion to the WSA and would not be in the canyon systems that are used for primitive recreation. Primitive recreation use, including commercial outfitting would increase and may have to be controlled in order to ensure a high quality primitive recreational experience. Vehicular use of 15 miles of ways, presently involving less than 100 visitor days per year, would continue.</p>	<p>Opportunities for primitive recreation would be preserved. Vehicular use would be eliminated. Loss in opportunities for ORV use would not be significant because there is presently little vehicular use in the area (100 visitor days per year) and use is restricted by management and terrain.</p>
Impacts on Local Economic Conditions	<p>Present economic uses and trends would not be significantly affected. Recreation-related expenditures would contribute between \$176,169 and \$814,703 annually to the local economy. Federal revenues could be increased by as much as \$136,154 annually if unleased areas open to leasing were leased for oil and gas, if livestock use expanded to utilize 390 additional AUMs from vegetation treatments, and if commercial recreation use expands at 7 percent annually.</p>	<p>Present economic uses and trends would not be significantly affected. Recreation-related expenditures would contribute between \$176,169 and \$814,703 annually to the local economy. Potential Federal revenues would be about \$111,150 less per year than with the No Action/No Wilderness Alternative because oil and gas leasing and livestock use could not be expanded. Federal revenues from commercial recreation would be about the same as with the No Action/No Wilderness Alternative.</p>

## GRAND GULCH ISA COMPLEX

The most substantial human imprint within the Pine Canyon WSA is a way in the east portion that extends 2.5 miles into an old drill site. The way has been cut and bladed through dense pinyon-juniper, but does not now appear maintained by other than vehicle passage. Here and there vehicles have pulled off the way, probably for woodcutting. Minimal impact is created due to the screening provided by the dense pinyon-juniper in this area.

The Hole-in-the-Rock Trail, a rough jeep trail, forms the unit's northern boundary. Vehicle tracks extend from this trail in only a few places. A very little used way extends into the unit on Dripping Point. This way is difficult to follow. There are signs of seismic activity along this trail that are becoming hard to find.

In the western end of the Hole-in-the-Rock Trail there is a steel post-barbed wire fence with a gate. A historic drift fence lies within the unit in Dripping Canyon. This fence was made of piled juniper logs probably in the 1920s.

In the Bullet Canyon WSA imprints associated with grazing activities include four reservoirs, three feed troughs, three developed springs, two drift fences, and two railed areas. The sagebrush railings, completed about 1956, have regrown and are no longer noticeable. The four earthen dam stock reservoirs are all served by the boundary roads. Also, along the boundary within the unit are three metal feed troughs. The most developed spring is in the unit's extreme southeast in a shallow but steep-walled canyon. This improvement consists of a metal pipe, cement box, and wood/metal trough constructed in 1944. The drift fences may be historic and consist of piled juniper log fences; the one in the north has deteriorated to a no longer useful condition.

Along the unit's southern boundary road, six short seismic lines exist. The only one that is easily noticeable is the one across Bullet Canyon from the trailhead parking. This one is aligned up with the road on the north side of the canyon and cuts through dense pinyon-juniper woodland. The rest are substantially unnoticeable, having been cut through sage and sparse pinyon-juniper and revegetated over the years.

Across the west central part of the Bullet Canyon area, Hardscrabble Way travels across several washes to a reservoir just inside the Grand Gulch Primitive Area. A portion of this way is now signed Closed to Motorized Vehicle Travel.

There are two places where vehicle travel has created ways into the unit. They are in the eastern portion of the unit along the edge of Bullet Canyon. They both wind among the pinyon and juniper trees; the north side way is now used solely by hikers. The one on the south appears to be the result of firewood cutting.

Imprints in the Sheiks Flat WSA include a 26-year-old railing. The sagebrush has returned, obscuring most evidence of the railing. Two old seismic lines extend into the unit from the southern boundary road. These lines are well screened by pinyon-juniper forest and, hence, have little effect on overall naturalness. The four stock reservoirs are also substantially unnoticeable. A way leaves the unit from the reservoir at the extreme southwest corner. The only other imprint found was an old shepherd's structure north of the Coyote Flat road.

Imprints along the roads in northwest Slickhorn WSA are minimal within the unit and substantially unnoticeable. Near Government Trailhead, an old seismic line and old way are in the unit just north of the boundary road. This seismic line and way are well revegetated to the point of being difficult to find. Further west, a juniper pole-barbed wire fence extends perhaps 30 yards into the unit (north of the road). Near the end of the fence, a short (40-foot) livestock access has been bulldozed down to a spring.

In Section 14 of the northwest part of the Slickhorn Canyon WSA, just north of the Polly's Mesa loop road, there is an earthen dam stock reservoir with cattails growing in it. Nearby there are numerous cattle paths and a metal water trough. The reservoirs are all roughly 4 feet tall by 30 feet wide with a 30-foot by 50-foot reservoir area.

From the cherry-stemmed drill hole in Section 15, vehicle tracks extend 0.25 mile south into the unit. These tracks are substantially revegetated with grasses and small shrubs.

Another juniper pole-barbed wire fence is in Section 19. This fence extends across a narrow mesa top about 0.25 mile.

Finally, along the Polly's Mesa loop road, near its junction, a way leads 0.50 mile to an old corral. Here, a deteriorating wood fence encloses a small alcove, and below it is one of the previously mentioned reservoirs.

## GRAND GULCH ISA COMPLEX

In the north-central part of this ISA Complex there are two cherry-stemmed drill pads. In the creekbed just east of the most northern drill pad, a 10-foot stretch has been bulldozed to allow cattle access to a spring. This imprint is not noticeable because it is directly in the wash bottom.

In the south-central part of this unit, the Point Lookout fence angles between the third fork of Slickhorn Canyon and a westerly fork of John's Canyon. This fence was built in 1980 with steel posts and four strands of barbed wire. It extends through moderately dense pinyon-juniper for about 2 miles. Tree cuts are minimal, but there are vehicle tracks associated with its construction. The pinyon and juniper trees effectively screen views of the fence from any distance other than on the fence line.

Also in the Point Lookout area, at the south end of the cherry-stemmed county road, are three reservoirs located in Sections 10, 11, and 14. The one in Section 10 has a 3-foot-tall 15-foot-long berm to hold water in a slickrock depression. The dam in Section 11 is relatively large, being about 12 feet high by about 30 feet long, its pool area is also on slickrock. The reservoir in Section 14 is of approximately 40-foot diameter. In Section 11, a spring was at one time improved in the bottom of a shallow canyon. Now the improvements (two troughs and some pipeline) are largely dilapidated. A way connects the reservoir in Section 11 with the one in Section 14. This way is maintained solely by the passage of vehicles, mostly over slickrock. The Point Lookout reseeding of 640 acres was completed in 1963. Regrowth of sage has occurred obscuring the plant deadfall and the flat, open area still has much grass growth. The average visitor would probably not recognize this as a range plant manipulation project.

In the John's Canyon area, imprints are confined mainly to the mesa tops. However, in lower John's Canyon there is the old homestead site, a way, and an old steam drill hole. The homestead from the 1930s consists of a corral made of juniper poles with cables from the old drilling operation strung between them, the frame of a small tack shed, and two collapsed dugout structures. A juniper pole fenceline in disrepair, probably associated with this homestead, extends across the valley in this area. A large stand of cottonwood trees provides shade and aids in screening these impacts.

Up the valley of John's Canyon the passage of vehicles has created a way for 2.3 miles beyond the

cherry-stemmed road and drill pad in Section 25. The way crosses washes at three points, but for the most part consists of two-wheel ruts over grass and sage, with greasewood nearby. The way ends at an old cowboy camp with a fire pit and old rusted cans. Since this way crosses the wide-bottomed, open valley, it is visible from most any vantage point within 1 mile, especially the canyon rims.

In the west fork of John's Canyon, Section 18, there is a capped drill hole, pipes, and a few other steel pieces of equipment laying around. These are remnants of a steam-powered drilling operation in the early 1900s and have historic value. There have been several pinyon trees cut down in the area, probably for powering the steam drill. The access road was probably in the wash since there is no longer any sign of it.

The upper forks of John's Canyon are rugged and impassable to vehicles, although there are many access points for vehicles to the canyon rims from roads nearby and Highway 261. Off-road woodcutting seems to be responsible for most of the vehicle tracks along the rims. Along the rim of the westernmost fork of John's Canyon, the passage of vehicles has created six ways totalling about 4.7 miles into the unit. The ways wind among the pinyon and juniper trees and show up on the cryptogamic soil.

The eastern boundary way serves nine reservoirs, only two of which are on the west side of the way and within the unit. One reservoir is U-shaped and the dam is about 8 feet tall. The other has a 3-foot-tall dam and 25-foot-diameter reservoir.

Three short seismic reflection lines are on the mesa above John's Canyon. All three are less than 0.75 mile long. These lines have been cut through moderately dense pinyon-juniper forest; hence, they are seen easily from the air but screened well on the ground.

The Muley Point reseeding, in the extreme southeast portion of the WSA, was done at the same time as the Point Lookout reseeding and has similarly revegetated with sage although many grasses still thrive. As with the Point Lookout reseeding, this disturbance would not be obvious to the average visitor.

Two steel-pole/barbed-wire fences extend for very short distances into the unit on the rim of John's Canyon.



## GRAND GULCH ISA COMPLEX

Finally, a livestock trail has been bulldozed to a spring in Section 34. The trail is about 20 yards long and extends down from an overhanging ledge.

Since the BLM Wilderness Inventory, three pasture fences have been constructed and stabilization of cultural resource sites has occurred in the WSA. These actions were nonimpairing.

All in all, imprints cover less than one percent of the ISA Complex, and meet the naturalness standard for areas under wilderness review. Overall, the 105,520 acres are natural in character.

- Solitude

The ISA Complex provides outstanding opportunities for solitude. This ISA includes four major canyons and numerous tributaries, offering over 190 miles of canyons systems. The meanders, high cliffs, and vegetation screening effectively block lines of sight and muffle sounds for any substantial distance. Outside intrusions and influences are essentially nonexistent within the canyons. The majority of the mesa tops have pinyon-juniper vegetation which, when combined with the topographic relief, effectively screens visitors and allows for solitude. A major commercial flight path connecting Los Angeles, California; Chicago, Illinois; and New York, New York, crosses over the Grand Gulch Plateau. The occasional high altitude overflights only remind a person of the outside world and do not detract from the opportunities for solitude within the ISA Complex.

There are several small areas of the ISA Complex where opportunities for solitude are not outstanding.

One such area is in the western portion of the Pine Canyon WSA. About 800 acres have little topographic relief and contain mostly low-lying desert shrub with scattered pinyon-juniper trees. This area is adjacent to Highway U-263, and motorized travel on this route limits the opportunities for solitude.

Another is in the Sheiks Flat WSA and is comprised of about 600 acres of sagebrush flat adjacent to the southern boundary road. The lack of screening allows vehicular travel on this road to reduce outstanding opportunities for solitude.

Another area is located in the southeastern corner of the Slickhorn Canyon WSA. About 200 acres of sage flat and seedings occur within 1 mile of the Muley

Point road. Travel on this road reduces outstanding opportunities for solitude.

Other areas adjacent to boundary roads are either screened by pinyon-juniper woodland or are adjacent to boundary roads that are so infrequently traveled as to not impose a significant obstacle to solitude. The Loop Road into Polly's Pasture is an example of the latter.

In all, over 98 percent (103,920 acres) of the ISA Complex meets the outstanding opportunities for solitude criterion for areas under wilderness review, while 1,600 acres do not.

- Primitive and Unconfined Recreation

Grand Gulch and its side canyons are well known for their primitive recreation opportunities. Slickhorn and John's Canyons are also receiving increasing amounts of use for hiking and backpacking. The more than 190 plus miles of canyons have access points that are scattered enough to disperse hiking users throughout their lengths.

Grand Gulch and Slickhorn Canyons also provide side canyon hiking opportunities from float boating trips on the San Juan River. Hiking also can occur on the mesa tops. Horseback travel occurs in the ISA Complex; however, topography limits horse access to the Collins and Kane Gulch trailheads in Grand Gulch and lower John's Canyon. Horseback travel is also possible over most of the mesa tops.

Sheer sandstone cliffs, pinnacles, knobs, arches, and an abundance of cliff dwellings all contribute to a high quality recreational, educational, and scientific experience. The striking scenery provides outstanding opportunity for high quality sightseeing and photography.

All in all, the entire ISA Complex (105,520 acres) meets outstanding recreation criterion for areas under wilderness review.

- Special Features

During the BLM wilderness inventory, the ISA Complex was found to offer supplemental features of scenic, geological, archaeological, and historical value. These features enhance the other wilderness values available.

## GRAND GULCH ISA COMPLEX

The canyons of the ISA Complex offer a myriad of sandstone shapes and such colors as white, reds, browns, and yellows. The sandstone canyons, pinnacles, pedestals, knobs, arches, and alcoves offer unique and dramatic views around every meander.

Long distance views from the mesa tops include such scenic focal points as Monument Valley, Navajo Mountain, Red House Cliffs, and the Henry Mountains.

The area contains extensive remains of the Anasazi Indian occupation from about 200 A.D. to 1300 A.D. There are 580 recorded sites and an estimated 12,360 additional sites. These consist of lithic scatters, walled fireplaces, pictographs, petroglyphs, pithouses, pottery shards, towers, cliff dwellings, and kivas. Not only are the sites of scientific importance, but they are also of interest to recreationists. The Grand Gulch Archaeological District (4,240 acres) was placed on the National Register of Historic Places in 1982.

There are features of historic value in the ISA Complex. A portion of the northern boundary follows the historic Hole-in-the-Rock Trail. This is the route the early Mormon settlers followed in 1879 to settle the town of Bluff, Utah.

There is also evidence of use by cattlemen in the early 1900s, including the Oliver Ranch in lower John's Canyon.

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. There are two animal species (peregrine falcon and bald eagle) listed as endangered that may occasionally visit the WSA. Also, UDWR has identified this area as having potential for black-footed ferret. There are seven animal species and four plant species that are considered sensitive that may occur in the WSA. The WSA has populations of cougar, bobcat, and possibly desert bighorn sheep, which are wildlife species associated with wilderness. Refer to the Vegetation and Wildlife Including Special Status Species sections for additional information. Approximately 54 percent of the WSA is rated Class A for scenic quality.

### • Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV types of juniper-pinyon woodland and blackbrush. Refer to the Vegetation Including Special Status Species section for more discussion on

ecoregions and PNV types. The ecoregion and PNV types represented by this WSA are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

This WSA is not within a 5-hour drive from any standard metropolitan statistical areas.

### Air Quality

The closest air monitoring station to the ISA Complex is 35 miles west at Bullfrog Marina on Lake Powell. Particulate and sulfur dioxide concentrations are measured.

Only the short-term (24-hour) particulate standard has been exceeded at the Bullfrog station. The 24-hour violations were probably associated with conditions of high winds and blowing dust (resulting from the scarce vegetation and large areas of exposed sand).

Generally, the air quality is very good over the ISA Complex, allowing for long vistas where topography or vegetation screening are not limiting. Visual range in the general vicinity averages between 100 to 132 miles during the summer (Aerocomp, Inc., 1984).

The ISA Complex is in a PSD Class II area under the provisions of the Clean Air Act, as amended. This classification allows for moderate increases in air pollution levels. The Department of the Interior did recommend to Congress on September 7, 1979, pursuant to Section 164(d) of the Clean Air Act Amendment of 1977, that the Grand Gulch Primitive Area had air quality related values as important attributes of the area worthy of redesignation to Class I air quality. No action has been taken on this recommendation by the State of Utah.

The closest PSD Class I area is Canyonlands National Park, approximately 30 air miles away.

### Geology and Topography

The Grand Gulch Complex is within the Canyonlands section of the Colorado Plateau Physiographic Province. This section is the most rugged and least accessible of the province and is characterized by bare rock surfaces, plateaus, and steep-walled canyons.

The Cedar Mesa Sandstone Member of the Cutler Formation (Permian age) is the dominant rock unit

## GRAND GULCH ISA COMPLEX

exposed in the ISA. The Halgaito Shale Member of the Cutler Formation (Pennsylvanian age) and the Honaker Trail Formation (Pennsylvanian age) are exposed in the lower 1.5 miles of Grand Gulch.

The Cedar Mesa Sandstone dips gently to the south and west at three degrees. It is about 800 feet thick and was deposited in a near shore marine environment. A shallow evaporite marine basin occurs to the east, as the Cedar Mesa Sandstone grades into a rock containing more gypsum in the Comb Ridge area.

The ISA sits adjacent to the crest of a broad, uplifted area known as the Monument Upwarp, which has a north-south axis and extends east to west from Comb Ridge to Clay Hills. The Monument Upwarp was probably formed during the Laramide Orogeny (65 million years ago).

The canyons are geologically young and have probably been cutting into Cedar Mesa Sandstone since only late Tertiary time (about 20 million years ago). This is when the entire Colorado Plateau began a period of uplift to its present form. Initial downcutting of the canyons must have been fairly rapid because much of the original meandering character of the stream is still present.

The topography of the ISA Complex is generally divided into two types: mesas and canyons. The mesas generally dip to the south and west with elevations ranging from 6,400 feet in the northeast to 4,800 feet in the southwest. This elevation change occurs over a straight line distance of about 21 miles. Hills and ridges on the mesas range up to about 200 feet providing topographic relief. There are three major canyons within the ISA Complex: Grand Gulch, Slickhorn, and John's, all of which drain into the San Juan River.

Grand Gulch is the most significant of these canyons as it meanders for about 53 miles (2 miles within Glen Canyon NRA) over a straight line distance of about 21 miles. Within its 400- to 600-foot canyon, erosion has further cut a 10- to 20- foot deep path through alluvial fill. Waterfalls occur at outcroppings of resistant rock, and the sandstone canyon walls have so many overhangs that entrance into the canyon without ropes is possible at less than a dozen places in its 53-mile length. These overhangs provide numerous sheltered alcoves. The erosion of the sandstone has also created a couple of natural arches, several rincons, and numerous pinnacles.

Including side canyons such as Bullet, Kane, Polly's, Collins, Step, and Pine, there are about 150 miles of canyons in the Grand Gulch drainage (inside the ISA Complex). These side canyons exhibit many of the same characteristics of Grand Gulch, although canyon depths are generally not as great.

Slickhorn Canyon is a 300- to 800-foot deep, narrow, gently meandering canyon, with several smaller tributaries branching from the east of the main canyon. From the extreme upper reaches, Slickhorn winds its way more than 12 miles (3 miles within Glen Canyon NRA) to the San Juan River. Tributaries add another 13 miles of canyons to this system. Unique erosional features, including arches, delicately balanced rocks, towering pinnacles, and vertical sandstone walls, are found throughout the entire length of the canyon. A 100-foot pouroff prohibits access into Slickhorn from the northern-most branch canyon; however, access of varying degrees of difficulty may be found in most of the other canyons to the east. Most of Slickhorn Canyon and its tributaries are strewn with boulders.

In contrast to the narrow, boulder-strewn Slickhorn Canyon, John's Canyon, specifically the lower portion, has a broad, flat alluvial bottom cut by a gently meandering arroyo. Canyon walls, although over 800 feet high, are diminished in apparent size due to the 1-mile-wide canyon floor. Towering pinnacles, balanced rocks, and other similar erosional features are not evident in the lower portion of John's. Instead, 800- to 1,000-foot buttes, with steep talus sloping away from vertical walls, line the canyon's internal boundaries.

The upper half of the canyon consists of numerous, deep, narrow canyons, branching out to the north and northeast, much in the shape of a human hand. Rising to a height of over 1,000 feet above the canyon floor, access into and out of upper John's Canyon is limited to one or two tributaries to the north and east. Most are blocked by high, undercut pouroffs or near vertical bare surfaces. At the junction of each side canyon are towering, vertical towers and pinnacles of the Cutler Formation, eroded into myriad shapes and designs. John's Canyon, with side drainages, contains about 19 miles of canyons.

### Soils

The majority of the ISA Complex consists of rock outcrop and shallow soils on the rims of canyons, mesas, and structural benches. Soils along canyon

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floors and broader areas of the benches are moderately deep to very deep loamy and sandy soils. On steep fans along canyon walls are moderately deep to deep stony soils. The soils have generally developed in eolian material and alluvium derived from sandstone. Table 2 gives soil characteristics and land types for the ISA Complex.

Table 2  
Soil Characteristics and Land Types

Soil Characteristics and Land Type	Percent of the Area	Acres	Estimated Rate of Erosion (cubic yards/acre/year)	
			Present Condition	Bare Soil Surface
Rock Outcrop	35	36,932	0.0	0
Shallow and loamy soils on sloping structural benches and ledges	35	36,932	1.0	5
Deep and loamy and sandy soils on gently sloping structural benches and canyon floors	15	15,828	0.1	1
Deep and stony soils on steep canyon sides	15	15,828	1.0	10
Totals	100	105,520		

Source: Hansen, 1985.

Table 3 gives soil erosion conditions for the ISA Complex. Present erosion rates in the ISA Complex average 0.51 cubic yard per acre per year.

Soil salinity class estimates indicate that the area is non-saline with an estimated average salinity production of 19 lbs of salt per acre per year.

Seeding potential varies from unsuited to seeding on 85 percent of the area due to stony soils on canyon sides, shallow soils and rock outcrops, to good on 15 percent of the ISA Complex where there are deep loamy soils on gently sloping benches and canyon floors.

## Vegetation Including Special Status Species

The existing vegetation in the ISA Complex is categorized into the pinyon-juniper woodland, Great Basin sagebrush, and blackbrush types. Approximately 9 percent of the ISA Complex is slickrock without substantial vegetation (refer to Table 4).

The pinyon-juniper woodland type (the majority of the ISA) consists of mature stands of trees. An

understory is present which contains sagebrush, rabbit brush, and annual vegetation.

The Great Basin sagebrush type is mostly in mature stands of sagebrush with a limited understory of curlygrass, bottlebrush, squirreltail, Indian ricegrass, sand dropseed, and fourwing saltbrush. In this type 1,900 acres (in three locations) were railed and seeded with crested wheatgrass about 20 to 25 years ago. Sagebrush has re-entered the seedings but is not as large or dense as in nonrailed areas.

Blackbrush communities have associated species, including fourwing saltbrush and Mormon tea. An understory of curly grass and Indian ricegrass is also present.

The barren areas are primarily steep slopes and drainages with slickrock or soil. Plant density is very low and includes pinyon pine, juniper, blackbrush, and shadscale.

The major canyons of the ISA Complex contain areas where springs provide yearround water in addition to seasonal flowing water from spring snowmelt and late summer thunderstorms. This water has allowed about 5 acres of riparian habitat to form which includes cottonwoods and willows.

There are no known threatened or endangered plant species in the ISA Complex. One species, Erigeron kachinensis, a Category 2 candidate species, is possibly located in the ISA. Three species (Astragalus cottamii, Astragalus monumentalis and Zigadenus vaginatus) may occur within the ISA Complex and considered to be sensitive species (see Appendix 4 in Volume I).

Erigeron kachinensis occurs in seeps and hanging gardens in San Juan County in elevations from 5,500 feet to 6,200 feet. Astragalus cottamii occurs on rimrock, ledges, and sandy canyons in pinyon-juniper and blackbrush communities that grow on Entrada, Navajo, Cedar Mesa, and White Rim formations in elevations ranging from 4,300 to 6,200 feet. Astragalus monumentalis occurs in rimrock and other slickrock sites in mixed desert shrub and pinyon-juniper communities from 4,000 to 6,000 feet in elevation in Garfield and San Juan Counties. Zigadenus vaginatus occurs in hanging garden communities in seeps and alcoves from 4,000 to 6,000 feet in Garfield and San Juan Counties (Welch, et al., 1987).

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Table 3  
Erosion Condition

Erosion Class	Erosion Rate cubic yards/ acre/year	Annual Soil Loss Under Present Conditions			Annual Soil Loss if Disturbed		
		Percent of Area	Acres	Cubic Yards	Percent of Area	Acres	Cubic Yards
Very High	20.0	-	-	-	-	-	-
High	10.0	-	-	-	15	15,828	158,280
Medium	5.0	-	-	-	35	36,932	184,660
Low	1.0	50	52,760	52,760	15	15,828	15,828
Very Low	0.1	15	15,828	1,582	-	-	-
None	0.0	35	36,932	-	35	36,932	-
<b>Totals</b>		100	105,520	54,342*	100	105,520	358,768*

Source: Hansen, 1985.

Average annual soil loss in cubic yards per acre (0.45 under present conditions; 3.1 if disturbed).

Table 4  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Pinyon-juniper woodland	78,580	74
Great Basin sagebrush	7,840	7
Barren (rock outcrop, badlands)	8,975	9
Riparian	5	0
Blackbrush	10,120	10
<b>Total</b>	105,520	100

Source: USDI, BLM, 1985.

The Grand Gulch ISA Complex is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNV types of the ISA Complex are listed on Table 5.

Table 5  
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Juniper-pinyon woodland	74,580	71
Blackbrush	30,940	29
<b>Total</b>	105,520	100

Source: USDI, USGS, 1978.

## Water Resources

The Grand Gulch Complex is in the lower San Juan River Basin of the Upper Colorado River hydrologic subregion. The Complex is drained by three major canyons, Grand Gulch, Slickhorn, and John's. These canyons go directly into the San Juan River which in turn flows into Lake Powell. There are no perennial

streams in any of the canyons, all flows in the canyons are a result of rain, snowmelt, and thunderstorms and are temporary in nature. Water is a limited resource within the ISA Complex.

There are 23 known springs scattered throughout most of the major canyons; these provide water for recreationists, wildlife, and livestock. Four of these springs have been developed with piping and troughs for livestock use. Also, fourteen earthen reservoirs have been constructed on the mesa for livestock use. During the snowmelt or thunderstorm seasons, water is also held in numerous slickrock pools.

The WSA is within Water Right Adjudication area 09. The water is not fully appropriated (UDNRE, DWR, 1988). There is very little water development in this area because of its remoteness. Isolated springs may be open to appropriations not to exceed 0.015 cfs. Temporary and fixed time applications may exceed this limit.

The water quality standards for San Juan River and tributaries from Lake Powell to state line are: Class 1C (protected for domestic purposes with prior treatment); Class 2B (protected for boating, water skiing, and similar uses); Class 3B (protected for warm water species of game fish and other warm water aquatic life); and Class 4 (protected for agricultural uses including irrigation of crops and stockwatering). Water quality of the springs is suitable for livestock use.

## Mineral and Energy Resources

The energy and mineral resource rating summary for the Grand Gulch Complex is given in Table 6. Refer to

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Appendix 5 in Volume I for a description of the rating system.

Table 6  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f2	c2	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas

Source: SAI, 1982; USDI, BLM, 1987a.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

There are no strategic or critical materials known to occur within the ISA Complex (USDoD, 1988).

- Leasable Minerals

There are no known deposits of any leasable minerals in the ISA Complex. Currently, there are no active drilling, mining, or exploration activities for leasable minerals.

- Oil and Gas

Although the ISA Complex has no record of production, reported shows of oil and gas in some wells suggest the possibility that oil and gas may be present in Permian, Pennsylvanian, Mississippian, and Devonian rocks. The area may be outside the saline facies of the Hermosa Formation

(Pennsylvanian) that contains the major oil fields in the Four Corners region. Moreover, much of the strata correlating with productive zones in the Hermosa have been breached by the San Juan River near the ISA Complex so that oil formerly present may have drained away. Nevertheless, structural and stratigraphic traps in the Pennsylvanian rocks may be sealed by impermeable facies from reservoir drainage into the canyon of the San Juan River.

Approximately 57 oil and gas wells have been drilled near the ISA Complex and five have been drilled inside. Shows of oil and gas were encountered in Permian, Pennsylvanian, Mississippian, and Devonian strata. All of the wells were plugged and abandoned without production. Two additional wells were drilled into the Paradox Formation in 1982, which were also dry holes.

The ISA Complex is assigned an oil and gas favorability of f2. The size of the hydrocarbon accumulation in such an environment is anticipated to be less than 10 million barrels of oil or less than 60 billion cubic feet of gas. Based on the available information, the certainty of occurrence for oil and gas is rated low (c2) (SAI, 1982).

With the current land use plan, 41,172 acres of the ISA Complex are in Category 2 (special stipulations); 15,165 acres are in Category 3 (no surface occupancy); and 49,183 acres are in Category 4 (closed to leasing). See Table 7 for leasing categories in the various portions of the ISA Complex. There are presently eight post-FLPMA leases, covering 1,060 acres in the ISA Complex.

Table 7  
Existing Leasing Categories

Unit	Acres	Category 4 Closed to Leasing		Category 3 No Surface Occupancy		Category 2 Special Stipulations		Category 1 Standard Stipulations	
		Acres	(%)	Acres	(%)	Acres	(%)	Acres	(%)
Grand Gulch	37,580	37,580	(100%)	0	(0%)	0	(0%)	0	(0%)
Pine Canyon	10,890	2,400	(22%)	2,760	(25%)	5,730	(53%)	0	(0%)
Bullet Canyon	8,520	960	(11%)	3,320	(40%)	4,240	(49%)	0	(0%)
Sheiks Flat	3,140	0	(0%)	522	(17%)	2,618	(83%)	0	(0%)
Slickhorn Canyon	<u>45,390</u>	<u>8,243</u>	<u>(18%)</u>	<u>8,563</u>	<u>(19%)</u>	<u>28,584</u>	<u>(63%)</u>	<u>0</u>	<u>(0%)</u>
Totals	105,520	49,183	(47%)	15,165	(14%)	41,172	(39%)	0	(0%)

Source: USDI, BLM, 1975b.

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### • Locatable Minerals

At present, there are no mining claims in the ISA Complex. Approximately 37,580 acres in the Grand Gulch Primitive Area are closed to entry under the general mining laws; the remainder of the ISA Complex is open to entry. There are no known deposits of locatable minerals in the ISA Complex, and geologic conditions are unfavorable for the occurrence of any deposits.

### • Salable Minerals

The salable minerals within the ISA Complex have little or no commercial potential, based on the poor quality and the remote nature of the material. These deposits are not unique or economically significant due to the presence of ample similar materials outside the ISA Complex.

### Wildlife Including Special Status Species

Animals common in the pinyon-juniper woodland are found throughout the ISA Complex. The canyons provide intermittent riparian habitat for a diversity of wildlife species.

Mule deer inhabit some of the canyons yearlong. Most deer utilize the area as winter range from October through April. The ISA Complex is within the Utah Division of Wildlife Resources' (UDWR) Deer Herd Unit 31B. About 2,900 acres are classified as crucial deer winter range. Portions of the ISA Complex (mainly Grand Gulch, Bullet, Slickhorn, and John's Canyons) are within the White Canyon-Red Canyon Desert Bighorn Sheep Habitat Management Area. There have been no documented sightings of desert bighorn sheep in this area since 1975. Past evidence of bighorn sheep (i.e., weathered skulls, piles of pellets under rims, and petroglyphs) can still be found in some canyons. The closest known remnant population of desert bighorn sheep is found along the San Juan River from the Goosenecks to Grand Gulch. Bighorn sheep may still occasionally utilize the ISA Complex, but populations are not expected to re-establish in the ISA Complex at this time. About 3,900 acres are classified as crucial yearlong bighorn sheep habitat.

Spotted skunk and ringtail cat are found in the wetter canyons, but are rarely observed due to their nocturnal habits and sparse densities. Bobcat and mountain lion inhabit remote canyons where they are seldom seen. Coyote, cottontail rabbit, white-tail antelope, ground squirrel, Ord kangaroo rat, pinyon mice,

white-throated woodrat, and assorted bats are found unit wide.

There is very little waterfowl habitat within the ISA Complex. Mourning dove is the only gamebird that nests in the area. Hairy woodpecker, violet green swallow, titmouse, pinyon jay, and rock wren are also common. The greatest diversity of nongame birds is found in the canyons during the spring migration. Red-tailed hawk, American kestrel, Cooper's hawk, and great horned owl are found throughout the area.

The most common reptiles and amphibians found within the ISA Complex are the Great Basin spadefoot toad, red-spotted toad, side-blotched lizard, Great Basin gopher snake, and Hopi rattlesnake. There are no fish species present.

The FWS has identified this area as having potential for black-footed ferret. The bald eagle is a winter transient in the vicinity of the ISA Complex; however, no roosting sites have been located. Both of these species are endangered. Also the endangered peregrine falcon may possibly use the area.

The golden eagle, a BLM sensitive species, is found in the WSA. Other special status species that could occur in the WSA are six Category 2 candidate species (see Appendix 4 in Volume I). These are the Great Basin Silverspot butterfly, ferruginous hawk, southern spotted owl, western yellow-billed cuckoo, long-billed curlew, and white-faced ibis. If present, most of these species would be associated with canyon and wet meadow areas or cliff faces and deep canyons, except for the ferruginous hawk. The ferruginous hawk inhabits pinyon-juniper woodland areas where there are ecotones or edges that provide opportunities for nesting, cover, and hunting activities.

No Federally designated critical wildlife habitat is in the ISA Complex, nor are there existing or planned wildlife management treatments or facilities.

### Forest Resources

There are 78,580 acres of pinyon-juniper woodland within the Grand Gulch ISA Complex. These are low quality sites (less than 20 cubic feet usable wood per acre) and are considered nonproductive forest land. No areas within the ISA Complex have been designated or have potential as Christmas tree cutting areas. Less than an estimated 12,280 cords of firewood are within the ISA Complex.

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During 1981, 26 permits were sold to cut 1,700 juniper posts in the Cedar Mesa area. Due to the lack of roads within the ISA Complex, it is unlikely that any posts were cut there. In 1981, there were 323 free-use firewood permits issued in the San Juan Resource Area. Some of these permits were utilized in the Cedar Mesa area, but it is unlikely that individuals gathered firewood from within the ISA Complex. Most firewood cutting now taking place on Cedar Mesa occurs adjacent to access routes that are outside the ISA Complex.

Pinyon nuts are gathered by a few individuals, but there have been no commercial gathering permits issued for areas in or near this ISA Complex.

Demand for forest products in the ISA is not expected to significantly increase in the foreseeable future because of lack of access and readily available supplies outside the area.

## Livestock and Wild Horses/Burros

The Grand Gulch ISA Complex contains portions of four grazing allotments, involving eight operators. Table 8 summarizes allotment use data.

Current use of the ISA Complex is estimated to total 1,930 AUMs and includes 1,299 AUMs in the Slickhorn allotment, 479 AUMs in the Lake Canyon allotment, 90 AUMs in the Texas Muley allotment, and 62 AUMs in the Perkins Brothers allotment.

The ISA Complex contains several range improvements including four developed springs, 14 earthen

reservoirs, three seedings (1,900 acres), and 5 miles of fence. Currently planned projects include 1,660 acres of prescribed burn and chemical treatment of previously railed and seeded area where sagebrush is reinvading, as well as three spring developments and 2.5 miles of water pipeline. It is estimated that the vegetation treatments would result in 390 additional AUMs.

Vehicular use for livestock management occurs on the boundary roads and on 30 miles of existing way. The degree to which existing ways are used is unknown.

Predator control was not conducted during the 1986-1987 period on the grazing allotments that comprise the Grand Gulch Complex ISA (USDA, APHIS, 1988).

There are no wild horses or burros in the ISA Complex.

## Visual Resources

The ISA Complex presents a landscape with a diversity of colors and shapes within the landform and vegetation.

The ISA Complex consists of two major landform types: canyons and mesas. The canyons have been cut through Cedar Mesa Sandstone, forming a meandering pattern of steep-walled sides up to 800 feet deep. The major texture is the smooth slickrock, while rough talus slopes of jumbled rock occur at various locations. Arches, pinnacles, and rincons provide additional visual variety to this landform. Colors vary in

Table 8  
Livestock Grazing Use Data

Allotments	Total Acres	Acres in ISA <sup>a</sup>	Total AUMs	Number of AUMs in ISA	Number and Kind of Livestock	Season of Use	Number of Operators
Slickhorn	132,810	63,770	1,795	1,299	219 Cattle 4 Horses	10/16-06/15	1
Lake Canyon	610,800	22,230	4,895	479	600 Cattle 12 Horses	10/06-06/05	1
Perkins Brothers	106,425	5,570	7,579	62	1,076 Cattle 46 Horses	11/01-05/31	5
Texas Muley	67,730	4,790	1,795	90	274 Cattle 4 Horses	11/15-05/30	1

Sources: BLM File Data.



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intensity with the location of the sun, but are generally shades of reds, browns, and grays. The mesa type consists of flat to rolling sandstone outcrops and soil areas. Texture is generally smooth with colors ranging from dark browns and reds to light tans.

The vegetation varies with the landform. The canyons contain a desert type with sage, cactus, and annuals present which provide contrasting bright colors as they flower. Adjacent to the drainage bottom, an occasional riparian habitat exists containing cottonwoods and willows. The dominant vegetation type of the mesa is pinyon-juniper woodland. The color of larger vegetation varies from light gray-green to dark or bright greens. These colors create a contrast with earth tones of the landform.

The ISA Complex contains VRM Classes I, II, III, and IV and Class A, B, and C scenery (refer to Table 9). The BLM Visual Resource Evaluation System was used to rate the visual resource values of the area. The BLM's VRM rating system is explained in Appendix 7 in Volume I. The Grand Gulch ISA is rated Class I due to its status as a primitive area. Generally, the canyons are rated VRM Class II with Class A scenic quality. The forested mesas generally are VRM Class III with Class B scenic quality, and the blackbrush mesa west of Grand Gulch is rated as VRM Class III, with Class C scenic quality.

Table 9  
Visual Resource Quality and Management Class

Element	Acres	Percent of WSA
Scenic Quality Class A	56,520	54
Scenic Quality Class B	47,860	45
Scenic Quality Class C	1,140	1
Total	105,520	100
Management Class I	37,580	36
Management Class II	20,140	19
Management Class III	32,400	31
Management Class IV	15,400	14
Total	105,520	100

Source: USDI, BLM, 1982c

## Cultural Resources

Archaeological excavation work occurred in the ISA Complex (mostly Grand Gulch) as early as the 1890s and, by 1920, about 100 sites had been noted. This work was for the primary purpose of obtaining artifact collections for museums in the eastern United

States. In the 1950s and 1960s archaeological work began to be more systematic and research oriented.

The ISA Complex contains a wealth of pristine Anasazi cultural resources. A literature search revealed 580 recorded sites (Grand Gulch ISA, 165; Pine Canyon WSA, 55; Bullet Canyon WSA, 109; Slickhorn Canyon WSA, 191; and Sheiks Flat WSA, 60) representing a fairly even distribution between Basketmaker and Pueblo cultural manifestations (USDI, BLM 1988). Most of the Basketmaker sites consist of camps, lithic scatters, and storage cists, while the majority of Pueblo sites are either open habitation camps or cliff dwellings which include habitation and/or storage structures (granaries). It is also probable that the area was used by the Archaic and Ute/Navajo peoples. Many sites have been stabilized.

There are also features of historic value in the ISA Complex. A portion of the northern boundary follows the historic Hole-in-the-Rock Trail. This is the route the early Mormon settlers followed in 1879 to settle the Town of Bluff, Utah.

Another special feature of this unit is the historical value of the past use of the land. In the early 1900s lower John's Canyon was explored for oil. A man named Galloway drilled a well 1,900 feet deep and found enough oil to run the pumps but not enough for commercial production. Two capped drill holes are in John's Canyon and the other at the end of the cherry-stemmed road in the lower main John's Canyon. These were drilled with a steam-powered engine. Near the drill hole in the fork of John's Canyon, there are numerous old tree stumps. The trees were probably cut to power the steam engine.

In the 1920s John Oliver and his brother Bill built a ranch and ran cattle in the canyon. The only remnant of the Oliver ranch is a collapsed cabin, tack shed, corral, and dugout.

Noticeable evidence is scarce, but early 20th century cowboys undoubtedly used the land within this area for their range cattle. Items which are left include piled juniper-log drift-fences and old rusted cans.

The Grand Gulch Archaeological District (4,240 acres), which occupies the central portion of the ISA Complex, was placed on the National Register of Historic Places in 1982.

Additionally, based on estimates from similar settings in the area, it could be expected that 12,360

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sites would be located in the ISA Complex of which 8,240 could be National Register eligible.

Vandalism of cultural artifact sites is currently a significant problem (Nickens, 1981). Ranger patrols, including patrols by helicopter, have been initiated to alleviate it.

### Recreation

The Grand Gulch ISA Complex provides opportunities for various and unique recreation experiences. Hiking, backpacking, camping, and horseback riding are the most common and are often combined with the study of archaeological and natural resources. Grand Gulch ISA is the heart of this ISA Complex with use increasing steadily increasing (2,081 visitor days in 1974 compared to 22,800 visitor days in 1989). As this visitation has increased, use has spread out to other adjacent areas such as Slickhorn and John's Canyons. Visitation is compiled from trail registers or permits which visitors are requested to obtain. Actual visitation could be somewhat higher than estimated above. Much of the recorded annual visitation is comprised of educational and commercial group use. About 11,000 of the total visitor days use in 1989 were commercial in nature.

Access into Grand Gulch varies from trails negotiable by horseback to talus slopes and ledges that are difficult to negotiate on foot. The time spent in the canyon varies from dayhikes to up to 2 weeks. The most popular routes are from Kane Gulch and back out Kane, from Kane Gulch to Bullet, or Kane Gulch to Collins Spring.

Spring is the most popular time for visitation into Grand Gulch with March, April, and May accounting for 61 percent of the use and September, October, and November receiving another 19 percent. The remaining use (20 percent) occurs during the summer and milder portion of the winter season.

Grand Gulch attracts visitors from a multi-state and national base. An analysis of visitation shows that about 29 percent of the visitors are from Colorado, 24 percent from Utah, 6 percent from New Mexico, and 4 percent from Arizona. This totals 63 percent visitation for the Four Corners states. Additionally, 26 percent of the visitation is from states beyond the Four Corners area. For the remaining 11 percent, visitor origin is unknown.

Use in Slickhorn and John's Canyons is probably by the same visitors as in Grand Gulch. Inquiries on these areas often indicate that visitors have already hiked Grand Gulch and are looking for new locations.

The four forks of Slickhorn provide hiking access into the canyon and tend to distribute the hikers along the length of the canyon. An increasing amount of use is occurring in conjunction with the San Juan River. A loop trip up Slickhorn across the mesa and into Grand Gulch, then down to the river and back to Slickhorn is becoming more popular. Access on this hike can be from the river (float trips) or land-based.

John's Canyon is the least used of the major canyons in the ISA Complex. The upper reaches are seldom used but provide an excellent location for solitude, with only a short hike. The lower canyon is accessible from a county road, and the open nature of this portion allows motorized recreation to occur for about 1 mile up canyon within the ISA Complex. The motorized use of this portion is very limited at present.

The pinyon-juniper woodland covered mesa tops surrounding the canyons are utilized by recreationists primarily as access routes into the adjacent canyons. Limited camping does take place in the vicinity of the canyon rims; hiking and backpacking between vehicle and canyon destinations are only short-lived due to other more spectacular attractions of the canyons.

ORV use in the ISA Complex is currently minimal (less than 100 visitor days per year). Grand Gulch Primitive Area (there are approximately 15 miles of way in this area) has been closed to motorized use since 1970, and the topography greatly restricts motorized use in other portions of the ISA Complex to the existing 15 miles of ways outside the primitive area. The Hole-in-the-Rock Trail, which forms a portion of the unit's northern boundary, is the most often used ORV area within or adjacent to the ISA Complex.

Hunting is a limited activity in the ISA Complex and occurs mainly adjacent to the boundary roads. The hunting that does occur is for small game (mostly cottontail rabbits) and mule deer. The ISA Complex is located in a limited-entry buck-only hunting area that covers the southwestern portion of San Juan County. Only 440 permits were issued for the entire hunting area in 1988.

During the fall and winter months, there is some trapping for fur-bearing animals (coyote, bobcat, and fox) adjacent to roads.

# GRAND GULCH ISA COMPLEX

## Land Use Plans

The WSA is BLM-administered public land except for four State sections (2,400 acres). The current policy of the State of Utah is to maximize economic returns from State lands and to reserve its position regarding exchange of in-held lands (see Volume 1, Chapter I). In 1986 the Utah State Legislature passed S.C.R. No. 1 opposing any additional wilderness designation in Utah and urging that State lands not be exchanged out of wilderness areas. Of the 2,400 acres of in-held State land, 1,760 acres are under lease for grazing (UDNRE, DSLF, 1988). There are no private or split-estate lands.

Other lands adjacent to the ISA Complex are Federally owned. Glen Canyon NRA adjoins the ISA Complex on the south. Lands immediately adjacent to the south end of the ISA Complex are included in Glen Canyon NRA and are recommended by the NPS for designation as the San Juan Wilderness Area (13,070 acres).

By authority of Multiple Use Classification No. U-8131, on September 24, 1970, BLM withdrew the Federal lands within the Grand Gulch ISA (37,580 acres) from disposal, mining claim location, and surface use and occupancy. The withdrawal was made to recognize and protect the cultural resources in the Grand Gulch primitive area. The State-owned lands within and adjacent to the Primitive Area were not included in this withdrawal since the exchange with the State of Utah had not been completed, and these sections were not yet Federally owned. The exchange was completed in 1977, and these sections are now Federally owned and withdrawn. Also, the lands 50 feet on either side of the Hole-in-the-Rock Trail were segregated from disposal, mining claim location, and surface use and occupancy. The Hole-in-the-Rock Trail forms the north boundary of the Complex.

BLM has a public water reserve withdrawal on 160 acres in one location within the ISA Complex. The withdrawal is intended to protect and preserve bodies of water, springs, and water sources for public use. Valid and legitimate purposes for which water are reserved include stockwatering, human consumption, agriculture, and use by fish, wildlife, and their habitat.

Rights-of-way for communication sites exist in two locations, T. 38 S., R. 16 E., Sec. 27: NW 1/4 SW 1/4 SE 1/4; T. 38 S., R. 17 E., Sec. 34: SE 1/4 NW 1/4 NW 1/4. These rights-of-way presently are not

being used. BLM has two small portable radio communication facilities within the ISA Complex.

Access to the ISA Complex is possible from State Highways U-261 and U-263. Additionally, county and BLM roads provide access in numerous locations along the ISA Complex boundary.

The lands in the ISA Complex, except the Grand Gulch ISA, were classified for multiple-use management by BLM's Multiple Use Classification No. U-8131 of September 24, 1970. The ISA was set aside as a primitive area by the same number.

A small corner of the Federal land in T. 39 S., R. 18 E., Sec. 4, along with other land contiguous to the eastern boundary of the ISA Complex, were identified by BLM land use plans for disposal by sale. This land was classified for sale by Multiple Use Classification No. U-8131 of September 24, 1970. The law under which the lands were to be sold was repealed by the FLPMA, so the classification for sale is presently being reviewed for the purpose of rescinding the classification.

The ISA complex is in the BLM San Juan Resource Area and is managed according to the South San Juan MFP (USDI, BLM, 1971). The San Juan RMP will replace the MFP. Neither the MFP or RMP address wilderness designation. However, wilderness designation is part of the multiple-use concept. The BLM land use plan is linked to the Statewide Wilderness EIS through analysis of the present plan as the No Action/No Wilderness Alternative. Important features of the MFP include management of the Grand Gulch ISA as a primitive area with use restrictions as described in the No Action/No Wilderness Alternative.

The San Juan County Master Plan (Planning and Research Associates, 1967) emphasizes multiple use of public lands and zones the majority of the ISA Complex as open range/forest lands. An area along the eastern boundary of the Shieks Flat, Bullet Canyon, and Slickhorn Canyon WSAs is listed as potential future agriculture land. This plan predates wilderness considerations; however, the County opposes any legislative or administrative designation of wilderness in the county (San Juan County Commission, 1980). The San Juan County Commission has also enclosed the consolidated Local Government Response to Wilderness (Utah Counties, 1986) which opposes wilderness designation for BLM lands in Utah.

# GRAND GULCH ISA COMPLEX

## Socioeconomics

### • Demographics

The Grand Gulch ISA Complex is in southwestern San Juan County. The nearest communities are Bluff, approximately 25 road miles to the east, and Blanding, about 45 miles to the northeast. The socioeconomic effects of designation would be confined mostly to San Juan County. The county can be characterized as rural and sparsely populated.

Between 1970 to 1980, the population of San Juan County was fairly static, and grew by less than a 2 percent annual growth rate. The 1985 population was 12,500. Since 1983 the county's population has declined by approximately 500 (USDI, BLM, 1987b). The two largest communities in the county are Blanding (1980 population 3,118) and Monticello (1980 population 1,929). Approximately 40 percent of the county's population resides in these communities. Table 10 presents baseline and projected population data for San Juan County. Population projections for the county indicate that the number of people living in San Juan County in the year 2010 will be about 15,000 for about a 21 percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 10  
Baseline and Projected Population and Employment Growth  
San Juan County

	1980	1990	2000	2010
Population	12,400	12,900	12,900	15,000
Employment	3,980	3,800	4,300	5,100

Source: Utah Office of Planning and Budget, 1987.

The major racial groups are caucasians (52.4 percent) and American Indians (45.7 percent). About 4 percent of the Navajo reservation's population live in San Juan County (USDI, BLM, 1987b).

San Juan County is the largest county in Utah, comprising 5,045,760 acres or about 9.6 percent of the State's acreage. Approximately 86 percent of the county is administered by the Federal Government: 41 percent by BLM, 24 percent by the Bureau of Indian Affairs (BIA) in conjunction with the Navajo tribe, and 20.9 percent by other Federal agencies. About 6 percent is in State ownership and about 8.1 percent is privately owned (U of U BEBR, 1982 and USDI, BLM, 1987b).

### • Employment

Table 10 shows the baseline and projected total employment for the county to the year 2010. The government sector (Federal, State, and local) is the most important in terms of employment in the San Juan County economy. In 1987 mining made up about 16.5 percent of the total employment in the county. Tourism also generates a significant number of jobs (USDI, BLM, 1987b).

San Juan County is part of the Southeast MCD. Table 11 shows the baseline (1980) and projected employment by source for MCD to the year 2010. In 1980 the leading employment sectors for the MCD were mining (28 percent), government (18 percent), and trade (15 percent).

It is projected that by the year 2010 employment in the MCD will increase by about 27 percent and that services will increase to 18 percent, trade to 17 percent, and government to 15 percent of the total. While the mining, agriculture, and construction sectors will decline (Utah Office of Planning and Budget, 1987).

Table 11  
Southeast Multi-County District  
Employment\*

	1980	1990	2000	2010
Agriculture	1,203	1,100	1,100	1,100
Mining	6,368	3,500	4,500	5,700
Construction	1,360	700	900	1,100
Manufacturing	551	600	700	800
Transportation, Utilities	1,563	1,800	2,000	2,200
Trade	3,289	3,600	4,000	4,800
Finance, Insurance, Real Estate	424	400	400	500
Services	2,067	3,200	4,000	5,300
Government	3,994	4,100	3,800	4,400
Nonfarm Proprietors	1,715	2,000	2,200	2,800
Totals	22,534	21,000	23,600	28,700

Source: Utah Office of Planning and Budget, 1987.

\*Includes Carbon, Emery, Grand, and San Juan Counties.

### • Sales and Revenues

Past activities in the ISA Complex that could be of some local economic consequence include mineral exploration, livestock production, and dispersed nonmotorized recreation. Table 12 summarizes local sales and Federal revenues derived from the ISA Complex. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Table 12

# GRAND GULCH ISA COMPLEX

## Sales and Revenues

Source	Estimated Annual Local Sales <sup>a</sup>	Estimated Annual Federal Revenues
Oil and Gas Leases and Production	0	\$2,120
Livestock Grazing	\$38,600	2,972
Recreational Use	\$98,195	\$1,500
Total	\$138,195	\$6,592

Sources: USDI, BLM, 1982a; Appendix 9 in Volume I.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

Previous exploration of the ISA Complex for oil and gas has brought some income and temporary employment to residents of the area. Approximately 61 oil and gas wells have been drilled in or near the ISA Complex over the past 30 years. This drilling has generated an estimated 92 man years of employment, some of which probably represents local employment.

Some woodland products have been harvested from the ISA Complex; however, the harvests have been small and are insignificant to the local economy and only of minor significance to those involved in the harvest.

Eight livestock operators have grazing activities in the ISA Complex. Based on the consumption of 1,930 AUMs of forage by cattle, it is estimated that the ISA Complex accounts for \$38,600 of livestock sales, and \$9,650 of ranchers' returns to labor and investment.

Historical hunting pressure in the Complex has been low, and its local economic importance is insignificant. The ISA's motorized recreational use is low (less than 100 visitor days annually). Related local expenditures are low, well distributed, and not significant to the local economy or to industrial business.

The ISA Complex does support private and commercial primitive recreation use. Judging from the points of origin, approximately 85 percent of the users pass through San Juan County's service centers. The actual amount of income generated locally from recreational use in the ISA Complex is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicated that the State-wide average local expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Grand Gulch ISA Complex is estimated to average about 22,800

visitor days per year, for a total estimated local income of \$93,480.

For the most part, these recreation-related expenditures are well distributed within the local economy and are of low significance to any local individual business. Sales would be significant to the six commercial outfitters who make use of the ISA Complex, none of which are locally based. Commercial use of the ISA Complex accounts for an estimated \$55,000 of annual sales for the outfitters.

The ISA Complex generates revenues to the Federal Treasury from three sources: mineral leases, grazing fees, and recreation use permits (refer to Table 12). Within the ISA Complex, about 1,060 acres are currently leased for oil and gas. At \$2 per acre, this generates up to \$2,120 annually. Half of this is allocated back to the State of Utah. The State then reallocates these revenues to various funds, the majority of which are related to energy development. Based on 1,930 AUMs of forage consumed annually by livestock in the ISA Complex at the current grazing fee of approximately \$1.54 per AUM, the Complex annually accounts for \$2,972 of grazing fee revenues to the Treasury. Half of this is allocated back to the local BLM district for construction of rangeland improvements. Commercial recreation use of the ISA Complex generates about \$3,000 of Federal revenues annually.

## ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. The analysis is based on the BLM management actions and anticipated activities presented in the Introduction to Volume V and the Description of the Alternatives for the Grand Gulch ISA Complex.

### No Action/No Wilderness Alternative

- Impacts on Wilderness Values

Because the ISA Complex would not be designated wilderness with this alternative, the identified wilderness values would not receive the degree of protection afforded by application of the BLM Wilderness Management Policy (BLM Manual 8560). Wilderness values in the ISA Complex would be somewhat protected by limitations placed on potential surface-disturbing activities (i.e., VRM Class I management on 37,580 acres, VRM Class II management on 20,140 acres, management under oil and gas leasing Category

## GRAND GULCH ISA COMPLEX

4 [closed to leasing] on 49,183 acres and oil and gas leasing Category 3 [no surface occupancy] on 15,165 acres, and ORV closure on 37,580 acres).

In the foreseeable future, disturbance of approximately 1,684 acres from oil and gas exploration, vegetation treatments and rangeland projects, mainly in the east and southeast portions of the ISA Complex, would result in a loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas. Most special features, including Class A scenery, geologic features, archaeological values, endangered and sensitive species, wildlife associated with wilderness, and historical values, would not be significantly affected because the direct disturbance would involve only 1.6 percent of the ISA Complex. Proposed water developments and vegetation treatments would benefit wildlife special features because of increased water and forage. In addition, appropriate measures would be taken to protect endangered and sensitive species and archaeological and historical values prior to any surface-disturbing activity, and would not be significant to these values. Disturbance would most likely not occur in areas of Class A scenery. Refer to the Wildlife Including Special Status Species and Cultural Resources sections for more information.

During the period of activity, the visual and audible disturbance from energy exploration, vegetation treatments, and rangeland developments would reduce opportunities for solitude and primitive recreation not only on directly disturbed areas but also indirectly on adjacent portions of the ISA Complex. As much as 4 percent (4,220 acres) of the ISA Complex would be so affected in the foreseeable future.

Because future vehicular use would not be allowed within the Grand Gulch Primitive Area and would generally be limited by terrain to the existing 15 miles of vehicular way outside of the primitive area, no additional disturbance from ORV activity is anticipated in the future. The continued vehicular use of 15 of the 30 miles of existing ways, and use of any new energy exploration roads would occasionally detract from opportunities for solitude and primitive recreation.

The 2 to 7 percent annual increase in visitor use that would occur would be expected to reduce wilderness values unless restricted or otherwise controlled. This is because the primitive area can not incorporate the additional use adequately without loss of solitude and

increased vandalism of archaeological sites (refer to the Recreation and Cultural Resources sections).

Conclusion: Wilderness values would not be preserved by wilderness designation. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 1,684 acres of the ISA Complex, and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 4,220 acres. Special features would not be significantly affected.

### • Impacts on Mineral and Energy Exploration and Production

The ISA Complex would remain open to exploration and development of mineral and energy resources without consideration of wilderness values. Sixty-one percent of the ISA Complex is presently unavailable for oil and gas exploration and this situation would continue. Therefore, mineral and energy resources would not be restricted further by the No Action/No Wilderness Alternative.

Conclusion: Implementation of the No Action/No Wilderness Alternative would not place additional restrictions on mineral exploration or production.

### • Impacts on Wildlife Habitat and Populations Including Special Status Species

Approximately 20 acres of surface disturbance could occur from oil or gas exploration under this alternative. The effect of such disturbance would be negligible to wildlife. This disturbance could occur within the 3,900 acres of crucial yearlong desert bighorn habitat and the 2,900 acres of crucial deer winter range, reducing these habitats by approximately 1 percent during the period of disturbance, which is projected to be 3 to 6 months. Reclamation could result in the habitat being improved over the long term. This alternative would allow 1,660 acres of vegetation treatment and development of three springs and 2-1/2 miles of pipeline. The proposed water developments would cause surface disturbance on approximately 4 acres. These projects would result in improved water and additional forage and ecotones for mule deer, and would increase populations of certain passerine birds, small mammals, and other nongame species, while reducing populations of species associated with sagebrush communities. Bighorn sheep habitat in the canyons would not be disturbed.

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Mobile animals such as mule deer would leave the area of disturbance, and less mobile animal populations would be reduced during the time of disturbance. The extent and use of the WSA by the bald eagle, peregrine falcon, or the six Category 2 candidate species that may occur there is unknown. Proposed vegetation treatments would not affect most of these species because activities would be in the flat sagebrush areas, and, if present, these species would inhabit the riparian and cliff face areas in the canyons.

BLM would conduct site-specific clearances of the potentially disturbed areas. If any threatened or endangered species are located, BLM would initiate consultation with FWS as required by the Endangered Species Act and BLM policy. BLM would request a biological opinion when appropriate (refer to Appendix 4 in Volume I). Appropriate mitigation measures, such as avoidance of sensitive areas, would be implemented. Because necessary measures would be taken to protect these species, potential populations of threatened, endangered, or special status animal species would be preserved with the No Action/No Wilderness Alternative.

Conclusion: The projected vegetation treatments and water developments would increase wildlife diversity, populations, forage, and ecotones. Oil and gas exploration, the vegetation treatments, and water developments, would displace wildlife species on less than 2 percent (1,684 acres) of the ISA Complex during the lifetime of these projects. No adverse impacts would occur to endangered, threatened, or other special status species. Bighorn sheep habitat would not be affected.

### • Impacts on Livestock Management

Domestic livestock grazing would continue as authorized (currently 1,930 AUMs involving eight permittees). Fourteen earthen reservoirs, four developed springs, and 5 miles of fence could be used and maintained as in the past. The proposed controlled burns and chemical treatment of 1,660 acres of sagebrush, three spring developments, and 2.5 miles of water pipeline could be implemented by mechanical means. The vegetation treatments would result in 390 additional AUMs. Roads and ways would remain open for vehicular use in support of livestock management.

Conclusion: Few, if any, changes in livestock use or management techniques are expected with this alternative. Livestock management would not be affected by the No Action/No Wilderness Alternative.

### • Impacts on Cultural Resources

With this alternative, 1,660 acres of the ISA Complex would be subject to controlled burning or chemical treatment of vegetation. About 1,660 acres of the ISA Complex would be subject to controlled burning and chemical treatment of existing seedings in the southwestern portion of the unit. Given the high density of archaeological sites in the region, some significant cultural resources may be affected by this project. However, these sites may have been damaged by the original seeding projects conducted in the 1960s. Controlled burning and chemical treatments would not alter the surface further, thus, sites involved would not receive any additional damage. Minimal disturbance, 20 acres, would occur due to mineral exploration in the foreseeable future and would probably have little impact on cultural resources. Most of the unit outside the existing Grand Gulch Primitive Area would remain open to mineral location and leasing in the future. All sites in the ISA Complex would continue to be protected under existing State and Federal antiquities laws and appropriate inventory and mitigation procedures would precede any surface disturbance. Some inadvertent damage to archaeological sites, especially those that cannot be detected by surface inspection, may occur despite all management efforts. In addition, increased access due to road construction and increased human presence would provide opportunities for intentional vandalism and illegal artifact collection (Nickens et al., 1981).

The portion of the ISA Complex outside the Grand Gulch Primitive Area would remain open to ORV use and vehicular access. In general, the ISA Complex is quite inaccessible and all types of motorized traffic are currently limited to existing roads and ways. Most of the archaeological sites in the unit are protected from both intentional and unintentional damage from vehicular traffic due to topographic constraints. Vehicular activity would probably not increase significantly in the future because of the ISA Complex's rugged terrain.

Vandalism has been a significant problem in the region for the last few decades and incidence may increase in the future due to the general population increase. Many of the sites in the ISA would attract vandals seeking salable artifacts or additions to personal collections.

With this alternative, archaeological sites would be subject to standard cultural resource management procedures (Neumann and Reinburg, 1988).

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Stabilization of vandalized sites, inventory, interpretation of significant sites or resources, and research-oriented excavation could proceed without the restrictions for maintenance of other wilderness values. Ranger patrols, including use of helicopters in surveillance, would help to control vandalism and theft of cultural resources.

Conclusion: Projected surface disturbing activities may damage significant cultural resources. Impacts are expected to be minimal because most of the anticipated disturbance would be in previously disturbed areas. Vandalism may increase.

## • Impacts on Recreation

Primitive recreational opportunities and quality would be diminished on the 20 acres disturbed by mineral and energy activities and the 1,664 acres that would be disturbed by vegetation treatments and other livestock developments.

The energy-related disturbance would largely be limited to the 41,172-acre area that would be managed as leasing Category 2 (special stipulations) outside the existing Grand Gulch primitive area. Roads and ways created for oil and gas exploration and development would temporarily improve access into the area for nonprimitive recreation. Roads would be closed to the extent possible following completion of drilling operations. Approximately 15 miles of existing vehicular way presently open to vehicular access, as well as any new access roads, would provide vehicular access for nonprimitive recreational uses. Motorized activities would continue to be restricted to roads and ways by terrain limitations and would probably have little affect on primitive recreation opportunities.

The future trends in recreational use of the ISA Complex are unknown. However, based on a review of several projections (UDNRE, ORA, 1980; UDNRE, DPR, 1985; Utah Office of Planning and Budget, 1984; Jungst, 1978; Hof and Kaiser, 1981; and Cordell and Hendee, 1982), it is estimated that outdoor recreation in Utah will increase at between 2 to 7 percent per year over the foreseeable future. At this rate, overall recreational use could increase from 22,800 current visitor days per year to between 42,968 and 198,708 visitor days by the year 2020. The higher degree of increase is unlikely, however. Most of this use would remain primitive because of terrain and

management limitations on vehicle use. Commercial outfitting would continue to be an important recreational factor in the ISA Complex.

The quality of the primitive recreational experience would be reduced by visitor interaction at the projected upper level and visitor use may have to be restricted by BLM before such levels of visitation are reached in order to ensure a high quality primitive recreational experience in the Grand Gulch and adjoining canyons.

Conclusion: Opportunities for primitive recreation would not be significantly reduced by surface-disturbing activities. Overall recreational use, including commercial outfitting, would increase and may have to be controlled in order to ensure a high quality primitive recreational experience. Vehicular use of 15 miles of ways would continue.

## • Impacts on Local Economic Conditions

Overall, no changes in existing patterns or trends of population, employment, or distribution of local income would be expected.

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would not be affected. Employment of 10 individuals at one time for oil and gas exploration over a 3-to-6-month period would not contribute significantly to the local economy. Oil and gas development is not anticipated in the foreseeable future. The probability of economic development of locatable and salable minerals within the ISA Complex is low (refer to the Mineral and Energy Resources section for a description of mineral and development potentials).

There would be no livestock-related economic losses because the existing grazing use (1,930 AUMs), access, and ability to maintain, replace, and build new range improvements would remain as at present. The proposed 1,660 acres of vegetation treatments that would produce 390 AUMs of forage would lead to only \$7,800 of livestock sales and \$1,950 of ranchers' returns to labor and investment.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures, could increase at a rate of 2 to 7 percent per year over the foreseeable future. Because recreational use in the area is estimated to increase from the current 22,800 visitor days per year to between



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42,968 and 198,708 visitor days per year by the year 2020, overall recreation-related local expenditures (averaging \$4.10 per visitor day) could contribute as much as \$814,703 annually to the local economy at the higher projected use levels. Contributions of about \$176,169, comparable to the lower projected use level, are more likely. Nevertheless, these contributions would be significant to individual businesses dealing in recreational equipment and services. If local companies were to become involved in commercial outfitting, this would add to the economic return to the local economy.

Collection of livestock grazing fees (approximately \$2,972 per year) would continue. The additional 390 AUMS of forage that would be produced by proposed vegetation treatment would contribute an additional \$600 in livestock grazing fees annually. About 50 percent of the increased revenues would be returned to the local BLM office for use in range improvement projects. Approximately 55,277 acres of the ISA Complex that are currently open to lease but not currently leased could be leased for oil and gas which would contribute additional lease fees of \$110,554 annually to the Federal Treasury. If commercial recreation use increases in proportion to current use levels, by the year 2020, it could contribute as much as \$25,000 in additional Federal Revenues annually (currently about \$3,000 is collected). This degree of increase is unlikely, however.

Conclusion: Present economic trends and uses would not be affected. Recreation-related expenditures would contribute between \$176,169 to \$814,703 annually to the local economy by the year 2020. Federal revenues could increase by as much as \$136,154 annually.

## **All Wilderness Alternative (Proposed Action) (105,520 Acres)**

### **• Impacts on Wilderness Values**

Designation and management of all 105,520 acres as wilderness would preserve the wilderness values in the Grand Gulch ISA Complex. The potential for surface-disturbing activities would be eliminated through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness and outstanding opportunities for primitive recreation would be preserved on all 105,520 acres which have these values. Solitude would be preserved on approximately

103,920 acres that meet and 1,600 acres that do not meet the standards for outstanding opportunities. Resources that could be considered as special features in the ISA Complex including Class A scenery, endangered and sensitive species, wildlife associated with wilderness, geological values, and archaeological values, would also be preserved.

In the foreseeable future, direct disturbance of up to 4 acres (0.004 percent) of the ISA Complex is anticipated from development of rangeland projects. Indirect reduction in the quality of solitude and primitive recreation opportunities resulting from sights and sounds would involve up to 10 acres (0.009 percent) of the ISA Complex and would be temporary. Rangeland projects would be designed to meet wilderness management criteria and, upon completion, would not be substantially noticeable in the area as a whole. No wilderness values would be lost from disturbance.

Vehicular use of existing ways would cease with ORV closure, improving opportunities for solitude and primitive recreation.

The 2 to 7 percent annual increase in visitor use that would occur with time would be primitive in nature and would be managed so as to not result in loss of wilderness values. Visitor limitations or other controls may be necessary to protect archaeological values and maintain high opportunities for solitude.

Conclusion: Wilderness designation would preserve wilderness values overall throughout the ISA Complex. Wilderness values would be directly reduced in quality on 4 acres and indirectly reduced in quality on up to 10 acres. Wilderness management criteria would be met.

### **• Impacts on Mineral and Energy Exploration and Production**

#### **• Leasable Minerals**

Approximately 1,060 acres of the ISA Complex are leased for oil and gas. However, no exploration or development of oil and gas is presently occurring in the area. Existing leases could be developed subject to the stipulations issued at the time of leasing. Due to the small size of the potential deposits and the low certainty that they exist, there is a low probability of development and production. Existing leases would be phased out of the wilderness area and new leases would not be

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issued. This would not result in a significant loss of oil and gas recovery.

- Locatable Minerals

Currently, there are no mining claims in the ISA Complex. Because there is little or no potential for locatable mineral deposits in the WSA, it is concluded that this alternative would not result in a significant loss of locatable mineral exploration or production.

- Salable Minerals

Mineral sales would not be allowed in the wilderness area. Because of low potential for deposits and the availability of better sources of material outside of the ISA Complex, this alternative would not result in a significant loss of salable mineral production.

Conclusion: The potential for oil and gas exploration would be foregone. There would not be a significant loss in production of any mineral or energy resources.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative there would be no surface disturbance from oil and gas exploration or the proposed 1,660 acres of vegetation treatment. ORV use would not be allowed on the ways inside the ISA Complex. Therefore, some wildlife species would benefit due to the preservation of solitude. Most wildlife species, including threatened, endangered, and special status species that may occur in the ISA Complex would be provided additional protection with wilderness designation. However, the opportunity to provide habitat diversity and ecotones for big game and certain nongame species through vegetation treatment would be foregone.

Conclusion: Wilderness designation would protect wildlife habitat from disturbance and maintain present wildlife populations through the preservation of solitude. Opportunities to provide habitat diversity and additional forage that would benefit big game and certain nongame species would be precluded. Special status species would not be significantly affected.

- Impacts on Livestock Management

Grazing use would continue with no substantial change. The eight operators with cattle and/or cattle and horse use could continue grazing of the estimated 1,930 AUMs in the four allotments within the ISA Complex. The existing four springs, 14 earthen reservoirs, and 5 miles of fence would continue to be used and maintained as in the past based on practical necessity and reasonableness. The 1,660 acres of proposed vegetation treatment for maintenance of existing seedings would have to be done with hand tools and by nonmechanical means which could increase costs and reduce effectiveness. The proposed spring developments and 2.5 miles of water pipeline probably could be constructed. Livestock distribution would benefit from development of the allowable rangeland improvements, but the full benefits of increased AUMs that could be gained with controlled burning and chemical treatment would be reduced. Closure of existing ways would inconvenience some operators who use existing ways for livestock management. This would result in inconvenience and slightly increased costs of management for livestock operators.

Conclusion: Wilderness designation would result in inconvenience and slightly increased costs of management for eight livestock operators. The potential for increases in forage production (390 AUMS) through vegetation treatment would be foregone.

- Impacts on Cultural Resources

Minimal surface disturbance, approximately 4 acres, is expected in the foreseeable future with this alternative. The entire unit would be closed to all mineral location and leasing in the long term. Very little impact to cultural resources due to surface development is expected with this alternative.

Vehicular traffic would be limited to cherry-stemmed roads in the unit's western portion. These roads would provide only limited access to archaeological sites in the unit's interior. All sites would be essentially protected from intentional and unintentional damage resulting from continued vehicular access.

As recreational use of the unit increases in the future, site vandalism and collection of small transportable objects may increase. Sites in the ISA Complex containing valuable artifacts or specific features may experience large scale commercial looting due to the increased inaccessibility wilderness designation would provide. Many of the Basketmaker and Pueblo

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sites in the unit would fit this category (Wylie, 1988). The protection of cultural resources from all ORV activity, vehicular access, and surface development would, however, probably outweigh any increases in vandalism or large scale looting.

The general public is already aware of the high value cultural resources present in southeastern Utah. Since Grand Gulch was designated as a primitive area in 1970, visitation has increased and concomitantly artifact hunting and vandalism have also increased. Given the attractiveness of the archaeological sites in the Grand Gulch Complex, education of wilderness visitors would be essential in protecting the resource from both intentional vandalism and unintentional damage. Standard education and protection measures such as warning and interpretive signs may be disallowed under wilderness management. In addition, it may be difficult to stabilize sites already vandalized while maintaining wilderness values. Research potential in the ISA Complex is high, however, wilderness designation may restrict access to the unit for inventory and excavation of specific sites.

Conclusion: Sites would be protected from most intentional and unintentional damage. Increased recreational use and/or increased inaccessibility may increase certain types of vandalism but benefits of protection from disturbance and ORV use would probably outweigh potential damage. Cultural resource management may be restricted in scope and execution due to wilderness designation.

## • Impacts on Recreation

Use is currently high (approximately 22,800 visitor days per year), and the ISA Complex has outstanding primitive recreational values. If designated, the opportunities for hiking, backpacking, and horseback riding, in combination with sightseeing and cultural resource study, would be further recognized. As discussed for the No Action/No Wilderness Alternative, recreational use of the ISA Complex is estimated to increase between 2 to 7 percent per year over the foreseeable future in relation to population increases and current trends of recreational use. At this rate, recreation use would increase from the current 22,800 to between 42,968 and 198,708 visitor days by the year 2020. ORV use of existing ways would not be allowed and use would remain primitive.

Visitor interaction would reduce the quality of the primitive recreational experience if the projected upper level were reached. Management provided

through a Wilderness Management Plan would control destructive increases in future recreation use. So it is unlikely that the upper use levels would be reached.

Use of ORVs in the Grand Gulch ISA Complex is currently minimal because of management and terrain, and closure of the entire ISA Complex to vehicle use would result in little change from the current or future situation.

Commercial outfitting would benefit from wilderness designation because opportunities for commercial enterprise are good, and commercial use would likely increase in the future.

Conclusion: Opportunities for primitive recreation would be preserved. There would not be a significant loss in opportunities for ORV use in the region.

## • Impacts on Local Economic Conditions

Overall there would be no significant changes in current trends of population, employment, and local income distribution.

Because existing leases would not be reissued under wilderness designation, there would be losses in Federal revenues currently provided by oil and gas leases in the ISA Complex (refer to Table 13). Precluding exploration and development of energy and mineral resources would not alter existing economic conditions, and because mineral development is not projected in the foreseeable future, potential mineral-related local income would not be significantly reduced by wilderness designation. Local income related to assessment of any future mining claims would be lost, although the probability for such claims and their potential economic contribution is very low.

Livestock use and ranchers' income would continue as at present with \$38,600 of livestock sales and \$9,650 of ranchers' return to labor and investment. The potential for forage production from the proposed 1,660 acres of vegetation treatments would be lost, along with any resulting increase in ranchers' income. Because the potential forage increases are approximately 390 AUMs, potential annual increased returns to labor and investment foregone would be up to \$1,950 and the potential increase in livestock sales foregone each year would be \$7,800.

Future recreational use would increase to between 42,968 and 198,708 visitor days per year. Related

# GRAND GULCH ISA COMPLEX

local expenditures would average \$4.10 per visitor day for a annual total of as much as \$814,703 annually to the local economy at the higher projected use levels. Contribution of about \$176,169 comparable to the lower projected use levels is more likely. These contributions would be significant to individual businesses providing recreational equipment and services, to the commercial outfitters who now use the ISA Complex, and to those outfitters that may begin to use the ISA Complex. Current and projected motorized recreational use of the ISA Complex is currently light, and any decrease in related local expenditures due to ORV closure would be small and insignificant to both the local economy and individual businesses.

Recreation-related Federal revenues (presently about \$3,000 annually) would increase as commercial outfitter services increase. There are presently six commercial outfitters using the ISA Complex; designation could lead to more commercial recreational use in the ISA Complex. If commercial recreation use increases in proportion to current use levels, by the year 2020 it could contribute as much as \$25,000 in Federal Revenues annually. This degree of increase is unlikely, however.

Because the 55,277 acres that are available for leasing under the No Action/No Wilderness Alternative would not be leased with the alternative, up to \$110,554 per year of potential annual Federal lease fees would be foregone.

Conclusion: Present economic uses and trends would not be significantly affected. Recreation-related expenditures would contribute between \$176,169 and \$814,703 annually to the local economy by the year 2020. Potential annual Federal revenues would be \$111,150 less than with the No Action/No Wilderness Alternative.

## **Partial Wilderness Alternative (37,580 Acres)**

The area that would be designated wilderness with this alternative is currently administratively designated by BLM as the Grand Gulch Primitive Area. The Primitive Area is presently closed to mineral location and leasing, as well as to ORV activity. It is currently managed as VRM Class I. Partial wilderness designation essentially would result in continuation of the current management situation, with only one difference. Wilderness would be a statutory designation with this alternative, as opposed to the administrative Primitive Area designation that would occur with the No

Action/No Wilderness Alternative. The statutory designation would be much less subject to change in the future.

With the Partial Wilderness Alternative, impacts and conclusions would be the same as those described for the No Action/No Wilderness Alternative because the administration of the area and projected and planned activities would be the same and would involve the same disturbance for both alternatives.

# Road Canyon WSA

## INTRODUCTION

General Description of the Area

Location of the Area

Special Issues Relating to Current Planning and Future Plans



Visual Resources

Cultural Resources

Recreation

Land Use Plans

Economics

## ENVIRONMENTAL CONSIDERATIONS OF ALTERNATIVES

No Action/No Wilderness Alternative

All Wilderness Alternative (Proposed Route)

Large Partial Wilderness Alternative (15,750 Acres)

Small Partial Wilderness Alternative (23,270 Acres)



# ROAD CANYON WSA

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# ROAD CANYON WSA

(UT-060-201)

## INTRODUCTION

### General Description of the Area

Road Canyon WSA is located approximately 10 miles north of Mexican Hat, San Juan County, Utah. The WSA, containing 52,420 acres, is approximately 9 miles long and 10 miles wide at the widest point, with a cherry-stemmed boundary road cutting approximately 7 miles into the mid-portion of the area.

The area is situated along the southeast portion of the Grand Gulch Plateau and contains Road Canyon, Lime Creek, the West Fork of Lime Creek drainages, and a portion of Cedar Mesa. Elevations range from 6,500 feet in the northeast to 4,700 feet in the southeast. Vegetation consists largely of desert shrubs and pinyon-juniper woodland.

The principal feature of the WSA is its steep canyon walls, cross-bedded sandstone, and lower talus slopes with various erosional formations such as knobs, pinnacles, buttes, overhangs, arches, and alcoves.

Annual precipitation ranges from 6 inches to 12 inches over the Road Canyon WSA. January, May, and June are the driest months. July, August, and December are the wettest months. Annual total snowfall ranges from 10 to 40 inches. Average high temperatures in the Road Canyon WSA range from 65 to 70 degrees Fahrenheit (F), while average low temperatures are between 37 and 42 degrees F. The record high is 102 and the record low is -2 degrees F.

Road Canyon WSA is adjacent to the Fish Creek Canyon WSA to the north. They are separated by a county road.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume V, the following changes specific to the WSA have been made since publication of the Draft EIS.

1. T. 40 S., R. 19 E., sec. 16, was incorrectly shown on Map 1 of the Draft EIS. A portion of the section is not in State ownership and the Final EIS has been corrected.

2. The BLM Proposed Action in the Draft EIS was the 45,720 acre Partial Wilderness Alternative. The BLM Proposed Action for the Final EIS is the All Wilderness Alternative (52,420 acres). Refer to Appendix 11 in Volume I for rationale for the Proposed Action.

3. The anticipated surface disturbance presented in the Draft EIS (1,960 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities projected to be feasible within the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of surface disturbance estimates from the 1,960 acres reported in the Draft EIS to 721 acres of surface disturbance for the Final EIS.

4. The Draft EIS identified an 1,800 acre chaining and seeding within the WSA to improve livestock forage production. However, BLM does not anticipate sufficient funding in the foreseeable future to complete this project. As a result, the land treatment estimates have been revised downward to 700 acres in the Final EIS to reflect more realistic funding projections. The proposed method of treatment has changed from chaining to controlled burning and/or chemical (herbicide) treatment in order to avoid impacts on cultural resource sites. Construction of a 0.5 mile of fence is also projected in the Final EIS.

### Specific Issues Identified Through Scoping and Public Comment

- Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume V (i.e., impacts on air quality, geology and topography, water rights, and land use plans and policies),

STATEWIDE  
POCKET MAP  
WSA  
NO. **47**  
SEE VOL. I

## ROAD CANYON WSA

the following issues or impacts specific to the Road Canyon WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Soils: The public is concerned that without wilderness designation future activities in the WSA would result in soil disturbance and increases in soil erosion and loss of soil fertility. Because the mineral-related surface disturbance estimate for the WSA has been reduced from 160 to 20 acres in the Final EIS, only 0.04 percent of the WSA would be disturbed and require reclamation. This is considered insignificant.

The Draft EIS analyzed 1,800 acres of chaining and seeding. The proposed vegetation treatment has been changed to 700 acres of controlled burning and or chemical treatment. Vegetation would be reestablished in 1 to 2 years. Following reestablishment of vegetation, erosion rates would decrease. Therefore, there would not be adverse affects on soils from the proposed vegetation treatment.

Perennial streams or other natural water sources are lacking in the WSA. Therefore, there would not be secondary impacts to water quality and sediment yield from the WSA would not increase. Therefore, impacts on soils are not significant issues for the Final EIS for the Road Canyon WSA.

2. Water Resources: The public is concerned that wilderness designation would interfere with development of water and future developments could also increase sediment yield and affect water quality. There are no perennial streams in the WSA. Potential water uses include livestock, recreation, and wildlife, and these uses would be compatible with wilderness management. Therefore, impacts of wilderness designation on water uses and quality are not significant issues for the Road Canyon WSA and are not discussed in detail in the Final EIS.

3. Forest Resources: The Navajo Indian Tribe has expressed concern that prohibition of firewood cutting on Cedar Mesa would adversely affect the availability of fuel wood for the reservation. However, the Road Canyon WSA is estimated to contain less than 2,390 cords of firewood. Additionally, the bulk of the fuelwood for the reservation comes from the National Forest above the BLM WSAs on Cedar Mesa. Only minimal firewood or other forest products have been harvested from the WSA, mainly along Highway 126 and the Cigarette Spring cherry-stemmed road where there is easy access. For these reasons, impacts on

forest resources are not significant issues for analysis in the Final EIS.

4. Visual Resources: As discussed above, only 20 acres of surface disturbance are projected for the WSA in the Final EIS. This level of disturbance (approximately 0.04 percent of the area) would not significantly alter visual resources. The proposed 700 acres of controlled burns and chemical treatment of vegetation would be noticeable. Because impacts on visual resources would mainly affect the wilderness value of naturalness, the impacts on visual resources are not addressed in the Final EIS as a separate topic, but are addressed as part of the analysis of naturalness in the Wilderness Values sections.

5. Socioeconomics: The public, including State and local government, is concerned that wilderness designation would preclude mineral or other economic developments and adversely affect local economic conditions. Others believe that primitive recreation use would increase following wilderness designation and would contribute to the local economy.

There are no existing or anticipated mineral developments or proposals for lands or realty activities which would be impaired with or without wilderness designation. Recreational use is expected to increase from the current 450 up to 3,920 visitor days per year by the year 2020. This increase would contribute approximately \$16,072 to the local economy but the increase would be well distributed and would not be significant to the local economy. The potential for 170 AUMs of additional livestock forage in the WSA would bring only \$3,400 in annual sales, \$850 in returns to labor and improvements and \$262 in grazing fees. Therefore, impacts on economic conditions are not significant issues for the Final EIS.

### • Issues Analyzed in Detail

The significant issues for the Road Canyon WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on vegetation including special status plant species.
3. Impacts on mineral exploration and production.
4. Impacts on wildlife habitat and populations including special status species.

# ROAD CANYON WSA

5. Impacts on livestock management, including opportunities for rangeland developments.
6. Impacts on the preservation of cultural resources.
7. Impacts on recreational use of the Road Canyon, including tradeoffs between potential future ORV use on the mesa tops and primitive recreational use.

Comments made during the public comment period for the Draft EIS centered mainly on:

1. The adequacy of BLM's wilderness inventory.
2. Rationale for the BLM Proposed Action and manageability of the Valley of the Gods portion of the WSA.
3. Errors in BLM's assessment of wilderness values, including solitude and primitive and unconfined recreation.
4. Need for additional resource inventories.

Refer to Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 47, for responses to specific comments about the Road Canyon WSA.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated from Detailed Study

Alternatives that would add about 7,500 acres of Federal and State lands on the south and east of the WSA and combine the Road Canyon and Fish Creek Canyon WSAs into one complex were suggested in the public comments on the Draft EIS. These alternatives are not analyzed in detail because the inclusion of State lands is not consistent with BLM's wilderness review guidelines (refer to Volume VII-B, General Comment Response 6.4) and because other public lands were dropped from study during the inventory phase (refer to Volume VII-B, General Comment Response 3.1). The Fish Creek Canyon and Road Canyon WSAs are separated by a maintained county road, and, therefore, cannot be combined into one WSA.

Other citizen-proposed alternatives are comparable to the All Wilderness Alternative of 52,420 acres. They are not analyzed because they offer no major distinctions beyond the alternatives analyzed in the Final EIS.

### Alternatives Analyzed

Three alternatives are analyzed for this WSA: (1) No Action/No Wilderness; (2) All Wilderness (Proposed Action) (52,420 acres); (3) Large Partial Wilderness (45,720 acres); and (4) Small Partial Wilderness (23,220 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case. The management actions presented in the Introduction to Volume V are also applicable.

#### • No Action/No Wilderness Alternative

With this alternative, none of the 52,420-acre Road Canyon WSA would be designated by Congress as part of the NWPS. Although BLM's land use plans are regularly updated, and the San Juan Resource Area RMP will eventually replace the MFP, it is assumed that the area would continue to be managed in accordance with the South San Juan MFP (USDI, BLM, 1971). The three sections (1,920 acres) of State land within the WSA (refer to Map 1) have not been identified in the MFP for special Federal acquisition through exchange or purchase. No private or split-estate lands are located in the WSA.

#### • Management Conditions and Constraints

There are 8 mining claims (160 acres) in the WSA. Development work, extraction, and patenting would be allowed on existing and any future mining claims. Development would be regulated by unnecessary or undue degradation regulations (43 CFR 3809) without concern for wilderness values. However, there is little or no potential for the occurrence of locatable minerals and exploration or development is not expected in the foreseeable future. The 504 acres in 12 existing post-FLPMA oil and gas leases and future leases could be developed under leasing Category 2 (special stipulations) on 44,450 acres and Category 3 (no surface occupancy) on 6,420 acres. The remaining 1,550 acres in the WSA would remain closed to oil and gas leasing (Category 4).




Because there is potential for small accumulations of oil and gas in the Paleozoic formations underlying the nondesignated portion of the WSA, limited oil and gas exploration is expected in the leasing Category 2 area on the mesas surrounding the major canyon systems in the WSA and could result in

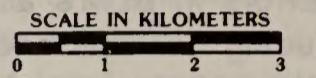
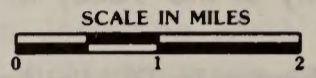
# ROAD CANYON WSA

## Map 1

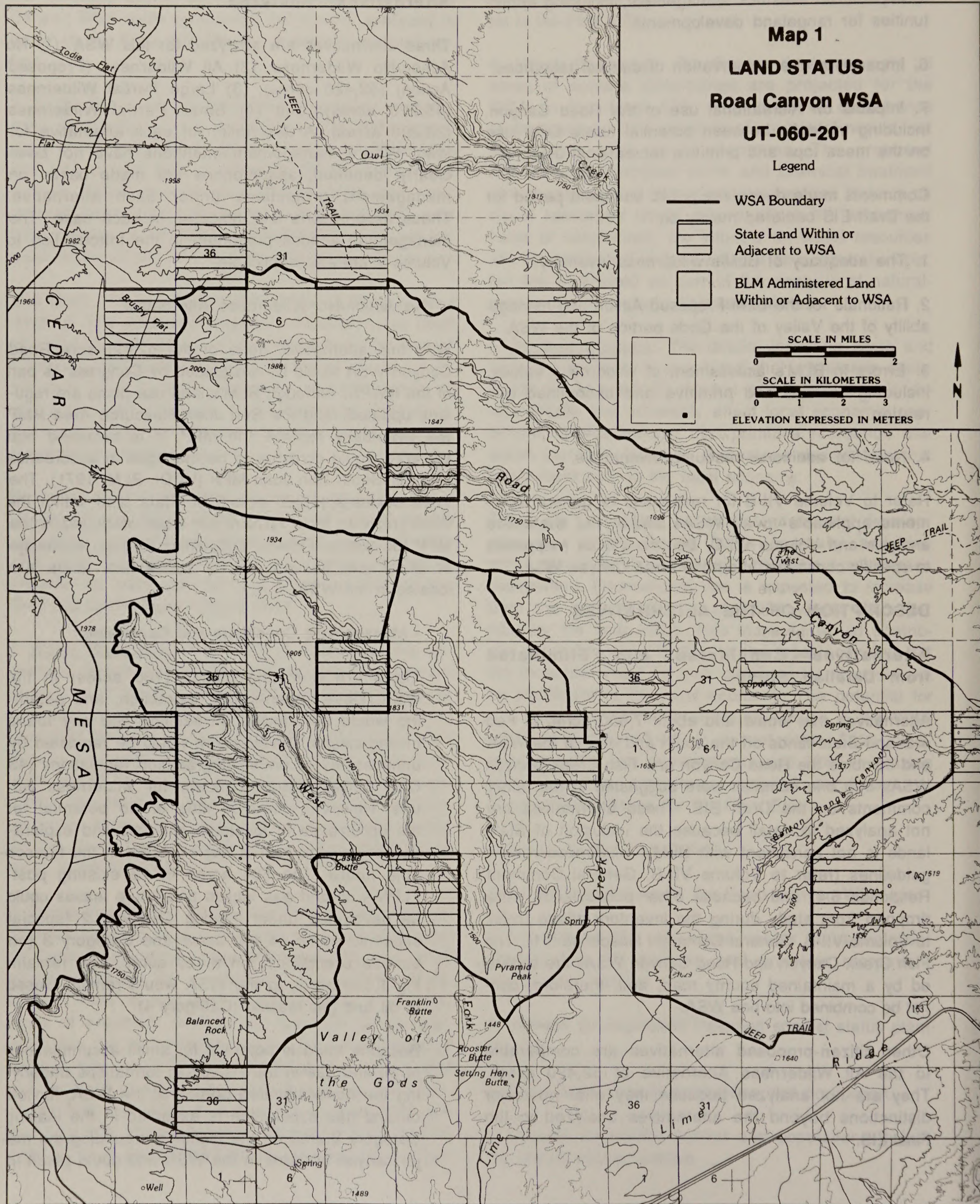
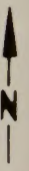
### LAND STATUS Road Canyon WSA UT-060-201

Legend

-  WSA Boundary
-  State Land Within or Adjacent to WSA
-  BLM Administered Land Within or Adjacent to WSA



ELEVATION EXPRESSED IN METERS



T. 38 S.

T. 39 S.

T. 40 S.

R. 19 E.

R. 20 E.

## ROAD CANYON WSA

about 20 acres of surface disturbance. Development of oil and gas is not projected following exploration because the level of known resources, the certainty of their occurrence and the probability of their development are too low to support a development assumption. Refer to Appendix 6 in Volume I for an explanation of mineral development projections.

The present level of domestic livestock grazing use (estimated 1,450 AUMs in four allotments in the WSA) would continue as authorized. Use of the existing 6 miles of fence, two stock trails, 13 reservoirs, and one corral would continue. Proposed developments of 0.5 mile of fence and 700 acres of vegetation treatment could be implemented without wilderness considerations.

The WSA would remain open to ORV use. ORV use is expected to increase in the foreseeable future mainly on 7 miles of ways and 10 miles of cherry-stemmed roads, but also on the flat mesa tops inside the WSA.

The entire WSA would remain open to woodland product harvest. The Snow Flat and Cigarette Point roads are used for woodland harvest. Amounts harvested are thought to be minimal, although actual use figures are not available. This occasional harvest would continue into the foreseeable future.

The WSA would continue to be managed under VRM Class II on 28,830 acres, VRM Class III on 19,400 acres, and VRM Class IV on 4,190 acres as indicated in the MFP.

- Action Scenario

It is projected that approximately 721 acres will be disturbed in the WSA in the foreseeable future. About 20 acres will be disturbed by oil and gas exploration. It is assumed that two exploratory wells will be drilled on the flat areas above the major canyon systems where the WSA is open to surface occupancy. The location of drill sites will be determined through the interpretation of geophysical data. Each location will disturb up to 10 acres for up to 4 miles of access road and drill pad construction. Exploration wells would employ an average of 10 employees per well and would take from 3 to 6 months to complete. Disturbed areas would be rehabilitated following abandon-

ment and approximately 2 years would be required for successful revegetation.

Approximately 700 acres of pinyon-juniper woodland and sagebrush vegetation would be altered by controlled burning or chemical (herbicide) treatment in order to improve livestock forage production. Treatments would be done in the central portion of the WSA on the flat mesa tops north and south of the Cigarette Springs cherry-stemmed road. Treated areas would be reseeded with grasses and other livestock forage species. Vegetation would reestablish within 2 years.

One-half mile of new fence would be constructed which would result in disturbance of about 1 acre.

Continued ORV use on the mesa tops in the central portion of the WSA will result in an undetermined amount of disturbance.

Recreation use will increase above the current estimated 2000 visitor days annually at a rate of 2 to 7 percent per year. Recreational use will continue to be 90 percent primitive in nature. Vehicular activity would mostly be on 7 miles of existing vehicular ways plus cherry-stemmed roads.

- All Wilderness Alternative (Proposed Action)

With this alternative, all 52,420 acres of the Road Canyon WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character.

The policy of the State of Utah is to reserve its position regarding exchange of in-held lands within any particular WSA (see Chapter 1 in Volume I). Based on this policy regarding exchange of State lands, it is assumed that State lands would remain under existing ownership. There are three State sections (1,920 acres) within the WSA (refer to Map 1 and Appendix 3 in Volume I). There are no private or split-estate lands in the WSA. The figures and acreages given with this alternative are for Federal lands only.

- Management Conditions and Constraints

After wilderness designation, all 52,420 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be

# ROAD CANYON WSA

T. 38 S.

T. 39 S.

T. 40 S.

R. 19 E.

R. 20 E.

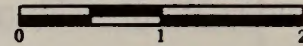
## Map 2

### ALL WILDERNESS ALTERNATIVE Road Canyon WSA UT-060-201

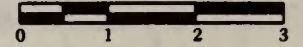
#### Legend

— All Wilderness  
Alternative (52,420 acres)

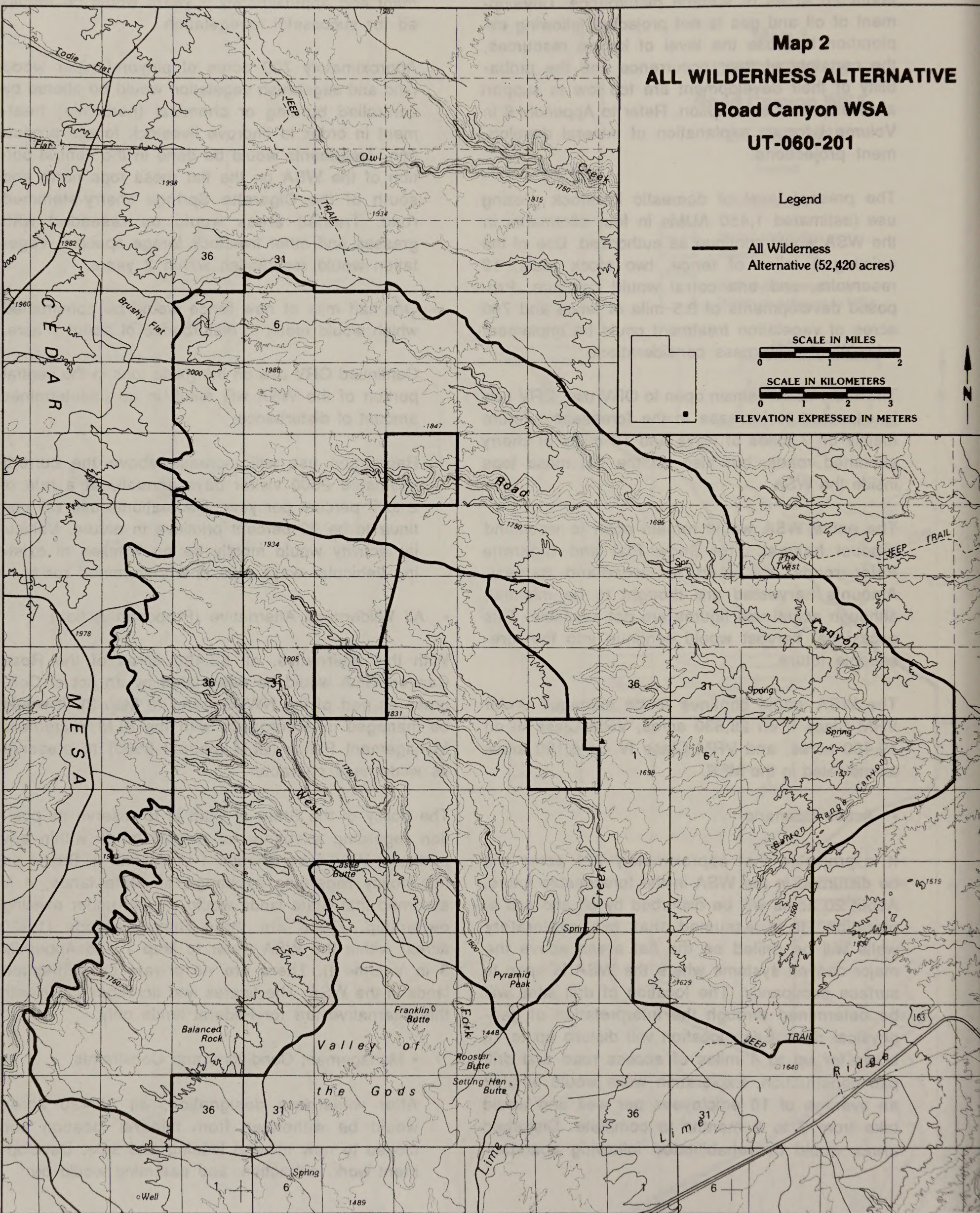
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



## ROAD CANYON WSA

allowed to continue on eight existing mining claims (160 acres) and future mining claims that may be located prior to wilderness designation if determined to be valid. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) with consideration given to wilderness values. Because there is little or no potential for locatable minerals in the WSA, exploration or development is not anticipated following wilderness designation. Twelve existing oil and gas leases involving 504 acres would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown. No new oil and gas leasing would be allowed. Because of depressed oil prices, the low certainty of occurrence of oil and gas in the WSA, and wilderness protection requirements, no exploration or development of oil and gas are projected prior to or following wilderness designation.

Present domestic livestock grazing would continue as authorized. The 1,450 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of 6 miles of fence, two stock trails, 13 reservoirs, and one corral would continue in the same manner as in the past based on practical necessity and reasonableness. It is assumed that after designation the proposed 0.5 mile of fence would be designated and installed compatible with wilderness protection guidelines. The proposed 700-acre vegetation treatment would probably not be allowed.

The entire 52,420-acre WSA would be closed to ORV use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR 8560 provisions; or (2) for occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. The approximately 7 miles of existing vehicular way in the WSA would not be available for vehicular use except as indicated above. Approximately 10 miles of cherry-stemmed roads in the WSA would remain open to vehicular traffic. Three State sections would also be cherry-stemmed in association with these roads. About 14 miles of the WSA boundary follow existing unpaved roads and jeep trails that would also remain open to vehicular travel.

Harvest of forest products would not be allowed except for harvest of pine nuts or noncommercial gathering of dead-and-down wood, if accomp-

lished by other than mechanical means for use in the WSA.

Visual resources in the WSA would be managed in accordance with VRM Class I standards which generally allow for only natural ecological change.

- Action Scenario

About 1 acre would be disturbed in the foreseeable future for construction of a 0.5 mile of fence. No disturbance from ORV activity is projected due to management and terrain constraints. Vehicular recreational activity would be eliminated. Primitive-type recreation use would increase above the current estimated primitive recreation use of about 1,800 visitor days annually at a rate of 2 to 7 percent per year.

- Large Partial Wilderness Alternative (45,720 Acres)

For this alternative, 45,720 acres of the Road Canyon WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to identify and analyze as wilderness that portion of the WSA with outstanding opportunities for solitude and eliminate from wilderness that area that lacks outstanding opportunities for solitude and primitive and unconfined recreation. It is assumed that the 6,700 acres within the WSA but outside of that designated as wilderness under this alternative would be managed in accordance with the South San Juan MFP as described for the No Action/No Wilderness Alternative. The 45,720 acres designated as wilderness would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) as described in the All Wilderness Alternative.

Because the policy of the State is to reserve its position regarding exchange of in-held lands within any particular WSA, it is assumed that State lands would remain under existing ownership. There are three State sections (1,920 acres) within the portion of the WSA that would be designated wilderness with this alternative (refer to Maps 1 and 3 and Appendix 3 in Volume I). There are no private or split-estate lands in the WSA. The figures and acreages given with this alternative are for Federal lands only.

- Management Conditions and Constraints

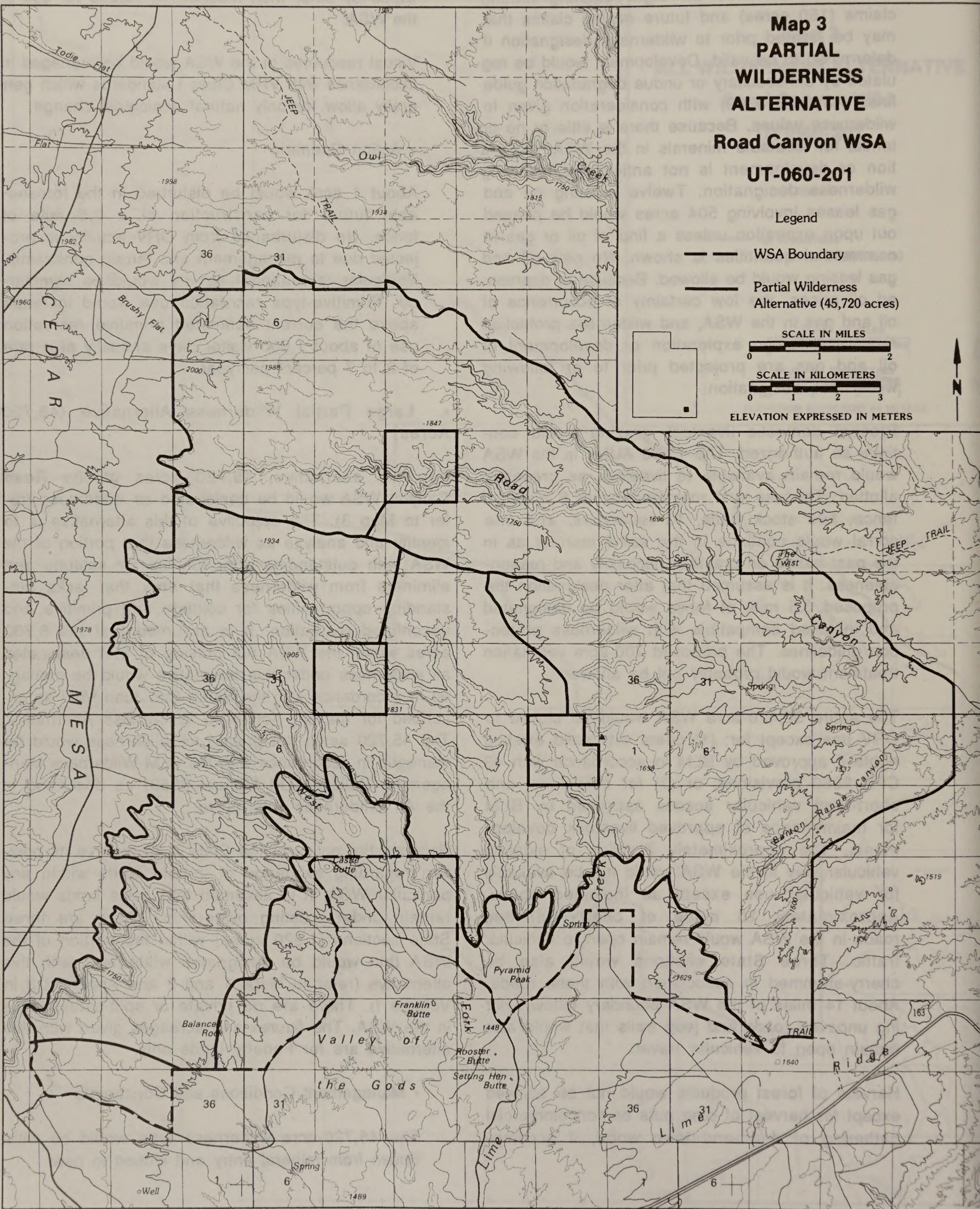
The 45,720-acre wilderness area would be withdrawn from mineral entry and closed to new

# ROAD CANYON WSA

T. 38 S.

T. 39 S.

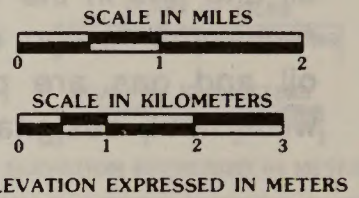
T. 40 S.



## Map 3 PARTIAL WILDERNESS ALTERNATIVE Road Canyon WSA UT-060-201

Legend

- WSA Boundary
- Partial Wilderness Alternative (45,720 acres)



R. 19 E.

R. 20 E.



## ROAD CANYON WSA

mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on eight existing mining claims (160 acres) and claims filed prior to designation provided they are determined to be valid. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) with consideration given to wilderness values. Because there is little to no potential for locatable minerals in the WSA, exploration or development of locatable minerals is not anticipated in the designated area. Twelve existing oil and gas leases, covering 504 acres, would be phased out upon expiration unless a find in commercial quantities is shown. Because of depressed oil prices, low certainty of occurrence of oil and gas, and wilderness protection requirements, exploration or development of oil and gas is not expected prior to or following wilderness designation. The 6,700 acres not designated wilderness would be open to mineral location and sale. Development work, extraction, and patenting of future mining claims could occur if claims are valid. No exploration is anticipated in this area because of little or no potential for occurrence of locatable minerals. There are no oil and gas leases in the 6,700-acre nondesignated area. However, future leases in this area could be allowed without concern for wilderness values. Oil and gas leasing would be managed as Category 2 (special stipulations) on the 6,530 acres. One hundred seventy acres would remain closed to oil and gas leasing. Although oil and gas would be managed as described, no oil and gas exploration or development is anticipated because the nondesignated area has lower potential for oil and gas than the area on the mesa tops.

Domestic livestock grazing would continue to occur in the 45,720-acre wilderness with an estimated 1,106 AUMs remaining available to livestock as presently allotted. Three of the 6 miles of fence, two stock trails, 11 reservoirs and the corral would continue to be used and maintained in the same manner as in the past based on practical necessity and reasonableness. About 344 AUMs, 3 miles of fence, and two reservoirs would be in the nondesignated area and would be maintained without wilderness considerations.

The proposed 0.5 miles of fence is in the area that would be designated wilderness. It is assumed that it would be designed and installed consistent with wilderness protection standards. The proposed 700-acre vegetation treatment is also

in the area that would be designated wilderness and would probably not be allowed.

The wilderness area would be closed to ORV use. About 7 miles of existing way would not be available for vehicular use except in situations described in the All Wilderness Alternative. Approximately 10 miles of cherry-stemmed roads would continue to be available to vehicular travel. Three State sections connected by the roads would also be cherry-stemmed. The remaining acres in the unit, including the existing roads that border the WSA, would remain open to vehicular travel and ORV use is expected to increase in the future in this area.

Harvest of forest products in the wilderness area would not be allowed except for harvest of pine nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means for use in the wilderness. The remaining area would be open to woodland harvest. However, harvest is not expected in this area because of low production and the scattered nature of the resource.

Visual resources in the wilderness area would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The area not designated wilderness would be managed as VRM Class II on 1,600 acres and VRM Class III on 5,100 acres.

### • Action Scenario

It is projected that about 1 acre of the WSA would be disturbed in the designated portion of the WSA for construction of 0.5 miles of fence. There would be no disturbance in the nondesignated area because no activities are anticipated. No disturbance from ORV use is projected due to management constraints. Vehicular recreational activity would be basically eliminated.

Primitive-type recreation use would increase above the current estimated primitive recreation use of about 1,800 visitor days annually at a rate of 2 to 7 percent per year.

### • Small Partial Wilderness Alternative (23,220 Acres)

For this alternative, 23,220 acres of the Road Canyon WSA would be designated as wilderness

## ROAD CANYON WSA

(refer to Map 4). The objective of this alternative is to avoid conflicts of wilderness designation with oil and gas exploration and vegetation treatments for livestock forage production while analyzing as wilderness those portions of this WSA that have the best wilderness values. BLM believes that wilderness values are of a higher quality in areas where outstanding opportunities for solitude and/or primitive recreation exist, preferably in combination with special features. In forming this alternative, the portions of the WSA where both outstanding opportunities for solitude and primitive recreation and special features were included where possible within a manageable boundary. This occurs in the northern one-third of the WSA. It is projected that the 29,200-acre area within the WSA, but outside of that designated as wilderness, would be managed in accordance with the South San Juan MFP as described for the No Action/No Wilderness Alternative. The area designated as wilderness would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) as described in the All Wilderness Alternative.

There is one section (640 acres) of State land in the area that would be designated. Because the policy of the State is to reserve its position regarding the exchange of in-held lands within any particular WSA, it is assumed that State lands would remain under existing ownership (refer to Maps 1 and 4 and Appendix 3 in Volume I). There are two sections (1,280 acres) of State land in the area that would not be designated. These lands have not been identified in the MFP for special Federal acquisition through exchange or purchase. There are no private or split-estate lands in the WSA. The figures and acreages given with this alternative are for Federal lands only.

### • Management Conditions and Constraints

The 23,220-acre wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed on eight existing claims and any future claims that may be located prior to wilderness designation, provided they are determined to be valid. Development would be regulated by unnecessary or undue degradation regulations (43 CFR 3809) with consideration given to wilderness values. Because there is little or no potential for locatable minerals in the WSA, exploration or development of locatable minerals is not anticipated following wilderness designation. The ten existing oil and gas leases, covering 424 acres of the designated area, would be phased out

upon expiration unless a find of oil or gas in commercial quantities is shown. Because of depressed oil prices and the low certainty of oil and gas occurrence and requirements for wilderness protection, exploration or development of oil and gas is not projected prior to or following partial wilderness designation. The 29,200 acres not designated wilderness would be open to mineral location and sale. Development work, extraction, and patenting of future mining claims could occur in the area if claims are valid. Development of two existing oil and gas leases (80 acres) and future leases could occur without concern for wilderness values. The area not designated would be managed as oil and gas leasing Category 2 (special stipulations) on 28,585 acres and Category 3 (no surface occupancy) on 390 acres. Two hundred twenty-five acres would remain in Category 4 (no leasing).

Because there is potential for small accumulations of oil and gas in the Paleozoic formations underlying the nondesignated portion of the WSA, limited oil and gas exploration is expected in the leasing Category 2 area on the mesas surrounding the major canyon systems in the WSA. Development of oil and gas is not projected following exploration because the level of known resources, the certainty of their occurrence, and the probability of their development are too low to support a development assumption. Refer to Appendix 6 in Volume I for an explanation of mineral development projections.

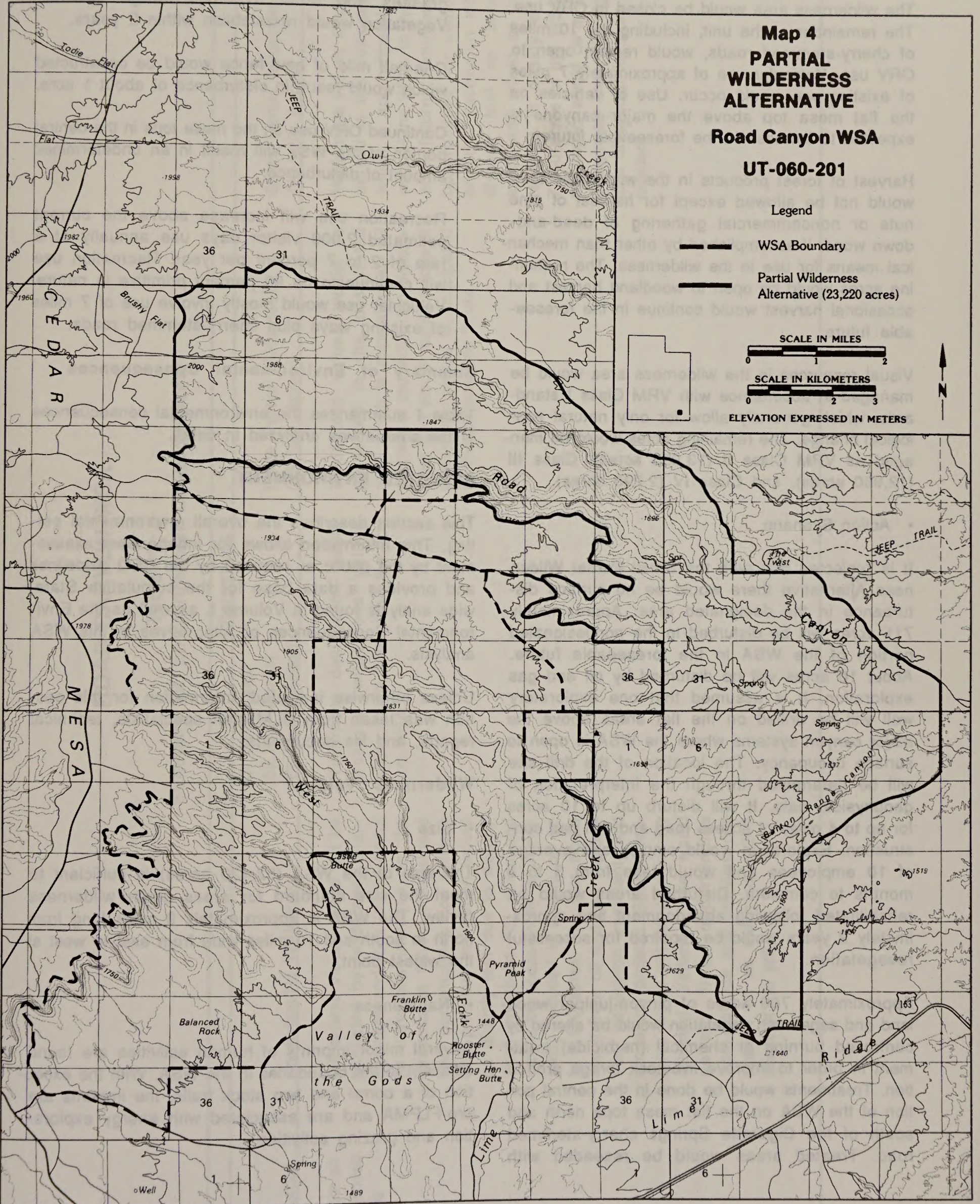
Domestic livestock grazing would continue to occur in the 23,200-acre wilderness area. The estimated 627 AUMs in the designated area would remain available to livestock as presently allotted. The use and maintenance of one stock trail and one reservoir located in the wilderness area would continue in the same manner as in the past, based on practical necessity and reasonableness. The remaining range developments would be in the nondesignated area and would be used and maintained without wilderness considerations. New developments are not proposed in the designated area. The proposed 700-acre land treatment and 0.5 miles of fence would be located in the nondesignated area and would also be allowed without concern for wilderness values. In the 29,200-acre nonwilderness area, grazing use of an estimated 823 AUMs would continue as authorized.

# ROAD CANYON WSA

38 S.

39 S.

40 S.



## Map 4 PARTIAL WILDERNESS ALTERNATIVE Road Canyon WSA UT-060-201

### Legend

- WSA Boundary
- Partial Wilderness Alternative (23,220 acres)

SCALE IN MILES  
0 1 2

SCALE IN KILOMETERS  
0 1 2 3

ELEVATION EXPRESSED IN METERS

R. 19 E.

R. 20 E.

## ROAD CANYON WSA

The wilderness area would be closed to ORV use. The remainder of the unit, including the 10 miles of cherry-stemmed roads, would remain open to ORV use. Vehicular use of approximately 7 miles of existing way could occur. Use of vehicles on the flat mesa top above the major canyons is expected to increase in the foreseeable future.

Harvest of forest products in the wilderness area would not be allowed except for harvest of pine nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means for use in the wilderness. The remaining acres would be open to woodland harvest and occasional harvest would continue in the foreseeable future.

Visual resources in the wilderness area would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The remaining acres would be managed as VRM Class II (13,930 acres), Class III (12,980 acres), and Class IV (2,290 acres).

- Action Scenario

It is projected that with the Small Partial Wilderness Alternative there would be no surface disturbance in the designated area. Approximately 711 acres will be disturbed in the nondesignated portion of the WSA in the foreseeable future. About 10 acres will be disturbed by oil and gas exploration. It is assumed that one exploratory well will be drilled on the flat areas above the major canyon systems where the WSA is open to surface occupancy. The location of the drill site will be determined through the interpretation of geophysical data. It will disturb up to 10 acres for up to 4 miles of access road and drill pad construction. Exploration would employ an average of 10 employees and would take from 3 to 6 months to complete. Disturbed areas would be rehabilitated following abandonment and approximately 2 years would be required for successful revegetation.

Approximately 700 acres of pinyon-juniper woodland and sagebrush vegetation would be altered by controlled burning or chemical (herbicide) treatment in order to improve livestock forage production. Treatments would be done in the central portion of the WSA on the flat mesa tops north and south of the Cigarette Springs cherry-stemmed road. Treated areas would be reseeded with

grasses and other livestock forage species. Vegetation would re-establish within 2 years.

One-half mile of new fence would be constructed which would result in disturbance of about 1 acre.

Continued ORV use on the mesa tops in the central portion of the WSA will result in an undetermined amount of disturbance.

Recreation use will increase above the current estimated 2,000 visitor days use annually at a rate of 2 to 7 percent per year. Recreation use will continue to be 90 percent primitive in nature. Vehicular use would mostly involve use of 7 miles of existing ways plus cherry-stemmed roads.

### Summary of Environmental Consequences

Table 1 summarizes the environmental consequences of the alternatives analyzed in detail.

### AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

#### Wilderness Values

- Size

The size of the WSA (52,420 acres) is sufficient to meet the size standard for areas under wilderness review. The WSA is approximately 9 miles long from north to south and 10 miles wide from east to west at the widest point.

- Naturalness

Several minor imprints of human activities are found adjacent to the boundaries in the WSA. With the exception of a corral and two stock trails, the imprints are pre-FLPMA and are associated with energy exploration and grazing activities.

# ROAD CANYON WSA

**Table 1  
Summary of Environmental Consequences**

Resources	Alternatives			
	No Action/No Wilderness	All Wilderness (52,240 Acres) (Proposed Action)	Large Partial Wilderness (45,720 Acres)	Small Partial Wilderness (23,220 Acres)
Impacts on Wilderness Values	Wilderness values would not be protected by wilderness management and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost due to disturbance on about 721 acres and would be occasionally and indirectly reduced in quality on up to 2,100 acres. The loss would result from oil and gas exploration, vegetation treatment, and rangeland projects. Special features would not be significantly affected. Vehicular use would detract from opportunities from solitude and primitive recreation on as much as 5,240 acres of the WSA.	Wilderness designation would preserve wilderness values where found throughout the entire WSA.	Wilderness values would be preserved in the designated area which is approximately 87 percent of the WSA. No disturbance that would result in loss of wilderness values is anticipated in the foreseeable future.	Wilderness values would be preserved in the designated area which is approximately 44 percent of the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on about 711 acres and would be indirectly reduced in quality on up to 7,340 acres of the WSA. All of the impact would be in the non-designated area. No significant loss of special features is anticipated.

# ROAD CANYON WSA

**Table 1 (Continued)  
Summary of Environmental Consequences**

Resources	Alternatives			
	No Action/No Wilderness	All Wilderness (52,240 Acres) (Proposed Action)	Large Partial Wilderness (45,720 Acres)	Small Partial Wilderness (23,220 Acres)
Impacts on Vegetation	Vegetation types would be altered on 1.4 percent (721 acres) of the WSA. Two FWS candidates and one sensitive plant species would not be affected because they do not grow in the pinyon-juniper woodland where the disturbances projected to occur.	Vegetation types would be preserved and endangered, threatened, and other special status species would receive additional protection from disturbance.	Vegetation types would be preserved and candidate endangered, threatened, and sensitive species would not be affected.	Vegetation types would be altered on 1 percent of the WSA. Two FWS candidate and one sensitive plant species would not be affected.
Impacts on Mineral Exploration and Development	Mineral exploration or production would not be adversely affected because mineral leasing, location of mining claims and mineral developments could occur without restrictions for protection of wilderness values.	The potential for oil and gas exploration would be foregone. There would not be a significant loss in production of any mineral or energy resources because there is a low probability of development even without wilderness designation.	The potential for oil and gas exploration would be foregone. There would not be a significant loss in production of any mineral or energy resources because there is a low probability of development even without wilderness designation.	Implementation would not significantly affect mineral exploration or production because 66 percent of the WSA would remain open to mineral leasing and mining claim location and oil and gas exploration would be possible. There would not be a significant loss in production of any mineral and energy resource because the probability of development is low even without partial wilderness designation.

# ROAD CANYON WSA

Table 1 (Continued)  
Summary of Environmental Consequences

Resources	Alternatives		
	No Action/No Wilderness	All Wilderness (52,240 Acres) (Proposed Action)	Large Partial Wilderness (45,720 Acres)
Impacts on Wildlife Habitat and Populations	Vegetation treatment and oil and gas exploration would reduce some wildlife populations on 1.4 percent (721 acres) of the WSA during the lifetime of these projects. Implementation of the land treatment would eventually benefit wildlife diversity and increase population levels. No significant adverse impacts would occur to endangered, threatened, or sensitive species because these species inhabit riparian and cliff face areas that would not be disturbed. Ferruginous hawk habitat would be improved.	Wilderness designation would protect wildlife habitat from disturbance and maintain present wildlife populations through preservation of naturalness and solitude. Opportunities to provide vegetation diversity and additional forage that would benefit big game and certain nongame species would be precluded. Special status species would receive additional protection.	Partial wilderness designation would protect wildlife habitat from disturbance and maintain present wildlife populations including special status species through the preservation of naturalness and solitude on 87 percent of the WSA. Opportunities to provide vegetation diversity and additional forage that would benefit big game and certain nongame species would be precluded because the proposed vegetation treatment would be in the designation area and would not be allowed.
			Implementation of the land treatment would benefit wildlife diversity and population levels by providing additional forage and ecotones. Oil and gas exploration would reduce some wildlife populations on 1.4 percent (711 acres) of the WSA during the lifetime of the projects. Endangered, threatened, and sensitive species would receive additional protection on 44 percent of the WSA.
Impacts on Livestock Management	Livestock management would not be significantly affected because access, maintenance and development of rangeland improvements and livestock management practices would continue without restrictions for protection of wilderness values.	The potential for vegetation treatment and 170 additional AUMs of livestock forage would be foregone.	Livestock management would not be significantly affected because access, maintenance and rangeland improvements would continue without wilderness restrictions on 66 percent of the WSA. Vegetation would be treated to provide 170 AUMs of forage.

# ROAD CANYON WSA

**Table 1 (Continued)  
Summary of Environmental Consequences**

Resources	Alternatives			
	No Action/No Wilderness	All Wilderness (52,240 Acres) (Proposed Action)	Large Partial Wilderness (45,720 Acres)	Small Partial Wilderness (23,220 Acres)
Impacts on Cultural Resources	Some impact to cultural resources due to surface disturbance is expected under this alternative. Continued vehicular access may cause additional vandalism and intentional or unintentional damage to archaeological sites in portions of the WSA. Cultural resources could be managed without regard to preservation or to other wilderness values.	The benefits of protection of cultural resources including 112 known sites from most surface disturbance and all vehicular access would probably outweigh potential negative effects from increased vandalism due to increased future recreational use. Management of cultural resources may be restricted in scope and execution due to wilderness designation.	Cultural resources including 110 recorded sites would receive protection from wilderness designation on 87 percent of the WSA under this alternative. Sites in the nondesignated portion would continue to receive protection under existing laws.	Cultural resources including 102 recorded sites would receive protection from wilderness designation on 44 percent of the WSA under this alternative. Sites in the nondesignated portion would continue to receive protection under existing laws.
Impacts on Recreation	Opportunities for ORV use would be maintained but the quality of opportunities for primitive recreation would be reduced. Both primitive recreation and vehicular use would continue to increase.	Opportunities for ORV use would be eliminated but opportunities for primitive recreation experience use would be preserved and enhanced. Loss of ORV opportunities would not be significant on a regional basis because there are adequate alternative areas available for ORV use. Primitive-type recreational use would continue to increase. Opportunities for commercial outfitting for primitive recreation would be enhanced.	Opportunities for ORV use would be eliminated on 87 percent of the WSA while opportunities for primitive recreation use would be preserved. Loss of ORV opportunities would not be significant on a regional basis because there are adequate alternative areas available for ORV use. Primitive-type recreational use including commercial outfitting would continue to increase.	Opportunities for ORV use would be maintained but the quality of opportunities for primitive recreation would be reduced. Both primitive recreation and vehicular use would increase.



## ROAD CANYON WSA

Thirteen livestock reservoirs are within, but near the boundaries of the WSA. The majority of the reservoirs are greater than 20 years old and have substantially revegetated. The earth dams creating these reservoirs generally do not exceed 6 feet in berm and 30 feet in length, and disturb less than 0.25 acre.

A post-FLPMA, post-and-log corral was constructed in December 1976 adjacent to the Cigarette Springs boundary road, affecting 0.25 acre.

A total of approximately 6 miles of fencing is found at various points along the perimeter of the WSA.

A 7-mile way was bladed on a plateau between Lime Creek and the West Fork of Lime Creek. The way was revegetated throughout most of the plateau, making it substantially unnoticeable.

Seismic lines follow the Cigarette Springs boundary road and extend 1 mile into the area from Brushy Flat. The lines have a localized effect due to dense screening by pinyon trees.

An abandoned drill hole is just north of Snow Flat adjacent to the northern boundary. The disturbed area covers 0.25 acre and has substantially revegetated.

Since the BLM wilderness inventory, two surface disturbing activities were authorized and conducted according to BLM interim management policy guidelines. Drilling on a pre-FLPMA lease was done in Sec. 11, T. 39 S., R. 19 E. in 1982 and a heliport was authorized for seismic exploration in 1984. Reclamation is complete on both projects and disturbance is substantially unnoticeable.

All of the human imprints in this area are of minor impact. Most intrusions are near boundaries. Imprints affect less than 1 percent of the WSA. The entire 52,420 acres meet the naturalness standard for areas under wilderness review.

### • Solitude

Opportunities for solitude are outstanding in most of the area. The rolling plateaus and deep winding canyons provide excellent topographic screening from other users, enhancing the feeling of seclusion. The plateaus and canyons are effectively screened by dense pinyon-juniper and riparian vegetation. Vistas from cliffs along the plateaus reveal a substantially natural area which provides exceptional solitude due to the vastness of the viewshed. The southern bound-

ary road can be viewed from the edge of plateaus or open areas on high points, but the distance from the road seems great enough to maintain a feeling of solitude.

From viewpoints within the southern part of the WSA, activity on the roads in the Valley of the Gods intrude upon one's solitude. A portion of the Valley of the Gods has steep walls with open drainages, affording little screening from outside intrusions. Both the Valley of the Gods and lower Road Canyon are predominantly unscreened.

Overall, over 87 percent (45,720 acres) of the WSA has opportunities which meet the criteria for outstanding opportunities for solitude, and 13 percent (6,700 acres) does not meet the criteria.

### • Primitive and Unconfined Recreation

The extensive canyon and plateau systems offer excellent opportunities for desert hiking and exploration. The rolling plateaus, winding canyons, talus slopes, knobs, buttes, pinnacles, alcoves, and other unique erosional features capture the attention of backpackers, dayhikers, climbers, and horseback riders. The area also has outstanding opportunities for sightseeing, photography, scientific, and educational studies. The outstanding archaeological resources are a major attraction for many recreationists.

The Cigarette Springs cherry-stemmed boundary road almost dissects the unit. It reduces the area having potential for primitive and unconfined recreation, but also provides access into this large unit. The southern boundary road that circles Castle Butte and the open character of the Valley of the Gods adjacent to the road limits the opportunities for primitive recreation.

The effects of the Valley of the Gods road reduces Lime Creek, the West Fork of Lime Creek, and the other drainages to the south into short segments of a few miles each. This irregular configuration reduces the opportunities for an unconfined, primitive recreation experience in this portion of the WSA. The mesa between Road and Lime Creeks also has an irregular configuration due to the cherry-stemmed road and State sections which limit the unconfined recreation experience.

Overall, the north and east portions of the WSA, including Road and Barton Range Canyons (23,220

# ROAD CANYON WSA

acres), meet the criteria for outstanding primitive and unconfined recreation opportunities. The southwestern portion of the WSA, including Lime Creek (29,200 acres), does not meet the outstanding recreation criteria because the irregular configuration limits the unconfined nature of the primitive experience.

- **Special Features**

Special features identified during the BLM wilderness inventory include scenic, geologic, topographic, and cultural features. Scenic and geological special values include the deep canyons cutting sheer cliffs into the red Cedar Mesa Sandstone. Twisting canyons offer dramatic views from the canyon rims. A portion of Valley of the Gods is included in the WSA where monolithic sandstone buttes rise 400 to 500 feet above the valley floor.

Road Canyon WSA contains a variety of topographic features, including unique erosional forms of sandstone, towering pinnacles, steep-walled canyons, and gently sloping plateaus. This WSA incorporates four canyon systems that are typical of the Cedar Mesa area.

A high density of cultural resources (112 recorded and 8,142 potential sites) from both the Basketmaker and Pueblo stages of the Anasazi culture are present in the WSA. The Hole-in-the-Rock Trail, a National Register site, forms the unit's northeast boundary.

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. There are two animal species (peregrine falcon and bald eagle) listed as endangered that may occur in the WSA. There are seven animal species and three plant species that are considered sensitive that may occur in the WSA. The cougar, which is a wildlife species associated with wilderness, is found in the WSA. Refer to the Vegetation and Wildlife Including Special Status Species sections for additional information. Approximately 56 percent of the WSA is rated Class A for scenic quality.

- **Diversity**

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV types of juniper-pinyon woodland and blackbrush. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. The ecoregion and PNV types represented by this WSA are compared with

existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

This WSA is not within a 5-hour drive from any standard metropolitan statistical areas.

## **Air Quality**

The WSA has a Class II air quality classification in accordance with the PSD regulations (EPA, 1979). The WSA is within the Four Corners Interstate Air Quality Control Region, which includes several coal-fired power plants. However, none of the power plants are within 80 miles of Road Canyon, and the air quality is very good. The nearest Class I air quality area is Canyonlands National Park some 40 air miles north of the WSA. Visual range in the general vicinity averages between 100 and 132 miles during the summer (Aerocomp, Inc., 1984).

## **Geology and Topography**

The Road Canyon WSA is entirely within the Canyonlands Section of the Colorado Plateau Physiographic Province. This section is the most rugged and least accessible of the province and is characterized by bare rock surfaces, plateaus, and steep-walled canyons.

The northern two-thirds of the tract consists of flat-lying beds of the Cedar Mesa Sandstone Member of the Cutler Formation of Permian age. In the southern part of the tract, erosion has removed the Cedar Mesa and has exposed the Halgaito Tongue of the Cutler Formation and the underlying Elephant Canyon Formation of Permian and Pennsylvanian age.

The WSA lies along the broad eastern limb of the Monument upwarp, a major north-trending structural division of the Colorado Plateau. The eastern side of the Monument upwarp has been folded into the Comb Ridge monocline. Several broad anticlines and synclines are within the tract.

The topography of the WSA varies widely from north to south. The northern portion of the WSA is a gently rolling to flat-lying plateau dissected by more than 25 miles of drainages associated with Road Canyon and Lime Creek. In the southern portion of the WSA, the uplifted plateau ends abruptly and the drainages empty into broad alluvial desert valleys. The elevation ranges from 6,500 feet on the northern plateau to 4,700 feet in the southern valley bottoms.

# ROAD CANYON WSA

The upper canyons within the WSA are generally steep-sided, narrow (less than 30 feet in places), and sinuous, with walls of alternating layers of sheer sandstone cliffs and rocks talus slopes. The upper canyons open up into canyons that are several hundred feet wide, but are also steep-sided and 600 to 800 feet deep in places. To the south, the canyons give way to broad desert valleys with isolated monoliths and rock fingers left as the only remnants of former canyon walls.

## Soils

Soil characteristics and land types are given in Table 2. The majority of the WSA consists of shallow, well drained soils and exposures of rock outcrop. Shallow to very deep soils occupy the canyons and valley floors. Shallow, well drained, loamy Moenkopi soils are on the sandstone and shale pediments. These soils range from fine sandy loams to sandy clay loams and are moderately susceptible to water erosion.

Washes cutting through this unit have deep and very deep sandy and loamy soils. There are also areas of deep and very deep sandy soils in sand drifts where eolian material has accumulated.

The face of the escarpment of Cedar Mesa consists of shallow to very deep gravelly and very stony soils on steep fans. On the intermediate benches of Cedar Mesa, near Road Canyon, are a complex of shallow to very deep soils and rock outcrops (slickrock).

Table 2  
Soil Characteristics and Land Types

Soil Characteristics and Land Type	Percent of the Area	Acres	Estimated Rate of Erosion (cubic yards/acre/year)	
			Present Condition	Bare Soil Surface
Shallow to very deep stony soils on steep mountainsides	15	7,716	1	10
Rock Outcrop and rubbleland	45	23,148	0	0
Shallow and loamy soils on sloping benches and ridges	30	15,432	1	5
Deep and very deep loamy soils on gently sloping alluvial fans and valley floors	25	13,105	0.1	1
Deep and stony soils on steep canyon sides	20	10,473	1.0	10
Totals	100	52,420		

Source: Hansen, 1985.

Table 3 summarizes soil erosion conditions for the WSA. Sediment yields vary from slight to moderate.

Soil salinity class estimates indicate that the area is nonsaline with an estimated average salinity production of 13 lb of salt per acre per year. Seeding potential varies from poor on steep slopes, rock outcrops, sandy (droughty) and shallow soils (75 percent of the WSA) to fair to good on flat areas where deep soils have accumulated (25 percent of the WSA).

Table 3  
Erosion Condition

Erosion Class	Erosion Rate cubic yards/acre/year	Annual Soil Loss Under Present Conditions			Annual Soil Loss if Disturbed		
		Percent of Area	Acres	Cubic Yards	Percent of Area	Acres	Cubic Yards
Very High	20	-	-	-	-	-	-
High	10	-	-	-	20	10,484	158,280
Medium	5	-	-	-	45	23,589	184,660
Low	1	65	34,073	34,073	25	13,105	15,828
Very Low	0.1	25	13,105	1,310	-	-	-
None	1	10	5,242	-	10	5,242	-
Totals		100	52,420	35,383 <sup>a</sup>	100	52,420	235,890 <sup>a</sup>

Source: Hansen, 1985.

Average annual soil loss in cubic yards per acre: 0.67 under present conditions; 4.5 if disturbed).

# ROAD CANYON WSA

## Vegetation Including Special Status Species

The major vegetation types in the WSA are sagebrush, pinyon-juniper woodland, desert shrub, or barren, as shown in Table 4.

Table 4  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Sagebrush	1,924	4
Desert shrub	21,973	42
Pinyon-juniper woodland	15,285	29
Barren	13,238	25
Total	52,420	100

Source: USDI, BLM, 1985

The sagebrush type (1,924 acres) includes understory species such as curlygrass, bottlebrush, squirreltail, Indian ricegrass, and fourwing saltbush.

The desert shrub type (21,973 acres) includes blackbrush, fourwing saltbush, and Mormon tea. Understory species include curlygrass, Indian ricegrass, and other grass species. The pinyon-juniper woodland (15,285 acres) contains an understory of sagebrush, squirreltail, and forbs. The barren areas (13,238 acres) are basically bare rock or soil and drainages with a very low density of plants. There is no riparian vegetation identified in the WSA.

No threatened or endangered plant species are known to occur in the WSA. However, two Category 2 candidate species, Erigeron kachinensis and Astragalus cronquistii and one sensitive species, Eriogonum clavellatum, may occur in the WSA (see Appendix 4 in Volume I). Astragalus cronquistii and Eriogonum clavellatum are known to inhabit black brush and desert shrub communities near Comb Reef while Erigeron kachinensi is known to occur around seeps and in hanging gardens in White and Dark canyons and on Elk Ridge (Welch, et al., 1987).

The Road Canyon WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNV types of the WSA are shown on Table 5.

## Water Resources

The Road Canyon WSA is within the lower San Juan River basin of the Upper Colorado River hydrologic subregion. The WSA is drained by Lime Creek. This

drainage goes directly into the San Juan River which in turn flows into Lake Powell. There are no perennial streams in any of the canyons. All flows in the canyons are a result of rain, snowmelt, and thunderstorms and are temporary in nature.

Table 5  
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Juniper-pinyon woodland	36,000	69
Desert shrub	16,420	31
Total	52,420	100

Source: USDI, USGS, 1978.

Water is a somewhat limited resource throughout much of the WSA. The water sources consist of 13 livestock reservoirs and four springs (undeveloped). Pools of water are left in the canyons after rains and/or runoff. These provide water for recreationists, wildlife, and livestock. During the snowmelt or thunderstorm seasons, water is also held in numerous small slickrock pools.

The WSA is within Water Right Adjudication Area 09. The water is not fully appropriated (UDNRE, DWR, 1988). There is very little water development in this area because of its remoteness. Isolated springs may be open to appropriations not to exceed 0.015 cfs. Temporary and fixed time applications may exceed this limit.

The water quality standards for San Juan River and tributaries from Lake Powell to State line are: Class 1C (protected for domestic purposes with prior treatment); Class 2B (protected for boating, water skiing, and similar uses); Class 3B (protected for warm water species of game fish and other warm water aquatic life); and Class 4 (protected for agricultural uses, including irrigation of crops and stockwatering). Water quality of the springs is suitable for livestock use.

## Mineral and Energy Resources

The energy and mineral resource rating summary for the Road Canyon WSA is given in Table 6. Refer to Appendix 5 in Volume I for a description of the mineral rating system.

There are no strategic or critical minerals known to occur within the WSA (USDoD, 1988).

# ROAD CANYON WSA

Table 6  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f2	c2	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Uranium/Vanadium	f1	c4	None
Copper	f1	c4	None
Manganese	f1	c4	None

Source: SAI, 1982; USDI, BLM, 1987a.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

## • Leasable Minerals

There are no known deposits of any leasable minerals in the WSA. Currently there are no active drilling, mining, or exploration activities of leasable minerals.

### • Oil and Gas

Geologically, the WSA is similar to the area of the nearby Aneth and Bug oil and gas fields, and may have similar potential. However, broad uplifts have caused erosion that stripped overlying sedimentary rocks, allowing the oil to drain away. If oil and gas accumulations do exist, they are likely to be associated with stratigraphic traps and small-scale folding.

The WSA is assigned an oil and gas favorability of f2. The size of the hydrocarbon accumulation in such an environment is anticipated to be less than 10 million barrels of oil or less than 60 billion cubic feet of gas. Based on the available information, the certainty of occurrence for oil and gas in the WSA is rated low (c2) (SAI, 1982).

With the current land use plan, 44,450 acres of the WSA are in Category 2 (special stipulations); 6,420 acres are in Category 3 (no surface occupancy); and 1,550 acres are in Category 4 (closed to leasing)(refer to Table 7). There are presently 12 post-FLPMA leases, covering 504 acres in the WSA.

Table 7  
Oil and Gas Leasing Categories

Category	Acres	Percent of WSA
1. Open, standard stipulations	0	0
2. Open standard and special stipulations	44,450	85
3. Open, no surface occupancy	6,420	12
4. Closed to leasing	1,550	3
Total	52,420	100

Source: USDI, BLM, 1975b.

## • Locatable Minerals

There are no known deposits of locatable minerals in the WSA, and there are presently eight mining claims, covering 160 acres.

The principal uranium, vanadium, and copper-bearing units on the Colorado Plateau, which are the Morrison Formation (Jurassic) and the Chinle Formation (Triassic), have been removed from the WSA by erosion. Of the formations that are still in the WSA, only the Cutler Formation has been productive for uranium elsewhere in the region (at Lisbon Valley). The Cutler contains no known uranium anomalies in this area, as well as very little organic carbon favorability of f1 (an unfavorable environment for uranium deposits). The certainty that uranium deposits do not occur in the WSA is high (c4). This rating would also apply to any deposits of copper which might be associated with uranium (SAI, 1982).

Manganese deposits in southeastern Utah occur in the Morrison and Summerville formations (Jurassic). As these are eroded from the WSA, the favorability for manganese is rated f1, with a high (c4) degree of certainty (SAI, 1982).

## • Salable Minerals

The salable minerals within the WSA have little or no commercial potential, based on the poor quality and the remote nature of the material. These deposits are not unique or economically significant due to the presence of ample similar materials outside the WSA.

## Wildlife Including Special Status Species

Mammals common to the Road Canyon WSA include spotted skunk, ringtail cat, bobcat, coyote, cottontail rabbit, whitetail antelope squirrel, Ord kangaroo rat, pinyon mice, whitethroat woodrat, and assorted bats. A few resident mule deer utilize the area during the

## ROAD CANYON WSA

winter. The WSA is in Deer Herd Unit 31B that was closed to hunting in the early 1980s. However, the area did receive limited use prior to the hunting closure, and is now part of a limited entry, buck-only hunting area that encompasses southwestern San Juan County.

Birds common to the area include hairy woodpecker, violet-green swallow, pinyon jay, titmice, rock wren, red-tailed hawk, American kestrel, and great horned owl. The mourning dove, a gamebird, nests in the area and the chukar (an exotic) may occasionally be found along the eastern edge of the WSA. There is very little waterfowl habitat in the area.

Reptiles and amphibians common to the area include the Great Basin spadefoot toad, red-spotted toad, sideblotched lizard, northern plateau lizard, orange-headed spiny lizard, Great Basin gopher snake, and Hopi rattlesnake.

The Road Canyon WSA is within the White Canyon-Red Canyon Desert Bighorn Sheep Habitat Management Area; however, there have been no sightings of bighorn sheep since 1978. Evidence indicates this area to be historical habitat. It is not expected that bighorn sheep will re-establish a population in the WSA and no habitat improvements or bighorn sheep transplants are planned (USDI, BLM, 1985).

Bald eagles (an endangered species) are winter transients in the area even though roosting sites have not been located. It is also suspected that the peregrine falcon, another endangered species, may make occasional use of the area. The golden eagle, a BLM special status species, is found in the WSA. Other special status species that could occur in the WSA are six Category 2 candidate species. These are the Great Basin Silverspot butterfly, ferruginous hawk, southern spotted owl, western yellow-billed cuckoo, long-billed curlew, and white-faced ibis. Refer to Appendix 4 in Volume I for details. If present, most of the species would be associated with riparian and wet meadow areas or cliff faces and deep canyons, except for the ferruginous hawk. The ferruginous hawk inhabits pinyon-juniper areas where there are ecotones or edges that provide opportunities for nesting, cover, and hunting activities.

There are no acres of crucial or Federally designated critical habitat in the WSA. There are no existing or planned wildlife management facilities in the WSA.

### Forest Resources

There are 15,285 acres of pinyon-juniper woodland within the Road Canyon WSA. These are low quality sites (less than 20 cubic feet usable wood per acre) and are considered nonproductive forest land (USDI, BLM, 1971). No areas in or near the WSA have been designated as Christmas tree cutting areas. Less than 2,390 cords of fuelwood are estimated to occur in the WSA.

During 1981, 26 permits were sold to cut 1,700 juniper posts in the Cedar Mesa area; however, very few, if any, of these posts were cut in the WSA. Also, in 1981, there were 323 free-use firewood permits issued in the San Juan Resource Area, which includes nearly all of San Juan County. In the vicinity of the Road Canyon WSA, wood is gathered along the roads to Snow Flat and Cigarette Point, but quantities are unknown. Some firewood harvesting is done by individuals coming from the south. Pine nuts are gathered by a few individuals, but there have been no commercial gathering permits issued for this WSA.

### Livestock and Wild Horses/Burros

Much of the Road Canyon WSA has low forage production because of the extent of shallow soils and the invasion of pinyon and juniper on deep soils of Cedar Mesa.

The WSA contains portions of four different allotments and an estimated total of 1,450 AUMs of livestock forage. Grazing information for each allotment is shown in Table 8.

There are 13 reservoirs, 6 miles of fence, one corral, and two stock trails within the WSA. Additional livestock developments proposed include 700 acres of vegetation treatment (controlled burning and chemical, and seeding) and one fence (0.5 mile). The vegetation treatment would provide an additional 170 AUMs of forage in the Perkins Brothers Allotment.

The existing vehicular way (7 miles) has been closed and rehabilitated. It is not currently used by livestock operators or BLM. There are no wild horses or burros within the WSA.

Predator control was not conducted during the 1986-1987 period in the grazing allotment that comprises the Road Canyon WSA (USDA, APHIS, 1988).

# ROAD CANYON WSA

Table 8  
Livestock Grazing Use Data

Allotments	Total Acres	Acres in ISA <sup>a</sup>	Total AUMs	Number of AUMs in ISA	Number and Kind of Livestock	Season of Use	Number of Operators
Slickhorn	132,810	1,628	1,795	19	129 Cattle 5 Horses	10/16-06/15	1
Texas Muley	67,703	7,780	1,795	157	247 Cattle	11/15-05/31	1
Perkins Brothers	106,425	12,120	7,579	565	1,082 Cattle	11/01-05/31	4
Comb Wash	72,132	20,892	3,961	709	582 Cattle	10/06-05/31	13
<b>Total</b>	<b>379,070</b>	<b>42,420</b>	<b>15,130</b>	<b>1,450</b>			<b>19</b>

Sources: BLM File Data.

The 10 miles of cherry-stemmed road are frequently used for distribution and management of livestock.

## Visual Resources

The character of the WSA is derived from the following three major landforms.

The Grand Gulch Plateau, which occupies the northwest portion of the WSA with its southeast aspect, is gently rolling to relatively flat topography with isolated horizontal bands of exposed sandstone. The plateau is dissected by the canyon drainage of Road Canyon and Lime Creek. The soil colors range from light pink to red, and the exposed sandstone colors range from medium red to light gray. The colors of the vegetation range from dark to medium green to gray-green. Textures of the soils and sandstone are fine and smooth, while the textures of the vegetation vary from coarse to fine.

Road Canyon and Lime Creek are similar canyons which drain southeast. Flat bottoms, lower talus slopes, and steep upper slopes of exposed sandstone in horizontal bands characterize these canyons. Light gray and pink colors in these bands contrast sharply with vertical streaks of desert varnish. Textures vary from smooth to fine to coarse. The canyons in the WSA are the most scenic parts of the entire Lime Creek drainage. The vegetation ranges from riparian-associated cottonwood/willow/tamarisk in the canyon bottoms to scattered pinyon-juniper on the slopes.

The Valley of the Gods located along the southern boundary is relatively flat, but within the WSA gradually rises to the escarpment of the Grand Gulch Pla-

teau and then rises abruptly 700 feet to the mesa top. The soil color is a light pink with a fine texture. The vegetation consists of sparse desert shrubs which range from light to dark green and gray-greens with fine textures.

The WSA contains two scenic classes: Class A (high quality) scenery comprises 56 percent (29,355 acres) of the WSA and is located in Road and Barton Canyons and Lime Creek Canyon. Class B scenery comprises 44 percent (23,065 acres) of the WSA and is located on the tablelands between the two forks of both Lime Creek and Road Canyon and along the southern and eastern boundaries.

The WSA contains three VRM classes: Class II comprises 55 percent (28,830 acres) of the WSA and is located in Road, Barton, Lime Creek, and the West Fork of Lime Creek Canyons. Class III comprises 37 percent (19,400 acres) of the area and is located on the mesa tops above Road Canyon and along the southern boundary. Class IV comprises 8 percent (4,190 acres) of the area and is located on the mesa top between Lime Creek and the West Fork of Lime Creek. Refer to Appendix 7 in Volume I for a description of BLM's VRM rating system.

## Cultural Resources

A total of 112 archaeological sites have been recorded in the WSA (USDI, BLM, 1988), 110 of which are prehistoric. Approximately half of these are located in alcoves, ledges, and caves in the canyons of the unit. These sites consist of multi-room dwellings including kivas and middens, storage facilities including granaries and cists, or artifact scatters and middens. Pictographs and petroglyphs are associated with

## ROAD CANYON WSA

some of the cliff dwellings. Nearly half of the sites in the WSA are artifact scatters located on the mesa tops. Many of these are in unconsolidated aeolian deposits. Cultural materials represented at these sites include lithics, ceramics, ground stone, hearths, and storage cists. The remaining sites in the unit are open architectural sites located on mesa tops and ridges. These consist of slab lined pit structures, probably habitations, and multi-room masonry structures. Approximately 90 percent of the recorded sites are located in the northern portion of the unit. The 110 prehistoric sites represent an even distribution between Basketmaker and Pueblo cultural manifestations. Most of the Basketmaker sites consist of camps, scatters, or storage cists, while the majority of Pueblo sites are either open habitation camps or cliff dwellings, which include habitation and/or storage structures (granaries). Occasional vandalism of cultural resources is a problem in this vicinity, but most of the prehistoric sites in the WSA are in pristine condition.

The two recorded historic sites in the WSA consist of a sandstone masonry sweat lodge used in the early part of this century and sandstone structures built into an alcove also dating to the twentieth century. The Hole-in-the-Rock Trail, a National Register site, forms the WSA's northeast boundary. Of special historic interest is Cigarette Spring Cave which was surveyed in 1908 and withdrawn from land entry because, at that time, it was the only water source available for public use for intermediate stops on the way to Natural Bridges National Monument.

Based on limited inventory data and information from similar settings in the area, it is expected that 8,142 sites would be located in the WSA, of which 4,095 would be National Register eligible. There are no existing National Register sites or nominations in the WSA and the majority of the recorded sites have not been evaluated for significance.

### Recreation

The extensive canyon and plateau systems offer excellent opportunities for desert hiking, backpacking, horseback riding, and photography. The Road Canyon WSA is not a heavily used recreational area. Very few people are aware of the recreational opportunities in Road and Lime Canyons.

The total recreational use of the WSA is currently estimated to average about 2,000 visitor days annually. Nearly all of the use is attributed to primitive

activities with no more than 200 visitor days attributed to vehicle use. The WSA is generally open to ORV use, although the 7 miles of vehicular way have been rehabilitated. Currently, there is some ORV activity on the mesa tops in the central portions of the WSA. The 10 miles of cherry-stemmed road leads to many scenic overlook areas.

In 1982, less than 100 noncommercial visitor use days were recorded. This WSA has one commercial user: the National Outdoor Leadership School. The school uses an average of 170 commercial user days per year in this area.

There are no established campsites in this WSA, although open areas by canyon rims are a popular choice. Since there are no marked trails in the canyons, hikers must be capable of reading a topographic map and be good at route-finding. This is especially important if hikers are in the West Fork of Lime Creek, or going cross country between Road and Lime Canyons. The presence of many small side canyons can be quite confusing. Usually, the easiest foot access is near the head or mouth of either canyon, where the walls are shallow.

The WSA is within Deer Herd Unit 31B, which was closed to hunting in the early 1980s due to extremely low populations and productivity. Prior to the closed seasons, a few hunters regularly hunted in Road Canyon. The WSA area is now part of a limited entry, buck only hunting area for which only 440 permits were issued in 1988.

### Land Use Plans

Ownership within and adjacent to the WSA is primarily Federal land administered by BLM. Three State sections are accessed with the Cigarette Spring cherry-stemmed boundary road. These State sections are cherry-stemmed also and are considered to be outside of the WSA. However, there are three State sections presently without access in the WSA. The current policy of the State is to maximize economic returns from State lands and to reserve its position regarding exchange of in-held lands (see Chapter 1 in Volume I). In 1986, the Utah State Legislature passed S.C.R. No. 1 opposing any additional wilderness designation in Utah and urging that State lands not be exchanged out of wilderness areas. Two sections (1,280 acres) of in-held State land are under grazing permit and grazing is the only current activity on these lands. There are no private or split-estate lands in the WSA.



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The area is readily accessible by way of U.S. Highway 191, State Highway 261, and three county roads. The San Juan County Master Plan (Planning and Research Associates, 1967) zones the WSA as open range/forest lands or potential agricultural lands. The master plan predates wilderness considerations. However, the County Commission has pointed out that "nearly 20 percent of the land in the county has already been set aside for protection and preservation and that the remainder of the county is designated multiple use by our land use planning and zoning ordinance . . . the San Juan County Commission opposes any wilderness areas being legislatively or administratively designated in the County" (San Juan County Commission, 1980). The San Juan County Commission has also endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposed wilderness designation of BLM lands in Utah.

The WSA is in the BLM San Juan Resource Area and is managed for multiple uses according to the South San Juan MFP (USDI, BLM, 1971). The San Juan RMP will replace the MFP. Neither the MFP or RMP address wilderness designation. Wilderness designation is part of the multiple-use concept. The BLM land use plan is linked to the Statewide Wilderness EIS through analysis of the present plan as the No Action/No Wilderness Alternative.

## Socioeconomics

### • Demographics

The WSA is in central San Juan County. The nearest community is Bluff, approximately 10 road miles east of the WSA. The character of the county can be summarized as rural and sparsely populated.

Between 1970 to 1980, the population of San Juan County was fairly static and grew by less than a 2 percent annual growth rate. The 1985 population was 12,500. Since 1983, the County's population has declined by approximately 500 (USDI, BLM, 1987). The two largest communities in the County are Blanding (1980 population 3,118) and Monticello (1980 population 1,929). Approximately 40 percent of the County's population resides in these communities. Table 9 presents baseline and projected population data for San Juan County. Population projections for the County indicate that the number of people living in San Juan County in the year 2010 will be about 15,000 for about a 21 percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 9

Baseline and Projected Population and Employment Growth  
San Juan County

	1980	1990	2000	2010
Population	12,400	12,900	12,900	15,000
Employment	3,980	3,800	4,300	5,100

Source: Utah Office of Planning and Budget, 1987.

The major racial groups are caucasians (52.4 percent) and American Indians (45.7 percent). About 4 percent of the Navajo reservation's population live in San Juan County (USDI, BLM, 1987b).

San Juan County is the largest County in Utah, comprising 5,045,760 acres or about 9.6 percent of the State's acreage. Approximately 86 percent of the county is administered by the Federal Government: 41 percent by BLM, 24 percent by the Bureau of Indian Affairs (BIA) in conjunction with the Navajo tribe, and 20.9 percent by other Federal agencies. About 6 percent is in State ownership and about 8.1 percent is privately owned (University of Utah, BEBR, 1982; and USDI, BLM, 1987b).

### • Employment

Table 9 shows the baseline and projected total employment for the county to the year 2010. The government sector (Federal, State, and local) is the most important in terms of employment in the San Juan County economy. In 1987 mining made up about 16.5 percent of the total employment in the county. Tourism also generates a significant number of jobs (USDI, BLM, 1987b).

San Juan County is part of the Southeast MCD. Table 10 shows the baseline (1980) and projected employment by source for MCD to the year 2010. In 1980 the leading employment sectors for the MCD were mining (28 percent), government (18 percent) and trade (15 percent). It is projected that by the year 2010 employment in the MCD will increase by about 27 percent. Services will increase to 18 percent, trade to 17 percent, and government to 15 percent of the total; while the mining, agriculture, and construction sectors will decline (Utah Office of Planning and Budget, 1987).

### • Sales and Revenues

Past activities in the Road Canyon WSA that could be of some local economic consequence include mineral exploration, livestock production and recreation.

## ROAD CANYON WSA

The WSA has eight mining claims. Resolutions require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy.

Table 10  
Southeast Multi-County District  
Employment<sup>a</sup>

	1980	1990	2000	2010
Agriculture	1,203	1,100	1,100	1,100
Mining	8,368	3,500	4,500	5,700
Construction	1,360	700	900	1,100
Manufacturing	551	600	700	800
Transportation, Utilities	1,563	1,800	2,000	2,200
Trade	3,289	3,600	4,000	4,800
Finance, Insurance, Real Estate	424	400	400	500
Services	2,067	3,200	4,000	5,300
Government	3,994	4,100	3,800	4,400
Nonfarm Proprietors	<u>1,715</u>	<u>2,000</u>	<u>2,200</u>	<u>2,800</u>
<b>Totals</b>	<b>22,534</b>	<b>21,000</b>	<b>23,600</b>	<b>28,700</b>

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Carbon, Emery, Grand, and San Juan Counties.

Nineteen livestock operators have grazing privileges in the WSA. Based on the consumption of 1,450 AUMs of forage by cattle, it is estimated that the WSA accounts annually for \$29,000 of livestock sales and \$7,250 of ranchers' returns to labor and investment. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Historically, hunting pressure in the WSA has been low and its local economic importance is insignificant.

The WSA does support private and commercial primitive recreation use. Judging from the points of origin, approximately 85 percent of the users pass through San Juan County's service centers. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicated that the State-wide average local expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for the Road Canyon WSA is estimated to average about 2,000 visitor days per year, for a total estimated local income of \$8,200.

For the most part, these recreation-related expenditures are well distributed within the local economy and are of low significance to any individual business. Recreation-related expenditures could be significant only to the one commercial outfitter using the WSA,

who is not based locally. It is estimated that commercial use of the WSA accounts for an estimated \$10,000 of sales. Most of this money would not go to the local economy because the commercial operator is based in Wyoming.

The WSA generates revenues to the Federal Treasury from three sources: mineral leases, grazing fees, and recreation use permits. Within the WSA, about 504 acres are currently leased for oil and gas. At \$2 per acre, this generates up to \$1,008 annually. Half of this is allocated back to the State of Utah. The State then reallocates these revenues to various funds, the majority of which are related to energy development.

Based on 1,450 AUMs of forage consumed by livestock in the WSA and a current grazing fee of \$1.54, the WSA annually accounts for approximately \$2,223 of grazing fee revenues. Half of this is allocated back to the local BLM district for construction of range improvement projects.

The recreation land use permit fees for commercial use of the WSA generate an average of about \$200 of revenues annually.

Table 11 summarizes estimated local sales and Federal revenues from the Road Canyon WSA.

Table 11  
Sales and Revenues

Source	Estimated Annual Local Sales <sup>a</sup>	Estimated Annual Federal Revenues
Mining Claim Assessment	\$ 800	\$ 0
Oil and Gas Leases	\$ 0	\$1,008
Livestock Grazing	\$29,000	\$2,233
Recreational Use	<u>\$ 8,200</u>	<u>\$ 200</u>
<b>Total</b>	<b>\$38,000</b>	<b>\$3,441</b>

Sources: USDI, BLM File Data; Volume I, Appendix 9.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

### ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. The analysis is based on the BLM management actions and anticipated activities presented in the Introduction to Volume V and the Description of the Alternatives for the Road Canyon WSA.

# ROAD CANYON WSA

## No Action/No Wilderness Alternative

### • Impacts on Wilderness Values

Because the WSA would not be designated wilderness under this alternative, the identified wilderness values would not receive the degree of protection afforded by application of the BLM Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities (i.e., VRM Class II management on 28,830 acres, and management under oil and gas leasing Category 4 closed to leasing on 1,550 acres, and oil and gas leasing Category 3 no surface occupancy on 6,420 acres).

In the foreseeable future, disturbance of approximately 721 acres from oil and gas exploration, vegetation treatments, and rangeland projects would result in a direct loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas. Special features including Class A scenery, geological features, archaeological values, endangered and sensitive species, and wildlife associated with wilderness, would not be significantly affected because the direct disturbance would involve only about 1.4 percent of the WSA and would not be located where the special features are located. In addition, appropriate measures would be taken to protect endangered and sensitive species prior to any surface-disturbing activity, and no significant negative impact would occur to these species. Proposed vegetation treatments would benefit wildlife special features associated with wilderness because of increased forage. Refer to the Vegetation, Wildlife, and Cultural sections for more information.

During the period of activity, the visual and audible disturbance from oil and gas exploration would reduce the quality of opportunities for solitude and primitive recreation not only on directly disturbed areas but also on adjacent portions of the WSA. As much as 4 percent (2,100 acres) of the WSA could be so affected in the foreseeable future.

Vehicular use of existing ways and future exploration roads would detract from opportunities for solitude and primitive recreation. Another conflict with wilderness values in the foreseeable future is ORV activity. ORV activity is currently occurring on the mesa tops in the central portions of the WSA. Future new trails formed by ORV use and sights and sounds during the period of activity could reduce the quality of naturalness and opportunities for solitude and primitive

recreation in the assessable portions of the unit. As much as 10 percent (5,242 acres) of the WSA could be so affected.

The increased visitor use that would occur over time would be expected to somewhat reduce the quality of wilderness values because although the additional use would be largely primitive in nature, vehicular use would conflict with and reduce the quality of the primitive recreation experience in the mesa top areas in the central portions of the unit. In addition, if increased primitive use is concentrated in Lime and Road Canyons, loss of opportunity in solitude and primitive recreation experience could result.

The loss of wilderness values that would occur due to disturbance over the long-term future is not accurately known. Loss would occur as intrusions increase.

Conclusion: In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost from disturbance on about 721 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 7,342 acres. Special features would not be significantly affected.

### • Impacts on Vegetation Including Special Status Species

Because only 20 acres would be disturbed by oil and gas exploration, no major changes in any of the vegetation types in the WSA would occur. The 700 acres of vegetation treatment would change the vegetation composition on those affected areas (approximately 1 percent of the WSA), reducing pinyon-juniper woodland and sagebrush, and increasing range grass species. In the long term, gradual reinvasion of pinyon-juniper and sagebrush would be expected to slowly occur, following the normal cycle of plant succession. Erigeron kachinensis, Astragalus cronquistii, and Eriogonum clavellatum, are special status plant species that may be found within or near the WSA. These species would not be affected by oil and gas exploration or vegetation treatments in the pinyon-juniper woodland and sagebrush communities on the mesa tops because they occur only at lower elevations in the blackbrush and desert shrub communities or canyon bottoms. Any increase in ORV use in the mesa tops would have minor disruptive effects on the native vegetation. Before authorizing surface-disturbing activities, BLM would conduct site-specific clearances of the potentially disturbed areas. If threatened or endangered species could be affected, BLM would

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initiate consultation with the FWS. Necessary mitigation measures, such as avoidance of sensitive areas, would be implemented. Therefore, the viability of populations of these plant species would be preserved with the No Action/No Wilderness Alternative.

Conclusion: Vegetation types would be altered on 1.4 percent of the WSA. Three special status plant species possibly occurring in the WSA would not be affected.

- Impacts on Mineral and Energy Exploration and Production

The WSA would remain open to exploration and development of mineral and energy resources without consideration of wilderness values. Because there is a potential for small accumulations of oil in the Paleozoic rocks underlying the WSA, it is projected that in the foreseeable future limited oil and gas exploration will occur in the northern and central portions of the WSA on the flat mesa tops. Because exploration would be allowed, mineral and energy resources would not be significantly affected by the No Action/No wilderness Alternative.

Conclusion: Implementation of the No Action/No Wilderness Alternative would not adversely affect mineral exploration or production.

- Impacts on Wildlife Including Special Status Species

Approximately 20 acres of surface disturbance would occur from oil or gas exploration with this alternative. The effect of such disturbance would be negligible to wildlife. This alternative would allow 700 acres of vegetation treatments and 0.5 mile of fencing (both livestock proposals) to occur. The vegetation alteration would result in improved forage and additional ecotones for mule deer and would increase populations of certain passerine birds, small mammals, and other nongame species while reducing populations of species commonly associated with mature pinyon-juniper woodland and sagebrush communities. Mobile animals, such as mule deer, would leave the area of disturbance, and less mobile animal populations would be reduced during the time of disturbance. Future increases in ORV use would lead to harassment of wildlife. The extent and use of the WSA by the bald eagle, peregrine falcon, or the six Category 2 candidate species that may occur there is unknown. Proposed vegetation treatments would not affect most of these species because activities would be in the flat pinyon-juniper woodland and sagebrush areas, and if

present, these species would inhabit the riparian and cliff face areas in the canyons. However, vegetation treatments would create ecotones and edges which would improve ferruginous hawk habitat following revegetation.

BLM would conduct site-specific clearances of the potentially disturbed areas. If any threatened or endangered species are located, BLM would initiate informal consultation with FWS as required by the Endangered Species Act and BLM policy. BLM would request a biological opinion when appropriate (refer to Appendix 4 in Volume I). Appropriate mitigation measures, such as avoidance of sensitive areas, would be implemented. Because necessary measures would be taken to protect these species, populations of threatened, endangered, or other special status animal species would be preserved with the No Action/No Wilderness Alternative.

There are no critical or crucial habitats that could be affected. There are no identified wildlife-related vegetation treatments or facilities planned within this WSA; therefore, no loss of potential improvements for wildlife would result.

Conclusion: Vegetation treatments and oil and gas exploration would reduce some wildlife populations on 1 percent (721 acres) of the WSA during the lifetime of these projects. Implementation of the vegetation treatments would eventually benefit wildlife diversity and increase population levels. Significant adverse impacts would occur to endangered, threatened, or other special status species. Ferruginous hawk habitat would be improved.

- Impacts on Livestock Management

Domestic livestock grazing in the Road Canyon WSA would continue as authorized (currently 19 permittees and an estimated 1,450 AUMs). The existing 6 miles of fence, two stock trails, 13 reservoirs, and one corral could be used and maintained by motorized methods as in the past. The currently proposed projects, including 0.5 mile of fence and 700 acres of vegetation treatment, could be implemented unconstrained by wilderness protection criteria. The 700 acres of proposed vegetation treatment could result in an additional 170 AUMs of livestock forage. Few, if any, changes in livestock management techniques are expected.

# ROAD CANYON WSA

Conclusion: Livestock management would not be significantly affected by the No Action/No Wilderness Alternative.

## • Impacts on Cultural Resources

Approximately 700 acres of surface vegetation treatment are expected in the short term under this alternative. This project would consist of controlled burning and herbicide treatment in the central portion of the WSA. This treatment would have little impact on cultural resources because burning and chemical treatment has little physical effect on archaeological sites. The entire unit would remain open to mineral location and leasing in the future, but no development is expected. Twenty acres of disturbance due to exploration is expected in the foreseeable future. All sites in the WSA would continue to be protected under existing State and Federal antiquities laws and appropriate inventory and mitigation procedures would precede any surface disturbance.

The unit would remain open to ORV activity and general vehicular access. Currently there is some ORV activity on the mesa tops in the central portions of the WSA which may increase in the future. Although few archaeological sites have been recorded in this vicinity, some are undoubtedly present. Archaeological sites located in unconsolidated eolian deposits are vulnerable to any type of vehicular traffic. Some inadvertent damage to artifact scatters located in sand dunes may result from continued vehicular access in the WSA. In addition, continued vehicular access would provide opportunities for illegal artifact collection and intentional vandalism (Nickens et.al., 1981).

Vandalism is not currently a significant problem in the WSA, but may increase with the general visitation increase.

Under this alternative, archaeological sites would be subject to standard cultural resource management procedures (Neumann and Reinburg, 1988). Stabilization, interpretation, and excavation could proceed without the restrictions of wilderness values maintenance.

Conclusion: Little impact to cultural resources due to surface development is expected under this alternative. Continued vehicular access may cause intentional or unintentional damage to archaeological sites in portions of the WSA. Cultural resource management would continue without regard to wilderness management.

## • Impacts on Recreation

Potential adverse impacts to the primitive and unconfined recreation experience could occur as a result of nondesignation. The quality of the primitive recreational experience would be reduced by vehicle noise and activity. Motorized recreation users would benefit from lands being available for their use. Motorized activities would be allowed and would be in conflict with nonmotorized users on the mesa tops where use areas overlap. The 7 miles of existing way (currently rehabilitated) could be used for motorized vehicle travel in the future.

The future trends in recreational use of the WSA are unknown. However, based on a review of several projections (UDNRE, ORA, 1980; UDNRE, DPR, 1985; Utah Office of Planning and Budget, 1984; Jungst, 1978; Hof and Kaiser, 1981; and Cordell and Hendee, 1982) it is estimated that outdoor recreation in Utah will increase at between 2 and 7 percent per year over the foreseeable future. At this rate, overall recreational use could increase from 2,000 current visitor days per year to between 3,769 and 17,431 visitor days by the year 2020. Assuming proportionate increases in primitive and motorized recreation use, primitive use could increase to between 3,392 and 15,688 while motorized use could increase to between 377 and 1,743 visitor days per year.

Conclusion: Opportunities for ORV use would be maintained but the quality of opportunities for primitive recreation use would be reduced. Both types of use would continue to increase.

## **All Wilderness Alternative (Proposed Action) (52,420 Acres)**

### • Impacts on Wilderness Values

Designation and management of all 52,240 acres as wilderness would preserve the wilderness values in the Road Canyon WSA. The potential for surface-disturbing activities would be eliminated through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness would be preserved on all 52,240 acres. Solitude would be preserved on approximately 45,720 acres that meet and 6,700 acres that do not meet the standards for outstanding opportunities. Primitive and unconfined recreation would be preserved on approximately 23,220 acres that meet and 29,200 acres that do not meet the standards for

## ROAD CANYON WSA

outstanding opportunities. Resources that could be considered as special features in the WSA, including Class A scenery, geological features, archaeological values, endangered and sensitive species, and wildlife associated with wilderness, would also be preserved.

With this alternative no surface-disturbing activities that would degrade wilderness values would occur. The proposed fence would be designed to meet wilderness management criteria and although naturalness would be slightly reduced in quality, upon completion, the disturbance would not be substantially noticeable in the area as a whole.

Vehicular use of existing ways and other ORV activity would generally cease with ORV closure, improving opportunities for solitude and primitive recreation. It would, however, be administratively difficult to totally eliminate ORV use from the area, even with signing and patrol. With the 10 miles of Cigarette Springs road and three State sections cherry-stemmed into the center of the Road Canyon WSA, vehicular access would be difficult to control on the flat, open terrain. Illegal ORV activity could occasionally reduce the quality of opportunities for solitude and primitive recreation. If designated wilderness, specific management actions would be needed.

Increased visitor use that would occur with time would be primitive in nature and would be managed so as to not result in loss of wilderness values. If all of the use were concentrated in Lime and Road Canyons, some loss of solitude and quality of the primitive recreation experience could result. However, because use would be controlled through a Wilderness Management Plan, loss of outstanding opportunities for solitude and primitive and unconfined recreation would be avoided. Visitor restrictions could be necessary in the future.

Conclusion: Wilderness designation would preserve wilderness values where they occur in the WSA.

### • Impacts on Vegetation Including Special Status Species

Vegetation composition would be altered on only 1 acre with this alternative. Essentially the entire WSA would remain covered with natural vegetation, primarily desert shrub and pinyon-juniper woodland. Therefore, no impacts to vegetation types in the WSA would occur.

The special status plant species that may occur in the WSA would receive additional protection with implementation of this alternative. No impacts to these species are projected.

Conclusion: Vegetation types and special status plant species in the WSA would be preserved.

### • Impacts on Mineral and Energy Exploration and Production

#### • Leasable Minerals

Approximately 504 acres of the WSA are leased for oil and gas. However, no exploration or development of oil and gas is presently occurring with the WSA. Existing leases could be developed subject to the stipulation issues at the time of leasing. Due to the small size of the potential deposits, the low certainty that they exist, and wilderness protection requirements, there is a low probability of development and production prior to or following wilderness designation. Existing leases would be phased out of the wilderness area and new leases would not be issued. It is concluded that wilderness designation would eliminate the opportunity to explore for oil and gas, but would not result in a significant loss of oil and gas recovery.

#### • Locatable Minerals

There are presently eight mining claims (160 acres) in the WSA and claims can be located up to the time of designation. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. An impact to locatable minerals would occur if potentially recoverable minerals are not within mining claims filed before designation. In that case, the potential for recovery of locatable minerals would be foregone. Because there is little or no potential for locatable mineral deposits in the WSA it is concluded that this alternative would not result in a significant loss of locatable mineral exploration or production.

#### • Salable Minerals

Mineral sales would not be allowed in the wilderness area. Therefore, any potential for development and production of salable minerals would be foregone. Because of low potential for deposits

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and the availability of better sources of material outside of the WSA, it is concluded that this alternative would not result in a significant loss of salable mineral production.

**Conclusion:** The potential for oil and gas exploration would be foregone. There would not be a significant loss in production of any mineral or energy resources.

## • Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative, there would be no surface disturbance from oil and gas exploration or the proposed 700 acres of vegetation treatments. Future increases in ORV use would not occur. Therefore, some wildlife species would benefit due to the preservation of naturalness and solitude. Most wildlife species, including threatened, endangered, and other special status species that may occur in the WSA, would be provided additional protection with wilderness designation. However, the opportunity to provide habitat diversity for ferruginous hawks, big game, and certain nongame species through vegetation treatment would be foregone.

**Conclusion:** Wilderness designation would protect wildlife habitat from disturbance and maintain present wildlife populations through the preservation of naturalness and solitude. Opportunities to provide vegetation diversity and additional forage that would benefit big game and certain nongame species would be precluded. Special status species would receive additional protection.

## • Impacts on Livestock Management

Grazing use would continue with no substantial change. The 19 operators with cattle and horse use could continue to utilize the estimated 1,450 AUMs within the WSA. The Road Canyon WSA includes only from 1 to 18 percent of the AUMs in the four allotments affected; therefore, wilderness designation is not expected to have a substantial influence on overall livestock operations in those allotments. The existing 13 reservoirs, 6 miles of fence, two stock trails, and one corral would have to be maintained by nonmotorized means where practical, but could be maintained by vehicle use if necessary. The proposed 0.5 miles of fence would be allowed in the WSA, but would have to be constructed in a manner compatible with the wilderness setting. The 700 acres of proposed land treatment and an associated additional 170

AUMs would be foregone with designation. The 10 miles of cherry-stemmed road would remain open to use of vehicles for livestock management purposes. The 7-mile way would not be available for use in livestock management; however, that has been rehabilitated and is not currently used.

**Conclusion:** The planned vegetation treatments and 170 additional AUMs of livestock forage would be foregone.

## • Impacts on Cultural Resources

Little or no surface disturbance is expected with this alternative and vehicular access would be completely eliminated within the boundaries of the WSA. Very little intentional or unintentional impacts on cultural resources due to these agents would occur under this alternative.

As recreational use of the unit increases in the future, site vandalism and collection of small transportable objects may increase. However, due to the lack of vehicular access, collection of large artifacts and illegal excavation of sites may decrease. If sites containing valuable artifacts or specific features are present in the WSA, the increased inaccessibility following wilderness designation may encourage large scale commercial looting. The Pueblo and Basketmaker sites in the WSA may meet these requirements (Wylie, 1988). The benefits of protection of cultural resources from all ORV activity, vehicular access, and surface development would, however, probably outweigh the negative effects from increases in vandalism due to increased recreational use.

All cultural resource management procedures would be subject to the restrictions of wilderness designation (Neumann and Reinburg, 1988). Access to sites for stabilization, interpretation, or excavation may be limited or denied.

**Conclusion:** The benefits of protection from most surface disturbance and all vehicular access would probably outweigh the negative effects of increased vandalism due to increased future recreational use. Management may be restricted in scope and execution due to wilderness designation.

## • Impacts on Recreation

Although recreation use is currently low, portions of the WSA have outstanding primitive recreational values. If designated wilderness, the Road Canyon WSA's

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outstanding opportunities for dayhiking, backpacking, horseback riding, and sightseeing would be recognized, managed, and preserved. As discussed for the No Action/No Wilderness Alternative, recreational use of the WSA is estimated to increase between 2 and 7 percent per year in Utah over the foreseeable future.

At this rate overall primitive recreational use would increase from about 1,800 current visitor days per year to between 3,392 and 15,688. Motorized use would be eliminated and a potential of between 377 and 1,743 visitor days per year for vehicle based recreation would not be realized. The loss of potential ORV use would not be significant on a regional basis because there are adequate alternative areas for ORV use. The 10 miles of cherry-stemmed road would remain open providing vehicular access to scenic portions of the area. Designation would eliminate the potential for conflicts between nonmotorized and motorized recreation users, and the quality of the primitive recreational experience would be preserved and enhanced.

**Conclusion:** Opportunities for ORV use would be eliminated in the wilderness, but opportunities for primitive recreation experience use would be preserved and enhanced. Primitive recreation use would continue to increase.

### **Large Partial Wilderness Alternative (45,720 Acres)**

#### **• Impacts on Wilderness Values**

Wilderness designation of 45,720 acres would contribute to preservation of the area's wilderness values. Wilderness values would be preserved in the designated area. Protection in the designated area would include management under VRM Class I which generally allows for only natural ecological change, ORV closure including closure of 7 miles of ways, and closure to future mineral leasing and location. Naturalness and outstanding opportunities for solitude on all 45,720 acres and opportunities for primitive recreation including 23,220 acres that meet and 22,500 acres that do not meet the standards of outstanding, and special features including most areas having Class A scenery, geological features, archaeological values, endangered and sensitive species, and wildlife associated with wilderness, would be preserved in the designated area.

Slight reduction in naturalness would occur in the nondesignated area due to fence construction. However, loss of wilderness values is not expected.

Elimination of ORV use in the designated area would improve opportunities for solitude and primitive recreation overall in the WSA. It would be administratively difficult to eliminate all ORV use in the flat areas in the central portion of the WSA. Illegal ORV use could occasionally reduce the quality of opportunities for solitude and primitive recreation. Increased primitive recreation would be managed to protect wilderness values.

**Conclusion:** Wilderness values would be preserved in the designated area which is approximately 87 percent of the WSA. No disturbance that would affect wilderness values is anticipated anywhere in the WSA in the foreseeable future.

#### **• Impacts on Vegetation Including Special Status Species**

Because anticipated and proposed projects would be within the designated area with this alternative and would not be allowed, the impacts on vegetation would be similar to those described for the All Wilderness Alternative.

Vegetation composition would be altered on only 1 acre. Essentially the entire WSA would remain covered with natural vegetation. No impacts to any of the vegetation types in the WSA would occur. The special status plant species that may occur in the WSA are most likely to occur in the blackbrush and desert shrub communities in the nondesignated Valley of the Gods portion of the WSA. However, because oil and gas exploration and vegetation treatments are not projected in this area, these species would not be affected in the foreseeable future.

**Conclusion:** Vegetation types and special status plant species would not be affected in either the designated or nondesignated portions of the WSA.

#### **• Impacts on Mineral and Energy Exploration and Production**

Because potential mineral and energy resources are thought to be within the portion of the WSA that would be designated as wilderness, the impacts of the Large Partial Wilderness Alternative would be the same as those described for the All Wilderness Alternative.



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Conclusion: The potential for oil and gas exploration would be foregone. There would not be a significant loss in production of any mineral or energy resources.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative, there would be no surface disturbance from oil and gas exploration or the 700 acres of vegetation treatments. Future increases in ORV use on the mesa tops would not occur. Therefore, some wildlife species would benefit due to the preservation of solitude. Most wildlife species, including threatened, endangered, and other special status species that may occur in the WSA, would be provided additional protection with wilderness designation. However, the opportunity to provide habitat diversity for Ferruginous hawks and big game through vegetation treatments would be foregone.

Conclusion: Wilderness designation would protect wildlife habitat from disturbance and maintain present wildlife populations including special status species through the preservation of naturalness and solitude on 87 percent of the WSA. Opportunities to provide vegetation diversity and additional forage that would benefit big game and certain nongame species would be precluded.

- Impacts on Livestock Management

Domestic livestock grazing would continue to occur in the 45,720-acre wilderness with an estimated 1,106 AUMs (76 percent of the total forage in the WSA) remaining available to livestock as presently allotted. Three of the six miles of fence, two stock trails, 11 reservoirs and the corral would continue to be used and maintained in the same manner as in the past based on practical necessity and reasonableness. About 344 AUMs, 3 miles of fence, and two reservoirs would be in the nondesignated area and would be maintained without wilderness considerations.

The proposed 0.5 miles of fence is in the area that would be designated wilderness. It is assumed that it would be designed and installed consistent with wilderness protection standards. The proposed 700-acre vegetation treatment is also in the area that would be designated wilderness and would probably not be allowed. Therefore, the opportunity to produce an additional 170 AUMs of livestock forage would be foregone. The 10 miles of cherry-stemmed road would remain open to use of vehicles for livestock

management. The 7-mile way in the wilderness would not be available for vehicle use in livestock management; however it has been rehabilitated and is not currently used.

Conclusion: The potential for vegetation treatment and 170 additional AUMs of livestock forage would be foregone.

- Impacts on Cultural Resources

Impacts on cultural resources with this alternative would be essentially the same as with the All Wilderness Alternative because the majority of the known archaeological sites are in the area that would be designated.

Most of the recorded sites (110) are located in the designated portion and would receive protection under wilderness management. Minimal surface disturbance is expected in the foreseeable future and the entire designated portion would be closed to mineral location and leasing. The 45,720 acres composing the wilderness area would be closed to all vehicular access, thus, recorded and unrecorded sites would be protected from any potential damage due to vehicular traffic.

The remaining two recorded sites and all unrecorded sites in the nondesignated portion would be protected by existing Federal and State antiquities laws. The nondesignated area would remain open to mineral location and leasing. Surface-disturbing activities are not expected in this area. Any development would be preceded by appropriate inventory and mitigation procedures. Continued vehicular access may cause some damage to cultural resources in the southwestern portion of the WSA, however, impacts are expected to be minimal because there is little ORV use in this area.

Conclusion: Cultural resources including 110 recorded sites would receive protection from wilderness designation under this alternative. Sites in the undesignated portion would continue to receive protection under existing laws.

- Impacts on Recreation

Impacts on recreational use and opportunities from the 45,720-acre Large Partial Alternative would be about the same as described for the All Wilderness Alternative. Primitive recreational use could increase from 2,000 current visitor days per year to between 3,392 and 15,688. Motorized use would be

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eliminated and a potential of between 377 and 1,743 visitor days per year for vehicle based recreation would not be realized. Loss of potential ORV use would not be significant on a regional basis because there are adequate alternative areas for ORV use. The 10 miles of cherry-stemmed roads would remain open providing vehicular access to scenic portions of the area. Partial wilderness designation would eliminate the potential for conflicts between nonmotorized and motorized recreation users on 87 percent of the WSA, and the overall quality of the primitive recreational experience would be preserved and enhanced.

**Conclusion:** Opportunities for ORV use would be reduced or even eliminated. Opportunities for primitive recreation use would be preserved and enhanced on 87 percent of the WSA. Primitive recreation use would continue to increase.

### **Small Partial Wilderness Alternative (23,220 Acres)**

#### **• Impacts on Wilderness Values**

Wilderness designation of 23,220 acres would contribute to preservation of the area's wilderness values. Although in the foreseeable future impacts would be about the same as identified for the No Action/No Wilderness Alternative, this Partial Wilderness Alternative would reduce the potential for surface-disturbing activities that could impair wilderness values in the designated area. Wilderness values would be preserved in the designated area. Protection in the designated area would include management under VRM Class I which generally allows for only natural ecological change, ORV closure (no miles of ways are in this area), and closure to future mineral leasing and location. Naturalness and opportunities for solitude and primitive recreation and special features, including Class A scenery, geological features, archaeological values, endangered and sensitive species, and wildlife associated with wilderness would be preserved in the designated area. Endangered and sensitive species and wildlife associated with wilderness would benefit from the solitude provided through partial designation.

In the foreseeable future, loss of naturalness and opportunities for solitude and primitive recreation due to allowable surface disturbance from oil and gas exploration, rangeland projects, and vegetation treatments would occur on up to 711 acres within the non-designated portion. Special features would be largely preserved because direct disturbance would involve

only about 1.4 percent of the WSA and development is generally not expected in areas where special features are located. In addition, appropriate measures would be taken to protect endangered and sensitive species and cultural values prior to any surface-disturbing activity, and no significant negative impact would occur to these values. Refer to the Wildlife and Vegetation Including Special Status Species sections and the Cultural Resources analysis.

Sights and sounds from foreseeable development would reduce opportunities for solitude and primitive recreation on areas adjacent to the disturbed areas including up to 4 percent (2,100 acres) of the WSA. All of this type of indirect impact would be in the nondesignated area.

Elimination of ORV use in the designated area would somewhat improve opportunities for solitude and primitive recreation. However, vehicular use of 7 miles of ways and future exploration roads in the non-designated area would continue to detract from these opportunities during the period of activity. Also, ORV use could continue in the flat areas adjacent the Cigarette Springs road, and naturalness and opportunities for solitude and primitive recreation would be reduced in quality on up to 10 percent (5,242 acres) of the WSA.

The loss of wilderness values that would occur in the nondesignated area over the long-term future is not accurately known. Loss would result as intrusion occurs.

**Conclusion:** Wilderness values would be preserved in the designated area which is approximately 44 percent of the WSA. Naturalness and opportunities for solitude and primitive recreation would be directly lost on about 711 acres, and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to 7,342 acres. No significant loss of special features is anticipated.

#### **• Impacts on Vegetation Including Special Status Species**

Because the projected activities in the WSA would be in the nondesignated portion of the WSA and would be essentially the same as with the No Action No Wilderness Alternative, the impacts on vegetation types and special status plant species would be the same as described for that alternative. The 700 acres of planned controlled burn and chemical treatment of pinyon-juniper woodland and sagebrush would alter

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the natural vegetation on approximately 1 percent of the WSA.

Erigeron kachinensis, Astragalus cronquistii, and Eriogonum clavellatum, special status plant species, may be found within or near the WSA. These species would not be affected by oil and gas exploration or vegetation treatments in the pinyon-juniper woodland and sagebrush communities on the mesa tops because they occur only at lower elevations in the blackbrush and desert shrub communities or canyon bottoms. Therefore, no impacts to special status plant species are projected.

Conclusion: Vegetation types would be altered on 1.4 percent (711 acres) of the WSA. Special status plant species would not be affected.

- Impacts on Mineral and Energy Exploration and Production

Because there is little or no potential for locatable minerals in the WSA and little demand or availability of salable minerals, the Small Partial Wilderness Alternative would not affect exploration or production of these resources.

The area that would be designated wilderness would be placed in Category 4 status and new leases would not be issued. Presently, there are 10 post-FLPMA leases covering 424 acres of the area that would be designated wilderness. Activities on these leases could occur subject to the stipulations issued at the time of leasing. Leasing in this area would be phased out upon expiration unless a find of oil and gas in commercial quantities is shown. Because of depressed oil prices, the low certainty of occurrence of oil and gas and wilderness protection requirements, exploration or development are not expected in this area prior to or following partial wilderness designation. Therefore, any potential oil and gas production would be foregone in this area.

Oil and gas production is not likely in this area with or without wilderness designation and it is concluded that there would not be significant loss of oil and gas production.

The 29,200-acre nondesignated portion of the WSA would remain open to exploration and development of mineral and energy resources without consideration of wilderness values. Because exploration would be allowed in this area, mineral and energy resources would not be affected.

Conclusion: Implementation of the Small Partial Wilderness Alternative would not significantly affect mineral exploration or production.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

Because the projected activities in the WSA would be essentially the same as with the No Action/No Wilderness Alternative, the impacts on wildlife habitat and populations from the Small Partial Wilderness Alternative would be similar to those of the No Action/No Wilderness Alternative. Designation of 23,220 acres of the WSA, including the major canyon systems, would provide additional solitude and protection from future disturbance to wildlife on 44 percent (23,220 acres) of the WSA. Because most of the endangered, threatened, and other special status animal species inhabit cliff faces and canyon bottoms, their habitat and populations would not be affected.

Conclusion: Implementation of the vegetation treatments would benefit wildlife diversity and population levels by providing additional forage and ecotones. Oil and gas exploration would reduce some wildlife populations on less than 1 percent (10 acres) of the WSA during the lifetime of the projects. Endangered, threatened, and other special status species would not be affected.

- Impacts on Livestock Management

Designating 23,220 acres as wilderness would affect domestic livestock grazing essentially the same as with the No Action/No Wilderness Alternative. Of the 1,450 AUMs allocated, 627 would be within the designated portion of the WSA and 823 within the nondesignated portion. Of the existing range projects, only one reservoir and one stock trail would have to be maintained by nonmotorized means except where motorized maintenance is necessary. The remaining 12 reservoirs, 6 miles of fence, 7 miles of ways and one corral would be in the nondesignated portion and could be maintained by motorized means. The proposed 0.5 miles of fence and 700 acres of vegetation treatment would also be in the nondesignated portion and could be constructed unconstrained by wilderness stipulations.

Conclusion: Livestock management would not be significantly affected by the Small Partial Wilderness Alternative.

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## • Impacts on Cultural Resources

Most of the recorded sites (102) are located in the designated portion and would receive protection under wilderness management. No surface disturbance is expected in the foreseeable future and the entire designated portion would be closed to mineral location and leasing. The 23,220 acres composing the wilderness area would be closed to all vehicular access, thus, recorded and unrecorded sites would be protected from any potential damage due to vehicular traffic.

The remaining 10 recorded sites and all unrecorded sites in the nondesignated portion would be protected by existing Federal and State antiquities laws. The nondesignated area would remain open to mineral location and leasing, but degree and potential impacts to cultural resources are unknown. The vegetation treatment described under the No Action/No Wilderness Alternative would proceed under this alternative. Impacts to cultural resources are expected to be minimal. Any development would be preceded by appropriate inventory and mitigation procedures. Vehicular access would continue and impacts would be as described for the No Action/No Wilderness Alternative.

**Conclusion:** Cultural resources including 102 recorded sites would receive protection from wilderness designation under this alternative. Sites in the nondesignated portion would continue to receive protection under existing law.

## • Impacts on Recreation

Because wilderness designation on 23,220 acres would reduce the potential for surface disturbance, the quality of the primitive recreational experience would likely be preserved throughout the designated area.

As with the No Action/No Wilderness Alternative, opportunities for ORV use would be maintained on the flat mesas above the major canyon systems and primitive recreation values would be reduced in quality in those areas. The 7 miles of existing way could possibly be used for future vehicular access.

**Conclusion:** Opportunities for ORV use would be maintained, but opportunities for primitive recreation would be reduced. Both types of recreation use would continue to increase.

# Fish Creek Canyon WSA

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Changes to the Final EIS  
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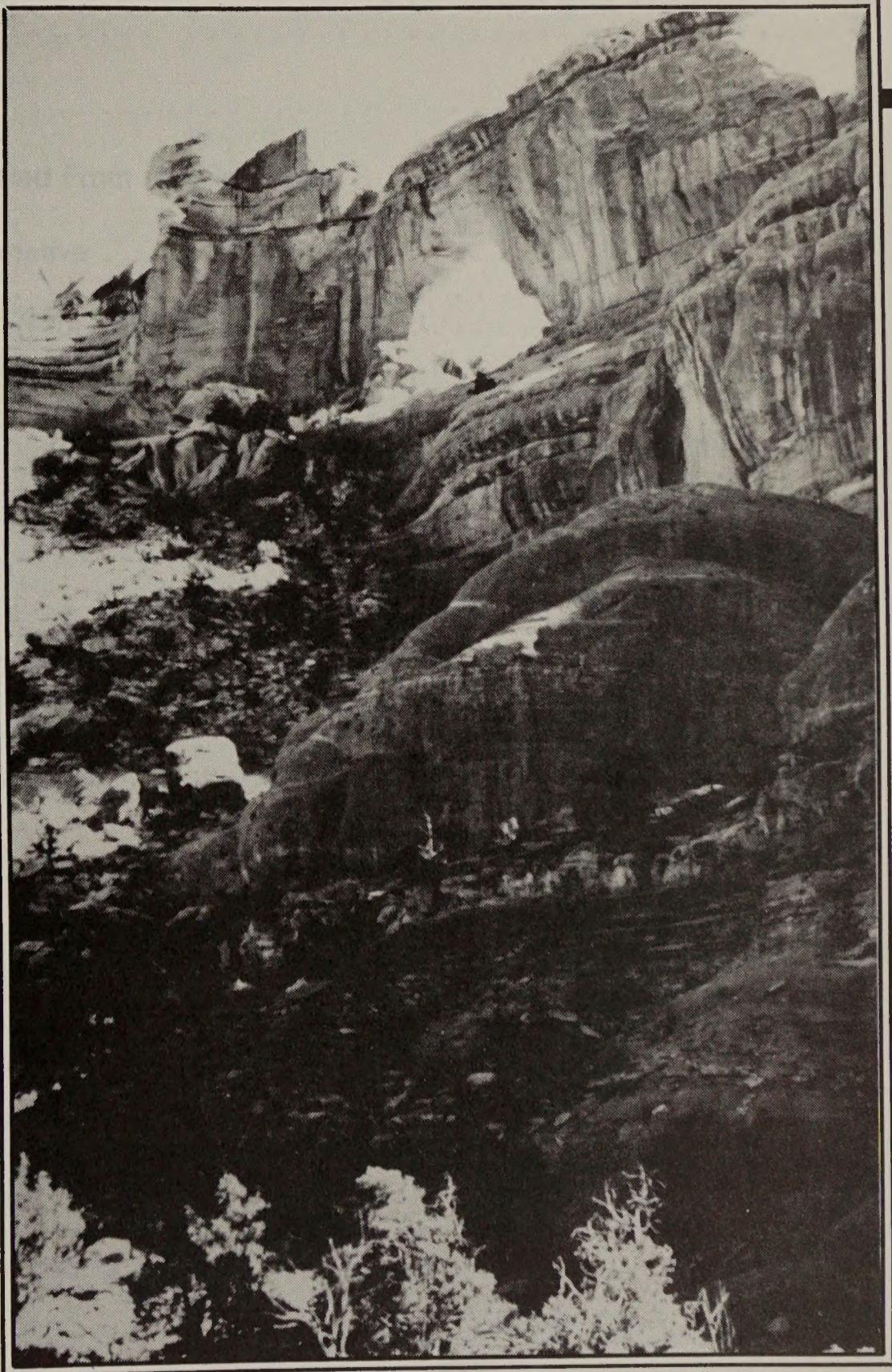
Alternative Described in the Final  
Management Analysis  
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## ENVIRONMENTAL CONSEQUENCES

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# FISH CREEK CANYON WSA

(UT-060-204)

## INTRODUCTION

### General Description of the Area

The Fish Creek Canyon WSA contains approximately 46,440 acres of public land administered by BLM. It is located about 29 miles southwest of Monticello, Utah, and 12 miles southwest of Blanding, Utah, in San Juan County.

The configuration of the WSA is roughly that of a rectangle, about 17 miles long and from 3 to 7 miles wide. The WSA is bounded by the old State Highway U-95 rights-of-way on the north, section lines and Comb Wash road on the east, by the historic Hole-in-the-Rock Trail on the south, and by a road, State section, and chaining on the west. A road and State section have been cherry-stemmed out of the western portion of the unit.

The entire WSA is situated on the Grand Gulch Plateau, also known as Cedar Mesa. Fish and Owl Creeks form the main canyons of this WSA, but Dry Wash and McCloyd Canyons also cut deeply into the Cedar Mesa Sandstone. The pinyon-juniper woodland covered plateau ranges in elevation from 6,800 feet on the north to about 5,300 feet on the south. The pinyon-juniper woodland is dense with interspersed sagebrush flats. Ponderosa pine is also found in the drainages of the northern part of the WSA. The mesa top topography gently undulates between dry washes and major canyons. In a few places, slickrock is exposed in formations on the mesa. The WSA is separated from the Road Canyon WSA to the south by the Hole-in-the-Rock Trail and the Mule Canyon Trail to the north by Utah Highway 95.

Fish Creek Canyon meanders through a straight-line distance of 17 miles from its head near State Highway U-95 to Comb Wash. The upper forks of Fish Creek are narrow with a number of pour-offs and large boulders. At the junction of the forks of Fish Creek, the canyon cliffs are a sheer 700 feet high. A natural arch, rock pinnacles, and other sandstone forms enclose the meandering wash of Fish Creek. The canyon widens and becomes shallower as it approaches Comb Wash to the east.

Owl Creek Canyon begins near the unit's western border and enters Fish Creek Canyon near the middle of the WSA. The canyon averages 700 feet deep and

meanders through a distance of about 7 straight-line miles. Numerous rock pinnacles, fins, knobs, and alcoves line the canyon walls. Nevill's Arch is an impressive, prominent feature in Owl Creek. Cottonwoods dot the wash bottom, and there is at least one year-round pool of water. Like Fish Creek, the upper forks of Owl Creek have formed rugged canyon bottoms with large boulders and pour-offs.

Information on the climate of the WSA is based on the nearest weather station at Natural Bridges National Monument, 10 miles away from Fish Creek. The average annual temperature is 51 degrees Fahrenheit (F), with an average low of 37 degrees F and an average high of 65 degrees F. The record low is -2 degrees F, and the record high is 101 degrees F.

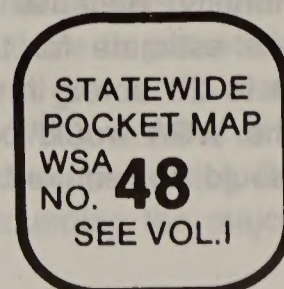
Annual precipitation ranges from 8 to 12 inches over Fish Creek. January, May, and June are the driest months. July, August, and December are the wettest months. Rainfall is usually associated with thunderstorms that can be quite intense, producing flashflooding. Annual total snowfall ranges from 20 to 40 inches.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume V, the following changes specific to the WSA have been made since publication of the Draft EIS.

1. Small portions of the boundary of the WSA (T. 38 S., R. 18 E., secs. 1 and 12; T. 38 S., R. 19 E., sec. 6; and T. 39 S., R. 19 E., sec. 13) have been redrawn to correct an error in the Draft EIS maps. These changes did not require acreage adjustments because acreage calculations were based on the boundaries as shown in the inventory document and Final EIS.

2. The Draft EIS identified a Partial Wilderness Alternative of 35,220 acres. This alternative was designed to preserve as wilderness those areas within the WSA having the most outstanding wilderness characteristics and to minimize manageability difficulties. In



# FISH CREEK CANYON WSA

response to public comments received on the Draft EIS, BLM has reanalyzed potential management problems associated with this WSA and concluded that the canyon area of Dry Wash could be administered as wilderness without significant management problems. Thus, the Partial Wilderness Alternative has been revised for the Final EIS. The new Partial Wilderness Alternative is 40,160 acres (refer to Map 3) and is BLM's Proposed Action.

3. The anticipated surface disturbance presented in the Draft EIS (2,260 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities projected to be feasible within the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of surface disturbance estimates from the 2,260 acres reported in the Draft EIS to 2,120 acres of surface disturbance for the Final EIS.

4. The Draft EIS identified a 2,100 acre chaining and seeding within the WSA to improve livestock forage production. The proposed method of treatment has changed from chaining to controlled burning and/or chemical (herbicide) treatment in order to avoid impacts on cultural resource sites.

## Specific Issues Identified Through Scoping and Public Comment

### • Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume V, (i.e., impacts on air quality, geology and topography, water rights, and land use plans and policies), the following issues or impacts specific to the Fish Creek Canyon WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Soils: The public is concerned that without wilderness designation future activities in the WSA would result in soil disturbance and increases in soil erosion and loss of soil fertility. Because the mineral-related surface disturbance estimate for the WSA has been reduced from 160 to 20 acres in the Final EIS, only 0.04 percent of the WSA would be directly disturbed and reclamation would be required.

The Draft EIS analyzed 2,100 acres of chaining and seeding. The proposed vegetation treatment has been changed to 2,100 acres of controlled burning and/or chemical treatment. This would not directly disturb the soil surface and vegetation would be reestablished in 1 to 2 years. Following reestablishment of vegetation, erosion rates would decrease. There would not be adverse effects on soils from the proposed vegetation treatment. Therefore, impacts on soils are not significant issues for analysis in the Final EIS.

2. Water Resources: The public is concerned that wilderness designation would interfere with development of water. Future developments could also increase sediment yield and affect water quality. There are only five miles of perennial streams in the WSA and soil erosion would not be significantly affected. The perennial waters originate within the WSA, therefore, no potential upstream uses would be affected. Potential water uses in the WSA include livestock, recreation, and wildlife, and these uses would be compatible with wilderness management. Therefore, the impacts on water uses and quality are not significant issues for the Fish Creek Canyon WSA.

3. Forest Resources: The Navajo Indian Tribe has expressed concern that prohibition of firewood cutting on Cedar Mesa would adversely affect the availability of fuelwood for the reservation. However, the Fish Creek Canyon WSA is estimated to contain less than 4,275 cords of firewood. Additionally, the bulk of the fuelwood for the reservation comes from the National Forest above the BLM WSAs on Cedar Mesa. Only minimal firewood or other forest products have been harvested from the WSA, mainly along Highway U-95 to Snow Flat. For these reasons, impacts on forest resources are not significant issues for analysis in the Final EIS.

4. Visual Resources: As discussed above, only 20 acres of surface disturbance resulting from mineral activities are projected for the WSA in the Final EIS. This level of disturbance (approximately .04 percent of the area) would not significantly alter visual resources. The proposed 2,100 acres of burns and chemical treatment of vegetation would be noticeable. Because impacts on visual resources would mainly affect the wilderness value of naturalness, the impacts on visual resources are not addressed in the Final EIS as a separate topic, but are addressed as part of the analysis of naturalness in the Wilderness Values section.

# FISH CREEK CANYON WSA

## • Issues Analyzed in Detail

The significant issues for the Fish Creek Canyon WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on vegetation including special status species.
3. Impacts on mineral exploration and production.
4. Impacts on wildlife habitat and populations including special status species.
5. Impacts on livestock management, including opportunities for rangeland developments.
6. Impacts on the preservation of cultural resources.
7. Impacts on recreational use of the Fish Creek Canyon, including tradeoffs between potential future ORV use on the mesa tops and primitive recreational use.
8. Impacts on local economic conditions.

Comments made during the public comment period for the Draft EIS centered mainly on the need for, and adequacy of, the rationale for the BLM Proposed Action; the adequacy of BLM wilderness inventory; the need for further inventories of resource values; and BLM's assessments of wilderness values, ORV activities, use of the area by Native Americans, and mineral values.

See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 48, for responses to specific comments about the Fish Creek Canyon WSA.

## DESCRIPTION OF THE ALTERNATIVES

### Alternative Considered and Eliminated From Detailed Study

An alternative that would add 16,000 acres of Federal and 2,560 acres of State lands on the east and northeastern boundaries of the WSA were suggested in the public comments. This alternative is not analyzed because the inclusion of State lands is not consistent with BLM's Wilderness Review Guidelines (refer to Volume VII-B, General Comment Response 6.4)

and because other public lands were dropped from study during the inventory phase (refer to Volume VII-B, General Comment Response 3.1).

## Alternatives Analyzed

Three alternatives are analyzed for this WSA: (1) No Action/No Wilderness; (2) All Wilderness (46,440 acres); and (3) Partial Wilderness (Proposed Action) (40,160 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case. The analysis assumptions presented in the Introduction to Volume V are also applicable.

### • No Action/No Wilderness Alternative

With this alternative, none of the 46,440-acre Fish Creek Canyon WSA would be designated by Congress as part of the NWPS. Although land use plans are regularly updated and the San Juan RMP will eventually replace the MFP, it is assumed that the area would continue to be managed in accordance with the South San Juan MFP (USDI, BLM, 1971). The five sections (3,210 acres) of State land within the WSA (refer to Map 1) has not been identified for special Federal acquisition through exchange or purchase; therefore, these lands are analyzed as remaining under State ownership.

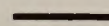




### • Management Conditions and Constraints

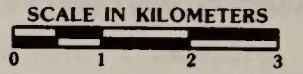
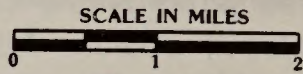
All 46,440 acres of the WSA would remain open to mineral location and sale. Although no mining claims now exist, development work, extraction, and patenting would be allowed on any future valid mining claims. Mining development would be regulated by unnecessary or undue degradation regulations (43 CFR 3809) without wilderness consideration. Thirty-two existing post-FLPMA oil and gas leases (1,880 acres) and future leases could be developed under leasing Category 2 on 19,310 acres and Category 3 (no surface occupancy) on 26,010 acres. About 1,120 acres are closed to leasing (Category 4). Application of the restrictive categories is intended to protect aesthetic, watershed, and cultural values in the area. Because there is potential for small accumulations of oil and gas in the Paleozoic formations underlying the WSA, limited oil and gas exploration is expected in the leasing Category 2 area on the mesas surrounding the major canyon systems

# FISH CREEK CANYON WSA

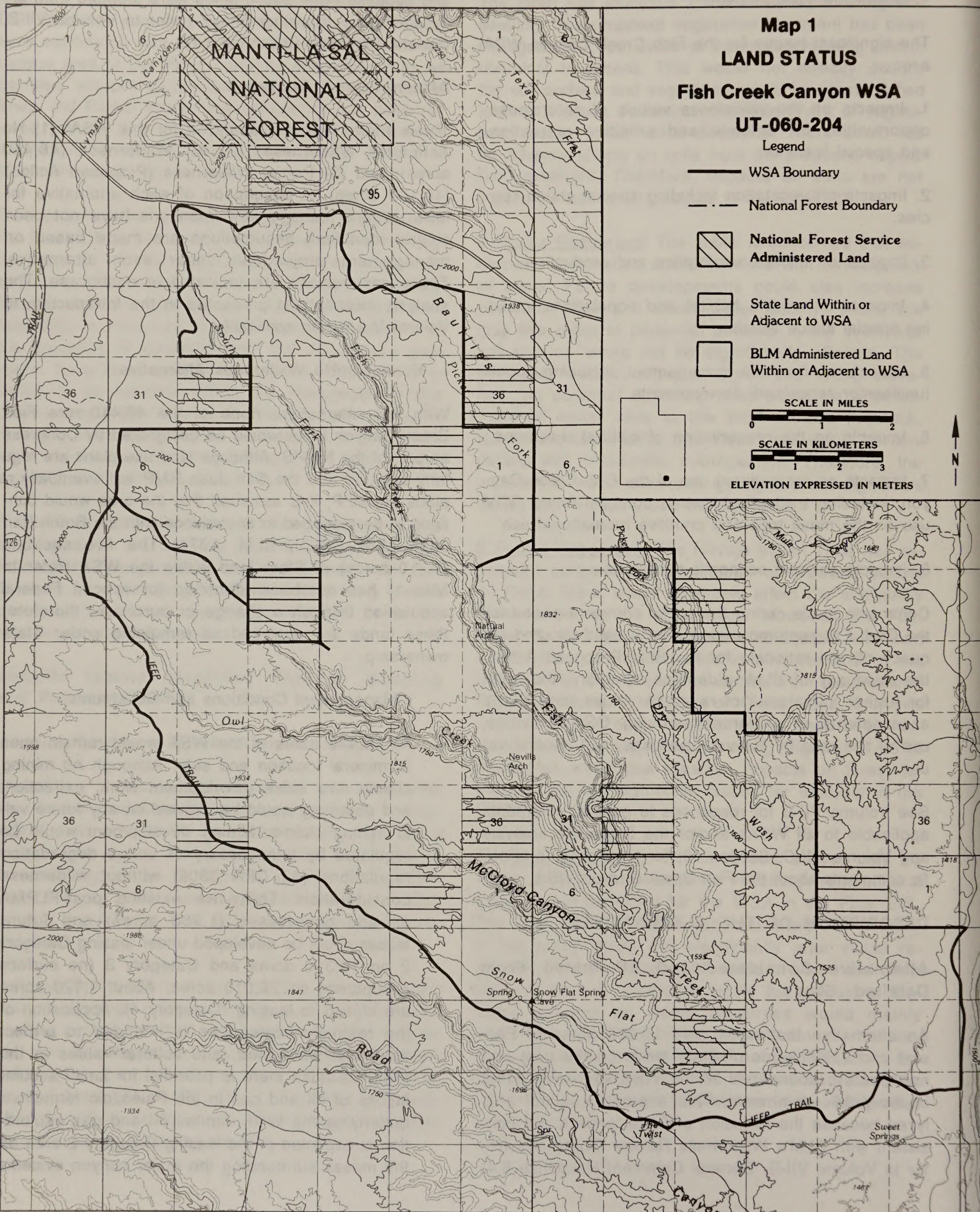
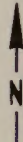
## Map 1 LAND STATUS Fish Creek Canyon WSA UT-060-204

Legend

-  WSA Boundary
-  National Forest Boundary
-  National Forest Service Administered Land
-  State Land Within or Adjacent to WSA
-  BLM Administered Land Within or Adjacent to WSA



ELEVATION EXPRESSED IN METERS



T. 37 S.

T. 38 S.

T. 39 S.

R. 19 E.

R. 20 E.

# FISH CREEK CANYON WSA

in the WSA. Development of oil and gas is not projected following exploration because the level of known resources, the certainty of their occurrence, and the probability of their development are too low to support a development assumption. Refer to Appendix 6 in Volume I for an explanation of mineral development projections.

The present level of domestic livestock grazing use of the 46,440-acre WSA would continue as authorized in the MFP (1,073 AUMs). Existing livestock developments (four short fences, 350 acres of seeding, three reservoirs, and one spring development) could be maintained in a routine manner with vehicle access. New rangeland developments could be implemented without wilderness considerations. Vegetation treatments (prescribed burning and spraying of pinyon-juniper woodland and sagebrush) in four sections (2,100 acres) in the southwest part of the WSA would be allowed. The seeding would be expected to provide an additional 500 AUMs.

Developments for wildlife, watershed, water resources, etc., would be allowed without concern for wilderness values if in conformance with the MFP. None exist and none are currently planned.

Public water reserve withdrawals of 165 acres would continue. These withdrawals segregate the lands from all public land laws and nonmetalliferous mineral location.

The 46,440 acres, including about 19.8 miles of ways and jeep trails, would remain open for vehicular use. Current ORV use is restricted in the main canyon areas due to steep terrain conditions. ORV use on the mesa areas of the WSA is light but is expected to increase in the future. A portion of the area may eventually be closed to ORV use, as recommended in the current MFP.

The entire 46,440-acre area would continue to be potentially open to woodland product harvest. There is minimal harvest of forest products at the present time, and this occasional use would continue in the foreseeable future.

The area would continue to be managed under VRM Class II on 28,000 acres and Class III on 18,440 acres.

## • Action Scenario

It is projected that approximately 2,120 acres will be disturbed in the WSA in the foreseeable future. About 20 acres will be disturbed by oil and gas exploration. It is assumed that two exploratory wells will be drilled on the flat areas above the major canyon systems where the WSA is open to surface occupancy. The location of drill sites will be determined through the interpretation of geophysical data. Each location will disturb up to 10 acres for up to 4 miles of access road and drill pad construction. Exploration wells would employ an average of 10 employees per well and would take from 3 to 6 months to complete. Disturbed areas would be rehabilitated following abandonment and approximately 2 years would be required for successful revegetation.

Approximately 2,100 acres of pinyon-juniper woodland and sagebrush vegetation would be altered by controlled burning or chemical (herbicide) treatment in order to improve livestock forage production. Treatments would be done in the southwestern portion of the WSA on the flat mesa top north of the Old Mormon Trail road. Treated areas would be reseeded with grasses and other livestock forage species. Vegetation would reestablish within 2 years.

A small amount of disturbance would occur from continued ORV use of the mesa tops and in the lower portion of Fish Creek.

Recreation use of the WSA is projected to increase over the current estimated use of 6,850 annual visitor days at a rate of 2 to 7 percent annually. Less than 2 percent of the use would be attributed to vehicular activity, mostly on 19.8 miles of existing ways and future access roads.

## • All Wilderness Alternative

With this alternative, all 46,440 acres of the Fish Creek Canyon WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character.

The policy of the State is to reserve its position regarding exchange of in-held lands within any particular WSA (see Chapter 1 in Volume I). Based on this policy regarding exchange of State lands, it is

# FISH CREEK CANYON WSA

## Map 2 ALL WILDERNESS ALTERNATIVE

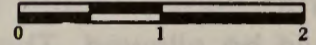
### Fish Creek Canyon WSA

UT-060-204

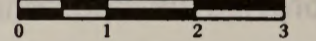
#### Legend

- All Wilderness Alternative (46,440 acres)
- - - National Forest Boundary

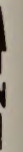
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



T. 37 S.

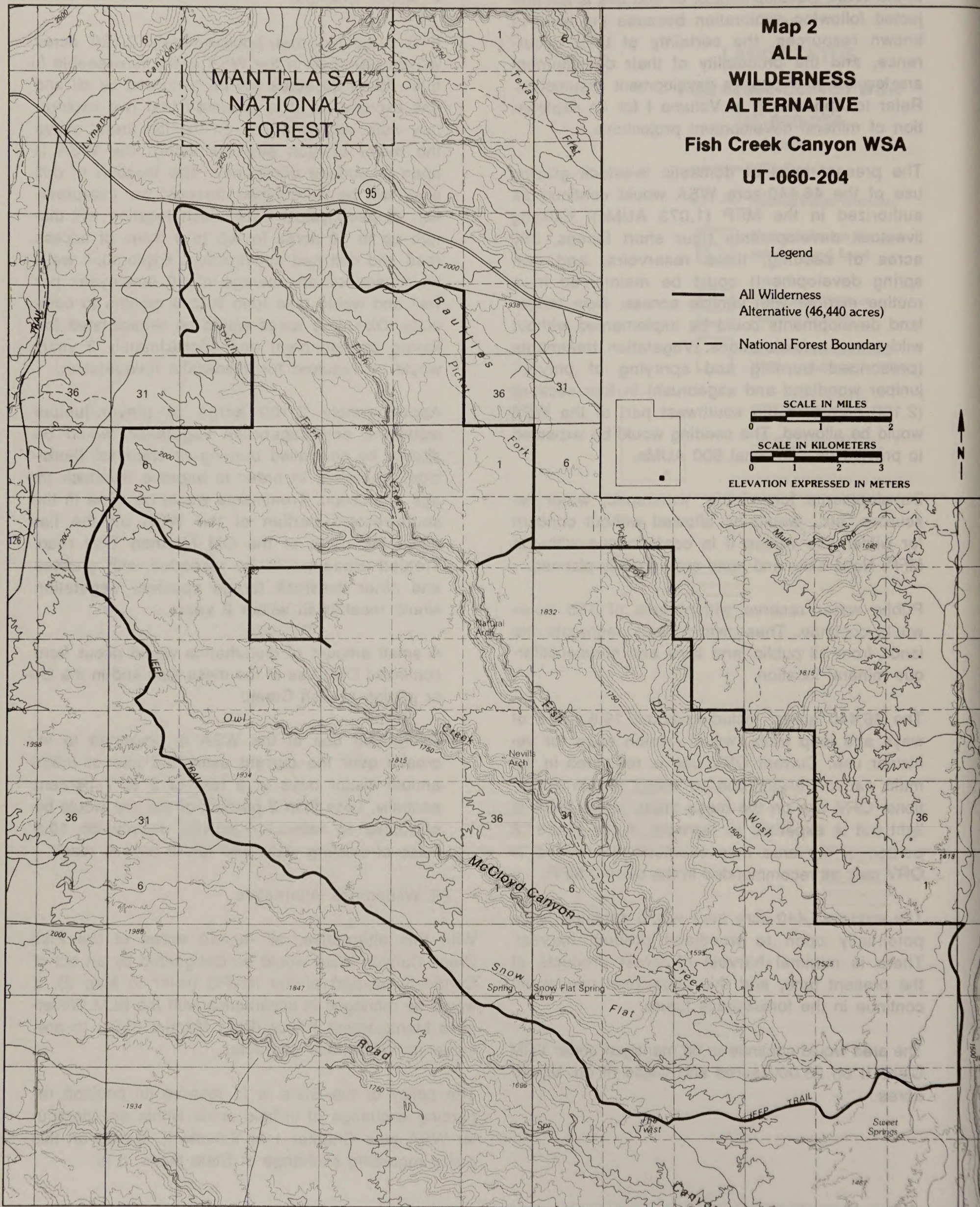
T. 38 S.

T. 39 S.

R. 19 E.

6

R. 20 E.



# FISH CREEK CANYON WSA

assumed that State and lands would remain under existing ownership. There are five State sections (3,210 acres) within the WSA (refer to Map 1 and Appendix 3 in Volume I). There are no private or split-estate lands in the WSA. The figures and acreages given with this alternative are for Federal lands only.

## • Management Conditions and Constraints

After wilderness designation, all 46,440 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Although no mining claims now exist, development work, extraction, and patenting would be allowed to continue on any valid mining claims that may be located prior to wilderness designation. Any mining development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) with concern for wilderness values. However, there is little or no potential for locatable minerals and new valid mining claims are not anticipated. Existing oil and gas leases involving 1,880 acres would be phased out upon expiration unless a find of oil or gas resources in commercial quantities is shown. New oil and gas leases would not be issued. Because of depressed oil prices, low certainty of occurrence of oil and gas, and wilderness protection requirements, exploration or development of oil and gas is not expected prior to or following wilderness designation.

Present domestic livestock grazing would be allowed to continue as authorized in the South San Juan MFP. The 1,073 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of rangeland developments existing at the time of designation (as listed in the No Action/No Wilderness Alternative) could continue in the same manner and degree as in the past based on practical necessity and reasonableness. After designation, new rangeland developments would be allowed on a case-by-case basis if necessary for resource protection (rangeland and/or wilderness) and the effective management of these resources, provided that wilderness protection standards are met (refer to Appendix 1 in Volume I). It is assumed that the potential 2,100 acres of vegetation manipulation and seedings likely would not be allowed.

Public water reserve withdrawals of 165 acres would continue. These withdrawals segregate the lands from all public land laws and nonmetalliferous mineral location.

The entire 46,440-acre area would be closed to ORV use except for users with valid existing rights if approved by BLM in accordance with 43 CFR 8560 provisions. About 19.8 miles of existing vehicular ways would not be available for vehicular use except as indicated above. About 21 miles of the WSA boundary follow existing gravel and dirt roads that would remain open to vehicular travel. Three roads totaling about 5 miles in the WSA would be cherry-stemmed and remain open to vehicle use. One State section also would be cherry-stemmed at the end of one of these roads.

Harvest of forest products would not be allowed except for harvest of pine nuts or noncommercial gathering of dead-and-down wood for use in the wilderness, if accomplished by other than mechanical means.

Visual resources on 46,440 acres would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

## • Action Scenario

BLM does not project any surface disturbance with the All Wilderness Alternative. Recreation use would be entirely primitive in nature and would increase over the current estimated 6,740 annual visitor days of primitive-type use at a rate of 2 to 7 percent per year.

## • Partial Wilderness Alternative (Proposed Action)

With this alternative, 40,160 acres of the Fish Creek Canyon WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to analyze as wilderness those portions of this WSA that have the best wilderness values. BLM believes that wilderness values are of a higher quality in areas where outstanding opportunities for solitude and/or primitive recreation exist, preferably in combination with special features. In forming this alternative, the portions of the WSA with outstanding opportunities for solitude and primitive recreation and special features were included where possible within a manageable boundary. The acres analyzed as wilderness with this alternative include the steepest canyon portions of the WSA along Fish Creek, Owl Creek, and Dry Wash. The 6,280-acre area north and east and the mouth of Dry Wash along the east side of the WSA, but outside of that portion designated as wilderness,

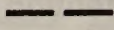
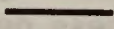
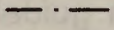
# FISH CREEK CANYON WSA

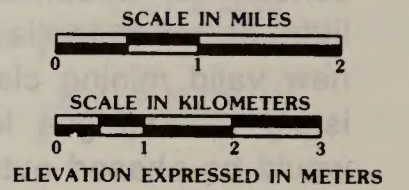
## Map 3 PARTIAL WILDERNESS ALTERNATIVE

### Fish Creek Canyon WSA

UT-060-204

#### Legend

-  WSA Boundary
-  Partial Wilderness Alternative (40,160 acres)
-  National Forest Boundary



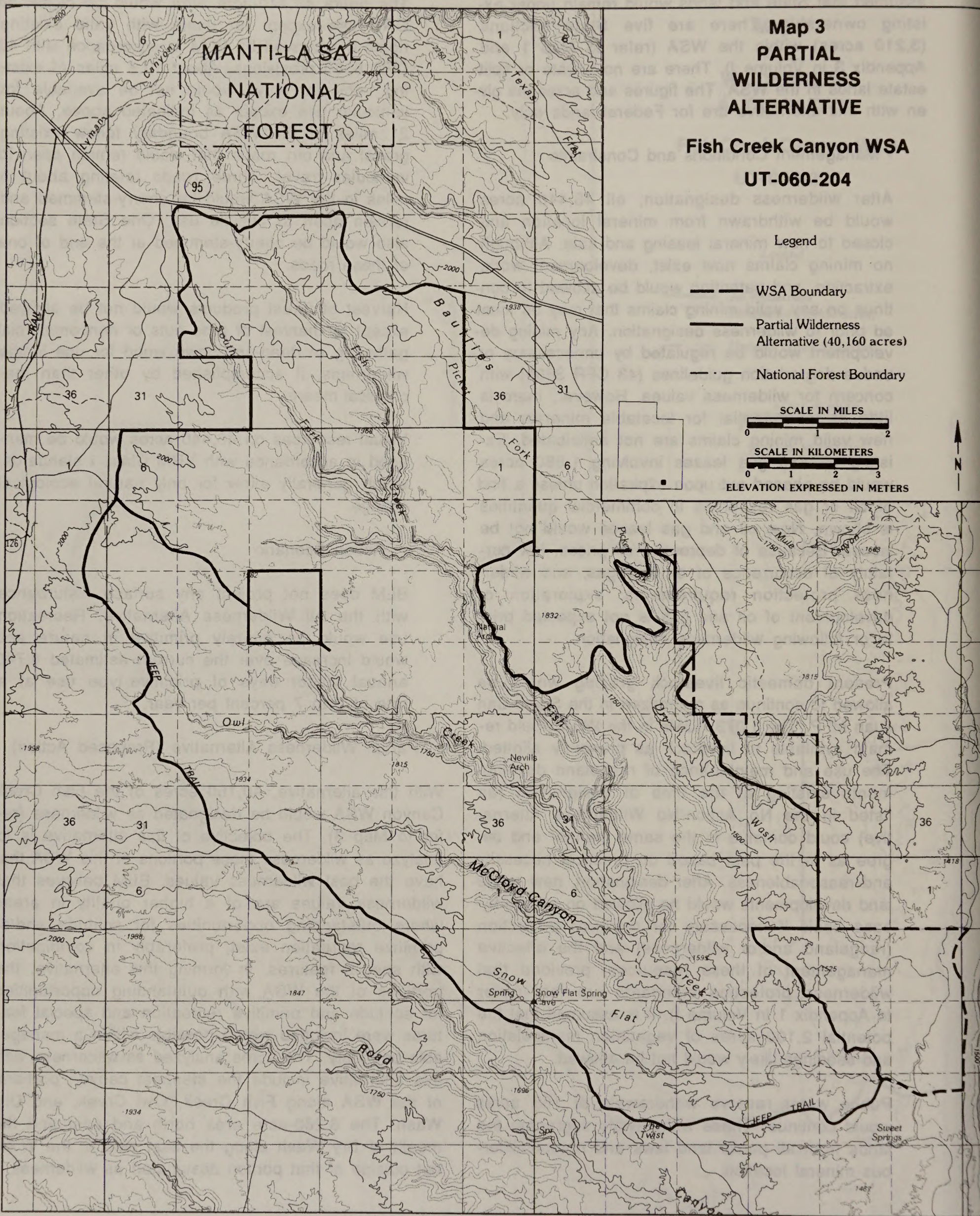
T. 37 S.

T. 38 S.

T. 39 S.

R. 19 E.

R. 20 E.





## FISH CREEK CANYON WSA

would be managed in accordance with the South San Juan MFP as described for the No Action/No Wilderness Alternative. The 40,160-acre area designated as wilderness would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560), as described for the All Wilderness Alternative.

Because the policy of the State is to reserve its position regarding exchange of in-held lands within any particular WSA, it is assumed that State lands would remain under existing ownership. There are five State sections (3,210 acres) in the portion of the WSA that would be designated wilderness (refer to Map 1 and Appendix 3 in Volume I). There are no private or split-estate lands within the WSA. The figures and acreages given for this alternative are for Federal lands only.

### • Management Conditions and Constraints

The 40,160-acre wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. In the 40,160-acre area, development work, extraction, and patenting would be allowed to continue on any valid claims located prior to wilderness designation (none exist at the present time). Existing oil and gas leases, covering 1,670 acres, would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown. The 6,280-acre area (refer to Map 3) within the WSA not designated wilderness would be open to future mineral location, leasing, and sale. In the 6,280-acre area development work, extraction, and patenting of future mining claims could occur without wilderness consideration if claims are valid. Three leases covering 210 acres are located in the nondesignated area and could be developed. The area not designated would be managed as oil and gas leasing Category 2 (standard and special stipulations) on 2,580 acres, Category 3 (no surface occupancy) on 3,300 acres, and Category 4 (closed to leasing) on 400 acres. Although mineral resources would be managed as described above, no locatable or leasable mineral explorations or developments are projected in the WSA because the potential exploration area would be in the designated wilderness and the level of known resources and the probability of their development are too low to support a development assumption.

Domestic livestock grazing would continue to occur in the 40,160-acre wilderness area. The

873 AUMs in the 40,160-acre area would remain available to livestock as presently allotted. Existing range projects (350 acres of seeding, four short fences, one spring, and one reservoir) could be maintained based on practical necessity and reasonableness. New rangeland facilities could be allowed in the wilderness area if necessary for protection and management of the rangeland and/or wilderness resource, provided that wilderness protection standards are met (refer to Appendix 1 in Volume I). It is assumed that the planned vegetation treatment and seeding of 2,100 acres in the wilderness area likely would not be allowed. In the 6,280-acre nonwilderness area, grazing use of 200 AUMs would be continued. Existing developments (two reservoirs) could be maintained in a routine manner with vehicle access.

Public water reserve withdrawals of 165 acres would continue. These withdrawals segregates the lands from all public land laws and nonmetalliferous mineral location.

The canyons and associated areas that would comprise the 40,160-acre wilderness would be closed to ORV use. About 13.8 miles of existing ways would not be available for vehicular use except in situations described under the All Wilderness Alternative. The remainder of the unit, including the existing 6 miles of way in the southeast part of the WSA, as well as the roads bordering the WSA, would remain open to vehicular travel. One road about 3 miles long would be cherry-stemmed on the west side of the WSA and would remain open to vehicular use. A State section at the end of this road also would be cherry-stemmed.

Harvest of forest products in the 40,160-acre wilderness would not be allowed except for harvest of pine nuts or non-commercial gathering of dead-and-down wood for use in the wilderness, if accomplished by other than mechanical means. The remaining 6,280 acres would be open to commercial woodland harvest.

Visual resources in the 40,160-acre wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The remaining 6,280 acres would be managed as VRM Class II on 4,200 acres and Class III on 2,080 acres.

# FISH CREEK CANYON WSA

- Action Scenario

BLM projects no surface disturbance including ORV-related disturbance with this Partial Wilderness Alternative.

Recreation use would increase at a rate of 2 to 7 percent per year. Less than 1 percent of the use would be attributed to vehicular activity in the designated area.

## Summary of Environmental Consequences

Table 1 presents the environmental consequences of alternatives analyzed in detail.

## AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

### Wilderness Values

- Size

The Fish Creek Canyon WSA contains 46,440 acres of public land and is approximately 17 miles long and varies from 3 to 7 miles wide.

- Naturalness

The major imprints surrounding Fish Creek WSA were eliminated by boundary adjustments during the BLM Intensive Wilderness Inventory (USDI, BLM, 1980). What remains are 19.8 miles of way, a few livestock developments, and four abandoned drill holes.

In addition, there are approximately 2.2 miles of access to a drill hole reclaimed under BLM's Interim Management Policy constraints (USDI, BLM, 1979).

From the northeast side of the unit a way extends 5.9 miles south in the WSA. This way travels along a narrow mesa top, ending in a grassy area near the mesa point between Fish Creek and Dry Wash Canyons.

Vehicle passage has created this way which winds among the pinyon-juniper, crosses grassy glades, and follows wash bottoms in a few places, especially towards its end on the mesa point. From the above mentioned way, three spur ways fork to the west.

The first one follows the unit boundary for a total of about 1.50 miles. The two-wheel tracks have been formed by the passage of vehicles. The way weaves among the pinyon-juniper trees and across the sage flats and is well revegetated with grasses and encroaching bushes. Another way extends west for 0.8 mile through sage finally disappearing into a sage flat. Vehicle passage has created a third way to the west for 1.0 mile to the rim of Fish Creek Canyon. As with the others, it crosses sage flats, weaves among the pinyon-juniper, and crosses slickrock.

An access way and drill pad were built in December 1981 from the Comb Wash Road (drill pad in Township 39 South, Range 20 East, Section 11). Part of an existing way was accessed by a newly constructed route that totaled 2.2 miles. The newly constructed route and drill pad were reclaimed in 1982.

From the Comb Wash road, a way extends into the unit for 3.1 miles to an abandoned drill hole in Section 10, Township 39 South, Range 20 East. At one time, this way was constructed; however, it is severely washed out where it crosses Fish Creek, and erosion is occurring in a few places. Beyond the drill pad, vehicle tracks occur around a small knoll for approximately 0.5 mile.

An old way extends up Fish Creek Wash for approximately 4 miles. Where this way crosses the creek bed it has become overgrown, washed out, and difficult to find.

In January 1984 a non-impairing seismic exploration was conducted in the WSA. The operation consisted of helicopter location of portable drilling rigs to about 20 sites. Shallow holes (approximately 10 feet deep) were drilled with all trailings being returned to the drill hole. Less than 1 acre was disturbed and all 20 sites were completely rehabilitated in July 1984.

From the cherry-stemmed road to Snow Flat Spring Cave, a way continues for 1.4 miles to the rim of McCloyd Canyon (a tributary of Owl Creek Canyon). The passage of vehicles has created this way, crossing sage flats and weaving among pinyon-juniper trees. Also from the Snow Flat Road, a way crosses sage flats in State Section 2, ending at the rim of McCloyd Canyon for a total of 1.1 miles. This way

# FISH CREEK WSA

**Table 1  
Summary of Environmental Consequences**

		Alternatives	
Resources	No Action/No Wilderness	All Wilderness (46,440 Acres)	Partial Wilderness (40,160 Acres) (Proposed Action)
Impacts on Wilderness Values	Wilderness values would not be protected by wilderness management and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on about 2,120 acres of the WSA, and indirectly reduced in quality on up to an additional 4,644 acres. The loss would be due to oil and gas exploration and vegetation treatments. Special features would not be significantly affected. Vehicular use of 19.8 miles of ways and new energy exploration roads would continue to detract from opportunities for solitude and primitive recreation in the WSA.	Wilderness designation would preserve the wilderness values in the WSA.	Wilderness values would be preserved in the designated area which is approximately 87 percent of the WSA. Vehicular use of 6 miles of ways in the nondesignated portion would continue to occasionally detract from opportunities for solitude and primitive recreation in the WSA.
Impacts on Vegetation	Up to 7.5 percent of the pinyon-juniper woodland type within the WSA would be converted to grasses. There would be no significant impact to populations of threatened, endangered, or other special status plant species because they generally do not grow where the disturbance would occur and mitigation would be required.	Vegetation, including threatened, endangered, and other special status species would be preserved with this alternative because there would be no additional surface disturbance and no ORV use in the WSA.	Vegetation types and threatened, endangered, or other special status species would be preserved on 87 percent of the WSA and would not be significantly affected in the nondesignated area because no surface disturbance is projected.

## FISH CREEK WSA

Table 1 (Continued)  
Summary of Environmental Consequences

Resources	Alternatives	
	No Action/No Wilderness	Partial Wilderness (40,160 Acres) (Proposed Action)
Impacts on Mineral and Energy Exploration and Production	<p>Implementation of this alternative would not further restrict or affect mineral and energy resource exploration and production beyond those already in effect because mineral leasing, location of mining claims, and mineral developments could occur without restrictions for protection of wilderness values.</p>	<p>The potential for oil and gas exploration would be foregone in the designated area. Restrictions on the nondesignated area would not change from those now in effect. There would not be a significant loss in production of any mineral or energy resource because there would be a low probability of mineral development even without wilderness designation.</p>
	<p>Implementation of the land treatment projects would benefit wildlife diversity and population levels by providing additional forage and ecotones. Surface disturbances caused by the proposed treatment and possible oil and gas exploration may displace some wildlife species during the lifetime of these projects. No significant adverse impacts would occur to threatened, endangered, or other special status species because they inhabit riparian and cliff face areas that would not be disturbed. Ferruginous hawk habitat would be improved.</p>	<p>Partial wilderness designation would protect wildlife habitat from disturbance and maintain present wildlife populations including special status species through the preservation of naturalness and solitude on 87 percent of the WSA. Opportunities to provide vegetation diversity and additional forage that would benefit big game and certain nongame species would be precluded because the proposed vegetation treatment would be in the designated area and would not be allowed.</p>
Impacts on Wildlife Habitat and Population	<p>Wilderness designation would protect wildlife habitat from disturbance and maintain present wildlife populations through preservation of naturalness and solitude. Opportunities to provide vegetation diversity and additional forage that would benefit big game and certain nongame species would be precluded. Special status species would receive additional protection.</p>	<p>Partial wilderness designation would protect wildlife habitat from disturbance and maintain present wildlife populations including special status species through the preservation of naturalness and solitude on 87 percent of the WSA. Opportunities to provide vegetation diversity and additional forage that would benefit big game and certain nongame species would be precluded because the proposed vegetation treatment would be in the designated area and would not be allowed.</p>

## FISH CREEK WSA

**Table 1 (Continued)  
Summary of Environmental Consequences**

		Alternatives	
Resources	No Action/No Wilderness	All Wilderness (46,440 Acres)	Partial Wilderness (40,160 Acres) (Proposed Action)
Impacts on Livestock Management	Existing and proposed livestock management and projects would not be significantly affected because access, maintenance and development of rangeland improvements would continue without restrictions for protection of wilderness values.	The opportunity to increase livestock forage by 500 AUMs through vegetation treatment on 2,100 acres would be foregone. Restrictions on vehicle access on 19.8 miles of way would necessitate changes in livestock management and cause inconvenience and slight increases in costs to 15 livestock permittees.	Impacts would be about the same as with the All Wilderness Alternative because 87 percent of the WSA would be designated wilderness, access to 13.8 miles of ways would be restricted and the 2,100-acre vegetation treatment would not be allowed.
Impacts on Cultural Resources	Minor impact to cultural resources is expected due to oil and gas exploration. Continued vehicular access may cause intentional or unintentional damage to archaeological sites in portions of the WSA. Cultural resource management would continue without regard to wilderness management.	The benefits of protection of cultural resources including 61 known sites from most surface disturbance and all vehicular access would probably outweigh potential negative effects from increased vandalism due to increased future recreational use. Management of cultural resources may be restricted in scope and execution due to wilderness designation.	Cultural resources including 51 recorded sites would receive protection from wilderness designation on 87 percent of the WSA under this alternative. Sites in the nondesignated portion would continue to receive protection under existing laws.

# FISH CREEK WSA

**Table 1 (Continued)  
Summary of Environmental Consequences**

	Alternatives		
	No Action/No Wilderness	All Wilderness (46,440 Acres)	Partial Wilderness (40,160 Acres) (Proposed Action)
<b>Resources</b>			
<b>Impacts on Recreation</b>	<p>Opportunities for ORV use would be maintained but the quality of opportunities for primitive recreation would be reduced. Both primitive recreation and vehicular use would continue to increase.</p>	<p>Opportunities for ORV use would be eliminated but opportunities for primitive recreation experience use would be preserved and enhanced. Loss of ORV opportunities would not be significant on a regional basis because there are adequate alternative areas available for ORV use. Primitive-type recreational use would continue to increase. Opportunities for commercial outfitting for primitive recreation would be enhanced.</p>	<p>Opportunities for ORV use would be eliminated on 87 percent of the WSA while opportunities for primitive recreation use would be preserved. Loss of ORV opportunities would not be significant on a regional basis because there are adequate alternative areas available for ORV use. Primitive-type recreational use including opportunities for commercial outfitting would continue to increase.</p>
<b>Impacts on Economic Conditions</b>	<p>Present economic trends would not be affected because major mineral or other developments are not projected to occur in the WSA in the foreseeable future. Recreation-related expenditures could contribute up to \$244,800 to the local economy by the year 2020. An additional 500 AUMs from vegetation manipulation would contribute up to \$10,000 annually in local livestock sales and \$770 annually in grazing fees. Present and future oil and gas leases could contribute up to \$90,640 annually in Federal lease revenues.</p>	<p>Future local recreation-related expenditures could increase up to \$240,800 with an increase in primitive recreation use. Up to \$101,410 in annual oil and gas lease fees and livestock sales and fees would be foregone.</p>	<p>Future local expenditures could increase up to \$240,800 from increases in primitive and motorized recreational use. Up to \$92,190 in annual oil and gas lease fees and livestock sales and fees would be foregone.</p>

## FISH CREEK CANYON WSA

similarly was created by the passage of vehicles and winds among pinyon-juniper trees and sage flats.

Vehicle tracks on the cryptogamic soils weaving approximately 0.3 mile among the moderately dense pinyon-juniper enter the unit from State Section 32 on the unit's southwest. These tracks follow the north rim of a shallow canyon.

A raiing and reseeding project (the East Slickhorn Reseeding) was completed in 1955 on the unit's north-east boundary. On 1,462 acres, the sagebrush was railed and the area seeded with crested wheatgrass. About 35 acres of these projects are within the WSA. There are large grassy fields along the Dry Wash Road (outside the unit) but in the portion inside the unit, thick 3-foot tall sage is predominant; therefore, the project is thus not apparent within the WSA.

An old and deteriorated corral, possibly with historical value, is in a sage flat in T. 38 S., R. 19 E., sec. 12. It is built with upright pinyon or juniper poles. The overall influence on the WSA's naturalness is negligible.

An archaeological site that has been fenced and stabilized is on the rim of Dry Wash Canyon on or just inside the WSA boundary. Referred to as Comb Wash Overlook, these are well preserved ruins with a dramatic view of the junction of Dry and Comb Washes.

Three stock reservoirs are located in the southeast part of the WSA, but are not a substantial intrusion. In the southeast part of Fish Creek Canyon WSA there are four abandoned and reclaimed drill holes.

At Snow Flat Spring Cave there are two natural springs. One, inside a cave, has had two wooden troughs placed under the dripping water. A metal sign bearing the words Snow Flat Spring Cave has been placed here, just west of the springs.

There is a 25-foot wide seismic line running straight north from the cherry-stemmed road to the drill hole in the west portion of the WSA. It is an imprint within the WSA for 0.5 mile and is substantially noticeable. A minor boundary adjustment could be made to remove this imprint from the WSA.

These imprints affect less than 1 percent of the WSA. The 46,440 acres would be considered natural and meet the naturalness standards for areas under wilderness review.

### • Solitude

The desert canyon system, including four deep canyons and their forks, offers miles of opportunities for users to experience solitude. The meanders of the canyons and 700-foot cliffs effectively block lines of sight and muffle sounds for any substantial distance.

On the mesas the thick pinyon-juniper vegetation effectively screens visitors. From high points, a sea of pinyon-juniper cut by abrupt canyons can be seen. To the south, the cultivated fields on Brushy Flat can be seen, and to the north, road cuts of the new Highway U-95 are barely visible. For approximately 1 mile south of Highway U-95, sights and sounds of traffic affect a user's sense of solitude. Dropping into a gulch or canyon, a user can avoid these highway sounds.

In the extreme southeast portion of the WSA, the area to the west of the Class B county road down Comb Wash is relatively open, covered mainly by greasewood. In this open area (1,500 acres) the county road, a barbed-wire fence, a corral, and the unit's southern boundary road reduce a person's feeling of remoteness and seclusion, creating less than outstanding opportunities for solitude.

Off-site intrusions and influences are essentially non-existent within the canyons. With such a lack of human influences, the occasional high altitude airliner reminds a person of the outside world. A major commercial airplane flight path connecting Los Angeles, Chicago, and New York, crosses over the Grand Gulch Plateau.

In all, over 96 percent (44,940 acres) of the WSA has outstanding opportunities for solitude. Fifteen hundred acres do not meet the Wilderness Act criteria for solitude.

### • Primitive and Unconfined Recreation

Fish and Owl Creek Canyons are already well known for their primitive recreation opportunities. The Grand Gulch rangers will sometimes direct visitors to these canyons to experience a less-used, unique canyon system. A convenient loop hike is possible from the heads of the canyons to the junction and return. A trail register is currently in use at the end of the cherry-stemmed access road. Highway U-95 on the north and Snow Flat road on the south also provide convenient access. Fish, Owl, and McCloyd's canyons have intermittent running water throughout the

## FISH CREEK CANYON WSA

drainages, which makes them very attractive during the warmer months.

Hiking and camping are the main recreational uses of these canyons. The upper forks of Fish and Owl Creek Canyons challenge the hiker with rugged terrain, while steep canyon walls provide rock scrambling opportunities for those entering or leaving the deep and narrow canyons.

In addition to the outstanding hiking and camping opportunities, the striking scenery provides outstanding opportunities for sightseeing and photography. Sheer pink sandstone cliffs, pinnacles, knobs, two arches, and an abundance of cliff dwellings all contribute to the experience.

Although not outstanding because of low population concentrations, birdwatching and wildlife observation supplement a user's outdoor experience.

These opportunities allow all 46,440 acres in the WSA to meet the outstanding recreation criterion for areas under wilderness review.

### • Special Features

The WSA offers supplemental features of scenic, archaeological, and historical value. These features enhance the other opportunities available within the unit.

Within the canyons of this unit are a myriad of sandstone shapes and colors twisted and carved in eroded white, reds, browns, and yellows. In the lower Dry Wash area, the purples and greens of the Chinle Shale and Moenkopi formations form a multi-colored landscape. In the sheer sandstone canyons, pinnacles, pedestals, knobs, arches, and alcoves offer unique and dramatic views around every meander. Approximately 60 percent (28,000 acres) of the WSA is rated Class A for scenic quality.

Fish Creek WSA includes land extensively occupied by the Anasazi Indians from about 200 A.D. to 1300 A.D. The unit contains a wealth of pristine cultural resources. Not only are these of scientific interest, but they are scenic and make interesting discoveries for the recreationist.

An archaeological site on the unit's northeast border has been stabilized and surrounded by a chainlink fence. This site, called Comb Wash Overlook, has four tower bases and a wall on the mesa rim and rock

shelter dwellings below. The well-preserved ruins, with a dramatic view of Dry and Comb Wash junctions, enhance a visitor's feeling of the history and the timelessness of the land.

The Hole-in-the-Rock Trail, the route followed by the Mormon settlers in 1879 to 1880, forms most of this unit's southern boundary. The pioneers camped at Snow Flat Spring Cave and built The Twist, a narrow twisting road through the rocks from the mesa down to the Comb Wash area.

In 1908, as part of a survey of Natural Bridges National Monument, W.B. Douglass of the General Land Office surveyed and described the Snow Flat Spring Cave. This was considered essential to the National Monument because it ". . . supplied the only available water at a necessary intermediate stopping point and was, therefore, essential to public travel." (Douglas, 1908)

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. There are two animal species (peregrine falcon and bald eagle) listed as endangered that may make occasional use of the WSA. There are seven animal species and four plant species that are considered sensitive that may occur in the WSA. Cougar, which is a wildlife species associated with wilderness, is found in the WSA. Refer to the Vegetation and Wildlife Including Special Status Species sections for additional information.

### • Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV types of juniper-pinyon woodland and blackbrush. Refer to the Vegetation Including Special Status section for more discussion on ecoregions and PNV types. The ecoregion and PNV types represented by this WSA are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

This WSA is not within a 5-hour drive from any standard metropolitan statistical area.

### Air Quality

The closest air monitoring station to the WSA is 50 miles west at Bullfrog Marina on Lake Powell, where particulate and sulfur dioxide concentrations are measured.



# FISH CREEK CANYON WSA

Only the short-term (24-hour) particulate standard has been exceeded at the Bullfrog station. These 24-hour violations were probably associated with conditions of high winds and blowing dust (resulting from the scarce vegetation and large areas of exposed sand). Sulfur dioxide concentrations measured at Bullfrog Marina are low and well under the applicable ambient standards.

Generally the air quality is very good over the WSA, allowing for long vistas where topography and vegetation do not obstruct sightlines. Visual range in the general vicinity of the Fish Creek Canyon WSA averages between 100 and 132 miles during the summer (Aerocomp, Inc., 1984).

The WSA is in a PSD Class II area under the provisions of the Clean Air Act as amended. This classification allows for moderate increases in air pollution levels. The nearest PSD Class I area is Canyonlands National Park about 29 miles to the north. However, the WSA is separated from Canyonlands by the Abajo Mountains.

## Geology and Topography

The WSA is within the Canyonlands Section of the Colorado Plateau Physiographic Province. This section is the most rugged and least accessible within the province, and is characterized by bare rock surfaces, plateaus, and steep-walled canyons. The many canyons are precipitous; escarpments separate dry plateaus and erosion has produced picturesque buttes, arches, and natural bridges.

The Cedar Mesa Sandstone Member of the Cutler Formation (Permian age) is the only rock unit exposed in the WSA. The thick sandstone forms the broad surface of Cedar Mesa, covering about 350,000 acres north of the San Juan River. The WSA sits adjacent to the crest of a broad uplifted area known as the Monument Upwarp, which has a north-south axis and extends east to west from Comb Ridge to Clay Hills.

The Cedar Mesa Sandstone appears to be essentially horizontal, but it does dip gently to the south and east at three degrees. In most places throughout Fish Creek, the stream has probably cut almost through the Cedar Mesa Sandstone. The present gradient of the stream is very close to the south and west dip of the sandstone.

The WSA's topography can be divided into three categories: mesa tops, canyons, and sloping, broken valleys.

The mesa tops generally dip to the south and east with an elevation of 6,800 feet in the northwest corner of the WSA falling to 5,300 feet over a distance of about 12 miles. Hills and ridges on the mesas range up to several hundred feet, providing topographic relief.

Fish, Owl, McCloyd's, and Dry Wash Canyons are deeply entrenched into the mesa as they meander southeasterly toward the Comb Ridge. They vary in depth from 50 feet at the heads to over 700 feet where they cut through the edge of the mesa. The erosion of the canyon has left a multitude of pinnacles and buttes standing apart from the canyon's walls. Several arches have been formed in the area, the largest being a flying buttress arch in Owl Canyon called Nevill's Arch. The rims of these canyons provide great vantage points to view the unique points of interest. The sandstone has eroded in such a manner that caves and overhangs provide sheltered areas where Anasazi culture habitations are found.

The canyons are accessible from the mesa top in only a few spots conducive to backpacking. Talus slopes reach from the bottom of the canyons to the top of the rims in Fish and Owl Canyons. Small pour-offs must be circumvented in both of these canyons.

The valley portion (Comb Wash) also dips to the southeast and ranges in elevation from 5,100 feet to 4,600 feet. Hills and ridges (generally less than 100 feet) break up this section and provide some topographic relief.

## Soils

Soil characteristics are shown in Table 2. The soil cover of the WSA can be divided into 50 percent Rock Land soil association and 50 percent Aridic Argiustoll-Typic Argiustolls soil association.

The Rock Land type is made up of from 50 to 75 percent bare rock, from 20 to 40 percent shallow and very shallow (less than 10 inches) soils, and from 5 to 10 percent moderately deep (20 to 36 inches) soils. The bare rock occurs as the sandstone cliffs, ledges, slickrock, and monoliths characteristic of the canyonlands of southeast Utah. The soils present are light to dark reddish-brown and range in texture from accumulations of wind-deposited sand to very fine

# FISH CREEK CANYON WSA

sandy loam. Precipitation runoff is high from this land type and erosion causes the poorly developed soils.

Table 2  
Soil Characteristics and Land Types

Soil Characteristics and Land Type	Percent of the Area	Acres	Estimated Rate of Erosion (cubic yards/acre/year)	
			Present Condition	Bare Soil Surface
Rock Outcrop	15	6,966	0	0
Shallow and loamy soils on sloping structural benches	45	20,898	1	5
Deep, loamy soils on gently sloping structural benches and along drainages	20	9,288	0.1	1
Deep stony soils on steep canyon sides	20	9,288	1	10
Totals	100	46,440		

Source: Hansen, 1985.

In the Argiustolls soil association, 40 percent of the surface is classed Aridic, 35 percent is Typic, and 25 percent is Lithic with some rock outcrop. Aridic Argiustolls are deep (more than 36 inches) with well

developed subsoils and substrata. Typic Argiustolls are moderately deep (20 to 36 inches) and have less well developed subsoils and substrata. Lithic Argiustolls are shallow (10 to 20 inches), often flaggy near the surface, and are underlain by sandstone bedrock at less than 20 inches. All of the soils in this group are medium to dark reddish-brown in color and of moderate alkalinity. Soil textures range from very fine sandy loam to fine silty material.

Runoff in the WSA is medium to rapid, and the estimated average soil loss rates are shown in Table 3.

## Vegetation Including Special Status Species

The vegetation in the WSA is classified as pinyon-juniper woodland, sagebrush, or desert shrub type (refer to Table 4). Additional land is classified as barren slickrock without substantial vegetation. There are approximately 12 acres of riparian vegetation in the WSA.

A portion of T. 37 S., R. 19 Ea., sec. 35; and T. 38 S., R. 20 E., sec. 1, was railed and reseeded in 1955. This area has now returned to a sagebrush-type vegetation and is included in this category.

Table 3  
Erosion Condition

Erosion Class	Erosion Rate cubic yards/acre/year	Annual Soil Loss Under Present Conditions			Annual Soil Loss if Disturbed		
		Percent of Area	Acres	Cubic Yards	Percent of Area	Acres	Cubic Yards
Very High	20	-	-	-	-	-	-
High	10	-	-	-	20	9,288	92,880
Medium	5	-	-	-	45	20,898	104,490
Low	1	65	30,186	30,186	20	9,288	9,280
Very Low	0.1	20	9,288	928	-	-	-
None	0	15	6,966	-	15	6,966	-
Totals		100	46,440	31,114 <sup>a</sup>	100	46,440	206,650 <sup>a</sup>

Source: Hansen, 1985.

Average annual soil loss in cubic yards per acre: 0.67 under present conditions; 4.45 if disturbed.

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Table 4  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Pinyon-juniper woodland	27,360	59
Sagebrush	1,620	03
Desert shrub	13,000	28
Barren	4,448	10
Riparian	12	0
Total	46,440	100

Source: USDI, BLM, 1985.

No threatened or endangered plant species are known to occur in the WSA. However, one Category 2 candidate species, Erigeron kachinensis and three sensitive species, Astragalus cottamii, Astragalus monumetalis, and Zigadenus vaginatus, may occur in the WSA (see Appendix 4 in Volume I). Erigeron kachinensis occurs in seeps and hanging gardens in San Juan County from 5,500 to 6,200 feet. Astragalus cottamii occurs on rimrock, ledges, and sunny canyons in pinyon-juniper woodland and blackbrush communities on Entrada, Navajo, Cedar Mesa, and White Rim formations from 4,300 to 6,200 feet. Astragalus monumetalis occurs in rimrock and other slickrock sites in mixed desert shrub and pinyon-juniper woodland communities from 4,000 to 6,000 feet in Garfield and San Juan Counties. Zigadenus vaginatus occurs in hanging garden communities in seeps and alcoves from 4,000 to 6,100 feet in Garfield and San Juan Counties (Welch, et al, 1987).

The Fish Creek Canyon WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNV types in the WSA are juniper-pinyon woodland and blackbrush as shown on Table 5.

Table 5  
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Blackbrush	14,559	31
Juniper-pinyon woodland	31,881	69
Total	46,440	100

Source: USDI, USGS, 1978.

## Water Resources

The Fish Creek Canyon WSA is in the lower San Juan River basin, which is in the Upper Colorado River hydrologic subregion. Fish Creek flows into Comb Wash

that empties into the San Juan River. Except for a section of Fish Creek, the drainages within the WSA are ephemeral, only flowing during times of rain, snowmelt, and thunderstorms. During the snowmelt or thunderstorm seasons, water is held in numerous slickrock pools.

The portions of Fish Creek where there is flowing water (about 5 miles) supports non-game fish species and amphibians. Cattle utilize lower Fish Creek during the grazing season.

There are 10 springs along the length of Fish and Owl creeks. The springs and creeks are used by recreationists and wildlife.

No water wells occur within the WSA. There are three stock reservoirs and a developed spring.

The WSA is within Water Right Adjudication area 09. The water is not fully appropriated (UDNRE, DWR, 1988). There is very little water development in this area because of its remoteness. Isolated springs may be open to appropriations not to exceed 0.015 cfs. Temporary and fixed time applications may exceed this limit.

The water quality standards for San Juan River and tributaries from Lake Powell to State line are: Class 1C (protected for domestic purposes with prior treatment), Class 2B (protected for boating, water skiing, and similar uses), Class 3B (protected for warm water species of game fish and other warm water aquatic life), and Class 4 (protected for agricultural uses including irrigation of crops and stockwatering). Water quality of the springs and creek is suitable for livestock use.

## Mineral and Energy Resources

The energy and mineral resource rating summary for the Fish Creek Canyon WSA is given in Table 6. Appendix 5 in Volume I describes the mineral and energy resource rating system.

There are no strategic or critical minerals known to occur within the WSA (USDoD, 1988).

### • Leasable Minerals

There are no known deposits of any leasable minerals in the WSA. Currently, there are no active drilling, mining, or exploration activities for leasable minerals.

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- Oil and Gas

Although the WSA has no record of production, reported shows of oil and gas in some wells suggest the possibility that oil and gas may be present in Permian, Pennsylvanian, Mississippian, and Devonian rocks. The area may be outside the saline facies of the Hermosa Formation (Pennsylvanian) that contains the major oil fields in the Four Corners region. Moreover, much of the strata correlating with productive zones in the Hermosa have been breached by the San Juan River near the WSA so that oil formerly present may have drained away. Nevertheless, structural and stratigraphic traps in the Pennsylvanian rocks may be sealed by impermeable facies from reservoir drainage into the canyon of the San Juan River.

Table 6  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f2	c2	Less than 10 million barrels of oil; less than 60 billion cubic feet of natural gas

Source: SAI, 1982; USDI, BLM, 1987a.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

Approximately 57 oil and gas wells have been drilled near the WSA and four have been drilled inside. Shows of oil and gas were encountered in Permian, Pennsylvanian, Mississippian, and Devonian strata. All of the wells were plugged and abandoned without production. Two additional wells were drilled into the Paradox Formation in 1982, which were also dry holes.

Based on this discussion, the WSA is assigned an oil and gas favorability of f2. The size of the hydrocarbon accumulation in such an environment is anticipated to be less than 10 million barrels of oil or less than 60 billion cubic feet of gas. Based on the available information, the certainty of occurrence for oil and gas is rated low (c2).

Under the current land use plan, 19,310 acres of the WSA are in Category 2 (special stipulations); 26,010 acres are in Category 3 (no surface occupancy); and 1,120 acres are in Category 4

(closed to leasing). There are presently 32 post-FLPMA leases, covering 1,880 acres in the WSA.

- Locatable Minerals

There are no known deposits of locatable minerals in the WSA, and there are presently no mining claims. Geologic conditions are unfavorable for the occurrence of any deposits.

Spectrographic analyses of stream sediments and rocks collected in the area by the USGS and USBM do not suggest derivation from mineralized terrains. Scintillometer traverses along the principal roads and trails detected no anomalous radioactivity. Triassic rocks, which are hosts for uranium and copper deposits in adjacent areas, are not present in this area. Traces of gold were detected in panned concentrates of stream sediments but the reported values are too low to encourage prospecting (SAI, 1982).

- Salable Minerals

The salable minerals within the WSA have little or no commercial potential, based on the poor quality and the remote nature of the material. These deposits are not unique or economically significant due to the presence of ample similar materials outside the WSA.

## Wildlife Including Special Status Species

Animals common in pinyon-juniper woodland communities are found throughout the WSA. The canyons provide intermittent riparian habitat for a diversity of wildlife species.

There are a few resident mule deer, but most deer utilize the area only during the winter. The WSA is within the White Canyon-Red Canyon Desert Bighorn Sheep Habitat Management Area. There have been no documented sightings of desert bighorn sheep in this area in over 5 years. Due to bighorn sheep petroglyphs, the area is considered historical habitat (no crucial acres). Bighorn sheep populations are not expected to be re-established in the WSA at this time, and no future transplants or habitat improvements have been planned.

Spotted skunk and ringtail cat are found in the canyons, but they are rarely observed due to their nocturnal habits. Cougar and bobcat inhabit the remote canyons. Coyote, cottontail rabbit, white-tail antelope, ground squirrel, Ord kangaroo rat, pinyon mice, whitethroat woodrat, and assorted bats are scattered

# FISH CREEK CANYON WSA

unit wide. A few beaver utilize the riparian areas of the WSA.

There is very little waterfowl habitat within the WSA. Mourning dove is the only gamebird that nests in the area. Chukar, a gamebird introduced from Asia, may occasionally be found along the eastern edge of the WSA. Hairy woodpecker, violet-green swallow, pinyon jay, titmice, and rock wren are common in these pinyon-juniper environments. The greatest diversity of non-game birds is found in the canyons during the spring migration. Red-tailed hawk, American kestrel, and great horned owl are found throughout the area.

The most common reptile and amphibian species found within the WSA are the Great Basin spadefoot toad, red-spotted toad, sideblotched lizard, northern plateau lizard, orange-headed spiny lizard, Great Basin gopher snake, and Hopi rattlesnake. Canyon tree frogs, leopard frogs, and black-necked garter snakes can be found in the wetter areas.

Southwest plains killifish, speckled dace, fathead minnow, bluehead sucker, and sand shiner are found in Fish Creek.

Bald eagles, an endangered species, are winter transients in the area; however, no roosting sites have been located. It is also suspected that the peregrine falcon, another endangered species, may make occasional use of the area. The golden eagle, a BLM sensitive species, is found in the WSA. Other sensitive species that could occur in the WSA are six Category 2 candidate species. These are the Great Basin Silverspot butterfly, ferruginous hawk, southern spotted owl, Western yellow-billed cuckoo, long-billed curlew, and white-faced ibis (see Appendix 4 in Volume I). If present, most of these Category 2 candi-

date species would be associated with riparian and wet meadow areas or cliff faces and deep canyons, except for the ferruginous hawk. The ferruginous hawk inhabits pinyon-juniper woodland areas where there are ecotones or edges that provide opportunities for nesting, cover, and hunting activities. No critical habitats have been identified nor are there existing or planned wildlife management facilities or treatments in the WSA.

## Forest Resources

There are 27,360 acres of pinyon-juniper woodland within the Fish Creek WSA. These are low quality sites (less than 20 cubic feet usable wood per acre) and are considered non-productive forest land. Less than an estimated 4,275 cords of firewood exist in the WSA. No areas in or near the WSA have been designated as Christmas tree cutting areas and limited potential exists for Christmas tree harvesting.

During 1981, 26 permits were sold to cut a total of 1,700 juniper posts in the Cedar Mesa area. It is not known how many, if any, were taken from the WSA. Firewood is gathered along the western boundary of the WSA from State Highway U-95 to Snow Flat. Pine nuts are gathered by a few individuals, but there have been no commercial gathering permits issued for this WSA. Demand for forest products in the WSA is not expected to significantly increase in the foreseeable future because of low production and better availability of wood on other areas in the vicinity of the WSA.

## Livestock and Wild Horses/Burros

The WSA contains portions of three allotments: Comb Wash, Slickhorn, and Texas Muley, as shown in Table 7.

Table 7  
Livestock Grazing Use Data

Allotments	Total Acres	Acres In ISA*	Total AUMs	Number of AUMs In ISA	Number and Kind of Livestock	Season of Use	Number of Operators
Slickhorn	143,624	22,220	1,795	172	Cattle	10/06-06/15	1
Texas Muley	75,617	9,510	1,795	153	Cattle	11/05-05/31	1
Comb Wash	72,132	14,710	3,961	748	Cattle	10/06-05/31	13
<b>Total</b>	<b>291,373</b>	<b>46,440</b>	<b>7,551</b>	<b>1,073</b>			<b>15</b>

Sources: BLM File Data.

## FISH CREEK CANYON WSA

Within the WSA there are an estimated 172 AUMs in the Slickhorn Allotment, 153 AUMs in the Texas Muley Allotment, and 748 AUMs in the Comb Wash Allotment for a total of 1,073 AUMs.

Existing improvements for livestock use located within the WSA include: four short fences, a seeding (totaling 350 acres), three reservoirs, and a spring. The only proposed rangeland development is a vegetation treatment (prescribed burning and spraying of pinyon-juniper and sagebrush) and seeding of 2,100 acres (T. 39 S., R. 19 E., secs. 2, 3, 11, and 12) that would provide an additional 500 AUMs.

Vehicles are used on existing ways and cherry-stemmed roads for livestock management.

There is no agricultural activity within the WSA. There is dry farming on land about 3 miles to the west of the WSA.

Predator control was not conducted during the 1986-1987 period in the grazing allotments that comprise the Fish Creek Canyon WSA (USDA, APHIS, 1988).

There are no wild horses or burros in this WSA.

### Visual Resources

The Fish Creek Canyon WSA has been given VRM Class II (28,000 acres) and Class III (18,440 acres) designations. The Class II area corresponds with the canyon systems and the Class III with the mesa tops. These classes are developed by combining scenic quality, distance zones, and sensitivity levels. The canyons have a Class A scenic quality (28,000 acres) while the mesas are mostly Class B (18,440 acres). The area adjacent to Highway U-261 is 18,840 acres in the foreground, the mesa comprises the background, and the canyons are within the seldom-seen zone. Likewise the area adjacent to Highway U-261 has a high sensitivity, as do most of the mesas, while the canyons have a medium sensitivity. The Dry Wash area is rated as having a low sensitivity.

The canyons have been cut through Cedar Mesa Sandstone, forming a meandering pattern of steep-walled sides up to 800 feet deep. The major texture is the smooth slickrock while rough talus slopes of jumbled rock do occur. Arches, pinnacles, and rincons provide additional visual variety to this landform. Colors vary in intensity with the location of the sun, but are generally shades of reds, browns, and grays. The mesa type consists of flat to rolling sandstone out-

crops and soil areas. Texture is generally smooth with colors ranging from dark browns and reds to light tans.

The vegetation varies with the landform. The canyons contain a desert type with sage, cactus, and annuals present. Adjacent to the drainage bottoms, a riparian habitat exists containing cottonwoods and willows. The dominant vegetation type of the mesa is the pinyon-juniper woodland. The color of the vegetation varies from light gray-green to dark or bright greens. These colors create a contrast with earth tones of the land.

The contrasting colors of the landform and vegetation mixed with the visual of the landform shapes creates an outstanding scenic environment. Refer to Appendix 7 for a description of BLM's VRM system.

### Cultural Resources

A total of 61 archaeological sites have been recorded in the WSA (USDI, BLM, 1988). Most of these sites are cliff dwellings consisting of one to twenty rooms or structures and located in the unit's canyon alcoves. The rooms and structures were used as habitations, granaries, and kivas. The majority of the cliff dwellings date from the Pueblo II period of Anasazi occupation. Some open architectural sites representing multi-room pueblos are located on the mesa tops of the WSA. These date to the Pueblo II and Pueblo II periods. Some Basketmaker sites predating the Anasazi occupation are present in the unit. These sites are represented by hearths and the remains of slab-lined structures. Some artifact scatters consisting of lithics and/or ceramics have been recorded on the mesa tops and are generally located in eolian deposits. The sites in the WSA generally are in pristine condition probably due to the isolated nature of region.

Portions of the west and south boundaries are along the Hole-in-the-Rock Trail, which is a National Register site. This trail was used by Mormon pioneers in 1879 to 1880 to travel from Escalante, Utah, to settle the Bluff, Utah, area.

There are no existing National Register sites and/or nominations in the WSA. The majority of the sites recorded have not been fully evaluated for significance. Of those that have been evaluated, approximately two-thirds are considered to be eligible for nomination.

# FISH CREEK CANYON WSA

Archaeological work was conducted on Cedar Mesa as early as the 1890s, however, most of this work was done in the vicinity of Grand Gulch. The inventory work in the WSA is related to small project clearances and recording of the major cliff dwellings in the canyons. No site-density estimates specifically for the unit may be computed with the data available. However based on estimates from similar settings in the area, it is expected that 5,445 sites could be located in the WSA, of which 3,630 could be National Register eligible. These sites would probably be comprised chiefly of Anasazi cliff dwellings and open architectural sites. Additional Basketmaker sites could also be present.

## Recreation

Fish, Owl, and McCloyd's canyons are very popular backpacking and dayhiking areas. People who are looking for a 3- to 5-day loop trip often choose Fish and Owl creeks. Also, all three canyons have intermittent running water throughout the drainages, which make them very attractive during the warmer months.

Visitors to this area are asked to register at Kane Gulch Ranger Station, but it is not mandatory. Many groups go straight to the trailheads without registering. Statistics from 1980 to 1984 indicate an overall increase of visitor use in the Fish Creek Canyon WSA. Annual visitation for that period is as follows: 1980, 2,469; 1981, 3,910; 1982, 4,278; 1983, 3,757; 1984, 6,163; and in 1987, 6,850. The data include commercial and educational use. Two commercial tour companies use the WSA. Also, the use has especially increased with educational groups.

The WSA is within Deer Herd Unit 31B, which was closed to hunting in the early 1980s due to extremely low populations and productivity. Prior to the closed seasons, a few hunters regularly hunted in Fish Creek. The WSA area is now part of a limited entry, buck only hunting area for which only 440 permits were issued in 1988.

Access into the canyons is considered difficult as there are no trails to guide one through the steep, rugged descents. In the canyon bottoms, trails developed by use are evident, especially through the vegetated areas.

A limited amount of motorized (dirt bike) recreation use (about 60 annual visitor days) occurs in the lower portion of Fish Creek to about the junction with McCloyd's Canyon. Nonmotorized recreational users

of the area have complained to the Grand Gulch Rangers about this use. Vehicular use of existing ways (about 50 annual visitor days) also occurs on the mesa top for sightseeing purposes, largely to the Fish Creek overlook.

The current total average annual recreation use is estimated at about 6,850 visitor days. About 1,000 of these visitor days are as a result of commercial recreation services using the WSA.

## Land Use Plans

The WSA is in the BLM San Juan Resource Area and is managed according to the South San Juan MFP (USDI, BLM, 1971). The San Juan RMP will replace the MFP. However, the RMP is under protest and the date of completion is unknown. Neither the MFP or RMP address wilderness designation. However, wilderness designation is part of the multiple-use concept and the BLM land use plan is linked to the Statewide Wilderness EIS through analysis of the present plan as the No Action/No Wilderness Alternative.

The Fish Creek Canyon WSA is composed primarily of public land with both the surface and subsurface managed by BLM. However, there are five sections (3,210 acres) of State-owned surface and subsurface. The current policy of the State is to maximize economic returns from State lands and to reserve its positions regarding exchange of in-held lands (See Chapter 1 in Volume I). In 1986, the Utah State Legislature passed SC.R. No.1 opposing any additional wilderness designation in Utah and urging that State lands not be exchanged out of wilderness areas. The 3,210 acres of State land are under lease for grazing and 640 acres are leased for oil, gas, and hydrocarbons. Grazing is the only activity on these lands at present (UDNRE, DSLF, 1988).

The San Juan County Master Plan (Planning and Research Associates, 1967) emphasizes multiple use of public lands and zones the WSA as open range and forest land. However, the policy of the San Juan County Commission is to oppose any legislative or administrative designations of wilderness in the county (San Juan County Commission, 1980). The commission has also endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah.

In addition to the State owned lands inside the WSA, there are also five sections of State-owned land adjacent to the WSA (including Section 16, T. 38 S., R.

# FISH CREEK CANYON WSA

19 E., Sec. 167, which is cherry-stemmed out along with a county road passing through it). Other lands adjacent to the WSA are Federally owned, BLM-administered public lands.

A public water reserve has been withdrawn in the WSA, involving part of four sections. During a recent review of withdrawals for public water reserves, it was recommended that this withdrawal be continued. The withdrawal is intended to protect and preserve bodies of water, springs, and water sources for public use. Valid and legitimate purposes for which water is reserved include stockwatering, human consumption, agriculture, and use by fish and wildlife and their habitat.

There are no rights-of-way within the WSA since county road No. 253 is cherry-stemmed out.

Access to the vicinity of the WSA is provided by State Highways U-95 and U-261, as well as by county roads to the boundary in several places. County roads also form portions of the boundary in several places.

Contiguous Federal lands to the south are under BLM wilderness review in the Road Canyon WSA. No lands contiguous to the WSA are under consideration for wilderness by other agencies.

## Socioeconomics

### • Demographics

The WSA is located in central San Juan County. The nearest community is Blanding, approximately 30 road miles away.

Between 1970 and 1980, the population of San Juan County was fairly static, and grew by less than a 2-percent annual growth rate. The 1985 population was 12,500. Since 1983, the county's population has declined by approximately 500 (USDI, BLM, 1987b). The two largest communities in the county are Blanding (1980 population 3,118) and Monticello (1980 population 1,929). Approximately 40 percent of the county's population resides in these communities. Table 8 presents baseline and projected population data for San Juan County. Population projections for the county indicate that the number of people living in San Juan County in the year 2010 will be about 15,000 for about a 21 percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 8

Baseline and Projected Population and Employment Growth  
San Juan County

	1980	1990	2000	2010
Population	12,400	12,900	12,900	15,000
Employment	3,980	3,800	4,300	5,100

Source: Utah Office of Planning and Budget, 1987.

The major racial groups are caucasians (52.4 percent) and American Indians (45.7 percent). About 4 percent of the Navajo reservation's population live in San Juan County (USDI, BLM, 1987b).

San Juan County is the largest county in Utah, comprising 5,045,760 acres or about 9.6 percent of the state's acreage. Approximately 86 percent of the county is administered by the Federal government; 41 percent by BLM, 24 percent by the Bureau of Indian Affairs (BIA) in conjunction with the Navajo tribe, and 20.9 percent by other Federal agencies. About 6 percent is in State ownership and about 8.1 percent is privately owned (University of Utah, BEBR, 1982; and USDI, BLM, 1987b).

### • Employment

Table 8 shows the baseline and projected total employment for the county to the year 2010. The government sector (Federal, State, and local) is in the most important in terms of employment in the San Juan County economy. In 1987, mining made up about 16.5 percent of the total employment in the county. Tourism also generates a significant number of jobs (USDI, BLM, 1987b).

San Juan County is part of the Southeast MCD. Table 9 shows the baseline (1980) and projected employment by source for district to the year 2010. In 1980 the leading employment sectors for the MCD were mining (28 percent), government (18 percent), and trade (15 percent). It is projected that by the year 2010 employment in the MCD will increase by about 27 percent and that services to 18 percent, trade to 17 percent, and government to 15 percent of the total. Mining, agriculture, and construction sectors will decline (Utah Office of Planning and Budget, 1987).

### • Sales and Revenues

Activities in the WSA that could be of some local economic consequence include mineral activities, livestock production, and dispersed nonmotorized recreation.



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Table 9  
Southeast Multi-County District  
Employment<sup>a</sup>

	1980	1990	2000	2010
Agriculture	1,203	1,100	1,100	1,100
Mining	6,368	3,500	4,500	5,700
Construction	1,360	700	900	1,100
Manufacturing	551	600	700	800
Transportation, Utilities	1,563	1,800	2,000	2,200
Trade	3,289	3,800	4,000	4,800
Finance, Insurance, Real Estate	424	400	400	500
Services	2,067	3,200	4,000	5,300
Government	3,994	4,100	3,800	4,400
Nonfarm Proprietors	<u>1,715</u>	<u>2,000</u>	<u>2,200</u>	<u>2,800</u>
Totals	22,534	21,000	23,600	28,700

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Carbon, Emery, Grand, and San Juan Counties.

Table 10 indicates local sales and Federal revenues for the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Table 10  
Sales and Revenues

Source	Estimated Annual Local Sales <sup>a</sup>	Estimated Annual Federal Revenues
Oil and Gas Leases	0	\$3,760
Livestock Grazing	\$21,460	\$1,652
Recreational Use	<u>\$28,085</u>	<u>\$1,500</u>
Total	\$49,545	\$6,412

Sources: USDI, BLM File Data; Volume I, Appendix 9.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

Sporadic exploration of the WSA for oil and gas has brought some income and temporary employment to residents of the area.

Fifteen livestock permittees have grazing privileges in the WSA. Based on the consumption of 1,073 AUMs of forage by cattle, it is estimated that the WSA accounts for \$21,460 of livestock sales, including \$5,365 of ranchers' returns to labor and investment.

Historical hunting pressure in the WSA has been low, and its local economic importance is insignificant.

The WSA does support private and commercial recreation use. Judging from the points of origin to nearby recreation areas, approximately 85 percent of the WSA users pass through San Juan County's service centers. The actual amount of income generated

locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that Statewide average local expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use of the Fish Creek Canyon WSA is estimated to average about 6,850 visitor days per year, for a local recreation expenditure estimate of \$28,085. For the most part, these recreation-related expenditures are well distributed within the local economy and are of low significance to individual businesses. The two commercial outfitters who make use of the WSA, neither of which is based locally, could be exceptions, as commercial use of the WSA could contribute significantly to these operations with a related income of about \$5,000 that would not go to the San Juan County economy.

The WSA generates Federal revenues from three sources: mineral leases, grazing fees, and recreation use permits. Within the WSA, about 1,880 acres are currently leased for oil and gas. At \$2 per acre, this generates about \$3,760 annually. Half of this, or about \$1,880, is allocated back to the State of Utah. The State then reallocates these revenues to various funds, the majority of which are related to energy development. How much, if any, is distributed to the local level is not known. Based on 1,073 AUMs of forage consumed by livestock in the WSA and with the current annual grazing fee of approximately \$1.54 per AUM, the WSA annually accounts for \$1,652 of grazing fee revenues to the Federal Treasury. Half of this is allocated back to the local BLM District for construction of range improvement projects. Commercial recreation use of the WSA generates approximately \$1,000 in revenues annually.

## ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis assumptions and guidelines for all alternatives are described in the Introduction to Volume V. The following analysis is also based on implementation of the Action Scenarios presented in the Description of the Alternatives.

### No Action/No Wilderness Alternative

- Impacts on Wilderness Values

Because the WSA would not be designated wilderness with this alternative, the identified wilderness values would not receive the degree of protection afforded

## FISH CREEK CANYON WSA

by application of the BLM Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be protected by limitations placed on potential surface-disturbing activities (i.e., VRM Class II management on 28,000 acres, management under oil and gas leasing Category 4 (closed to leasing) on 1,120 acres, and oil and gas leasing Category 3 (no surface occupancy) on 26,010 acres.

In the foreseeable future, disturbance of approximately 2,120 acres from oil and gas exploration, and from vegetation treatments (mainly in the southwestern portion of the WSA) would result in a direct loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas. Special features, including Class A scenery, endangered and special status species, wildlife associated with wilderness, and archaeological values would not be significantly affected because the direct disturbance would involve only about 4.6 percent of the WSA and would not be located where the special features are located. In addition, appropriate measures required by law would be taken to protect endangered and sensitive species and cultural values prior to any surface-disturbing activity. Refer to the Vegetation Including Special Status Species, Wildlife Including Special Status Species, and Cultural Resources sections for more information.

During the period of activity, the visual and audible disturbance from mineral exploration and vegetation treatments would indirectly reduce the quality of opportunities for solitude and primitive recreation not only on directly disturbed areas but also on adjacent portions of the WSA. As much as 10 percent (4,644 acres) of the WSA would be indirectly affected in the foreseeable future.

Because future vehicular use would generally be limited by terrain to existing vehicular ways, little disturbance from ORV activity is anticipated in the future, although some additional disturbance could occur on the mesa tops. Continued and increased vehicular use in the lower part of Fish Creek on existing ways, and on future energy exploration roads would occasionally detract from the quality of opportunities for solitude and primitive recreation.

The increased visitor use that would occur would be expected to eventually reduce opportunities for solitude and primitive recreation even though the additional use would be largely primitive in nature. Use may have to be restricted to protect other resource values.

Overflights would continue to be an occasional annoyance that to some would detract from opportunities for solitude and primitive recreation in the WSA.

The extent to which wilderness values would be lost due to disturbance over the long-term future is not accurately known. Loss would occur as intrusions increase.

Conclusion: Wilderness values would not be protected by wilderness designation, and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on up to 2,120 acres of the WSA, and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 4,644 acres. Special features would not be significantly affected.

### • Impacts on Vegetation Including Special Status Species

There would be a potential for disturbance of two of the special status plant species which may occur in the WSA. This would be due to oil and gas exploration on 20 acres and 2,100 acres of vegetation treatments (prescribed burning and/or spraying of pinyon-juniper and sagebrush types). Astragalus cottamii and Astragalus monumentalis could occur in the pinyon-juniper vegetation type. If present, Erigeron kachinensis and Zigadenus vaginatus would occur in seeps and hanging gardens in the canyon and alcove areas within the WSA and would likely not be affected. In any event, BLM would conduct site-specific clearances of the potentially disturbed areas. If threatened or endangered species could be affected, BLM would initiate consultation with the FWS under provisions of the Endangered Species Act (refer to Appendix 4 in Volume I). Appropriate mitigation measures, such as avoidance of sensitive areas, would be applied. Because necessary measures would be taken to protect these plants, the viability of populations of threatened, endangered, or other special status plant species would be preserved with the No Action/No Wilderness Alternative.

The 2,100 acres of proposed vegetation treatments would only remove up to 7.5 percent of the pinyon-juniper woodland from within the WSA. consequently, there would not be a major change in any vegetation type within the Fish Creek Canyon WSA.

Conclusion: Up to 7.5 percent of the pinyon-juniper woodland type within the WSA would be converted to

## FISH CREEK CANYON WSA

grasses. Populations of special status plant species would not be significantly impacted.

### • Impacts on Mineral and Energy Exploration and Production

The WSA would remain open to exploration and development of mineral and energy resources without consideration of wilderness values. Therefore, mineral and energy resources would not be affected by the No Action/No Wilderness Alternative.

Conclusion: Implementation of the No Action/No Wilderness Alternative would not adversely affect mineral exploration or production.

### • Impacts on Wildlife Including Special Status Species

Approximately 20 acres of surface disturbance could occur from oil and gas exploration with this alternative. The effect of such a small disturbance would be negligible to wildlife habitat or populations. Also, this alternative would allow the 2,100-acre vegetation treatment for livestock. This project would result in improved forage and additional ecotones for wildlife in the long term. Mobile animals, such as mule deer, would initially leave the area of disturbance, and less mobile animal populations would be reduced during the time of disturbance. Future increase in ORV use would lead to harassment of wildlife.

The extent and use of the WSA by the bald eagle, peregrine falcon, or the six Category 2 candidate species that may occur there is unknown. Proposed vegetation treatments would not affect most of these species because activities would be in the flat pinyon-juniper woodland and sagebrush areas, and if present, these species would inhabit the riparian and cliff-face areas in the canyons. However, vegetation treatments would create ecotones and edges which should improve ferruginous hawk habitat.

Prior to surface disturbance, BLM would conduct site-specific clearances of the potentially disturbed areas. If any threatened or endangered species are located, BLM would initiate consultation with FWS as required by the Endangered Species Act and BLM policy. BLM would request a biological opinion when appropriate (refer to Appendix 4 in Volume I). Appropriate mitigation measures, such as avoidance of sensitive areas, would be implemented. Because necessary measures would be taken to protect these species, potential populations of threatened, endangered, or other spe-

cial status animal species would be preserved with the No Action/No Wilderness Alternative.

Conclusion: Implementation of the vegetation treatments would benefit wildlife diversity and population levels by providing additional forage and ecotones. Surface disturbances caused by possible oil and gas exploration may displace some wildlife species during the lifetime of the projects. No significant adverse impacts would occur to threatened, endangered, or other special status species. Ferruginous hawk habitat would be improved.

### • Impacts on Livestock Management

Grazing would continue at the present or at an increased level. The 2,100 acres of proposed vegetation treatments would provide a potential increase of 500 AUMs. The 15 operators with cattle use could continue to allow grazing of the estimated 1,073 AUMs existing within the WSA. The WSA contains 16 percent of the total allotments affected. The existing range projects (four fences, 350-acre seeding, one spring, and three reservoirs) could be maintained by motorized means. Overall, there would be few changes in livestock management.

Conclusion: Existing and proposed livestock management and projects would not be affected by the No Action/No Wilderness Alternative.

### • Impacts on Cultural Resources

Approximately 2,100 acres of surface disturbance due to grazing improvements are expected with this alternative. This improvement project is located in the southwestern portion of the WSA and would be limited to controlled burning and herbicide treatment on a Mesa top. Eight sites have been recorded in the proposed treatment area and may be affected by the project. However, because minimal surface disturbance is caused by burning and herbicide treatment no significant impact to archaeological sites is expected. An additional 20 acres of surface development due to leasable mineral exploration activities is expected in the foreseeable future. The entire unit would remain open to future location and about 41.5 percent available for leasing and surface occupancy with stipulations, but no significant development is projected. All sites in the WSA would continue to be protected under existing State and Federal antiquities laws and appropriate inventory and mitigation procedures would precede any surface disturbance.

## FISH CREEK CANYON WSA

The unit would remain open to ORV activity and general vehicular access. Currently there is some ORV activity in the unit which may increase slightly in the future. Archaeological sites located in unconsolidated eolian deposits are vulnerable to any type of vehicular traffic. Some inadvertent damage to artifact scatters located in sand dunes may result from continued vehicular access in the WSA. In addition, continued vehicular access would provide opportunities for artifact collection and illegal excavation (Nickens, et. al., 1981).

Vandalism is not currently a significant problem in the WSA, but may increase with the general population increase.

With this alternative, archaeological sites would be subject to standard cultural resource management procedures (Neumann and Reinburg, 1988). Stabilization, interpretation, and excavation could proceed without the restrictions of wilderness values maintenance.

Conclusion: Minor impact to cultural resources due to oil and gas exploration is expected. Continued vehicular access may cause intentional or unintentional damage to archaeological sites in portions of the WSA. Cultural resource management would continue without regard to wilderness management.

### • Impacts on Recreation

Up to 20 acres could be disturbed by oil and gas exploration activities. Primitive recreational opportunities and quality would be diminished on the affected areas. Roads and ways created for mineral exploration and development would improve access into the area for non-primitive recreation.

The future trends in recreational use of the WSA are unknown. However, based on a review of several projections (UDNRE, ORA, 1980; UDNRE, DPR, 1985; Utah Office of Planning and Budget, 1984; Jungst 1978; Hof and Kaiser, 1981; and Cordell and Hendee, 1982) it is estimated that outdoor recreation in Utah will increase at between 2 to 7 percent per year over the foreseeable future. At this rate overall recreation use could increase from the 6,850 current visitor days per year to be between 12,910 and 59,200 annual visitor days by the year 2020. Assuming proportionate increases in primitive and motorized recreation use, primitive use could increase to between 12,700 and 58,740 annual visitor use days while motorized use could increase to between 210 and 960

annual visitor days. The quality of the primitive recreational experience would be reduced by vehicle noise as well as by the increase in primitive use. Levels of recreation use may have to be limited to protect recreational and other resource values.

Conclusion: Opportunities for ORV use would be maintained but opportunities for primitive recreation would be reduced in quality in places. Both types of use would increase.

### • Impacts on Local Economic Conditions

Overall, no changes in existing patterns or trends of population or employment would occur. However, increases in distribution of local income would be expected.

There would be no local mineral-related employment or income impacts because the existing ability to explore and develop mineral resources would remain as at present. Although the opportunity would continue for economic development of minerals under this alternative, the likelihood is minimal due to lack of resource potential.

There could be livestock-related economic benefits from a possible 500-AUM increase from the planned vegetation treatment. This could add up to \$10,000 in livestock sales attributed to the increased forage in the WSA.

Recreation use and related local expenditures would increase. As a result of the predicted increase in recreation visitor days from the existing 6,850 to between 12,910 and 59,700, local recreation-related annual expenditures could increase up to \$244,800.

State and local revenues would not be affected. The annual Federal revenues from grazing would increase by as much as \$700 due to the proposed increase of 500 AUMs. At the higher rate of use, by the end of 30 years, federal revenues from recreation permits could increase to be as much as \$8,800 per year.

Conclusion: No changes in economic trends would occur. Recreation-related expenditures could contribute up to \$244,800 annually to the local economy by the year 2020, and local annual livestock sales could increase by about \$10,000.

# FISH CREEK CANYON WSA

## All Wilderness Alternative (46,440 Acres)

### • Impacts on Wilderness Values

Designation and management of all 46,440 acres as wilderness would preserve the wilderness values in the Fish Creek Canyon WSA. The potential for surface-disturbing activities would be eliminated through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness and outstanding opportunities for primitive recreation would be preserved on all 46,440 acres. Solitude would be preserved on approximately 44,910 acres that meet and 1,530 acres that do not meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA, including Class A scenery, archaeological sites, endangered and sensitive species, and wildlife associated with wilderness, would also be preserved. There is no surface disturbance anticipated with this alternative that would affect wilderness values.

Vehicular use of existing ways would cease with ORV closure, improving opportunities for solitude and primitive recreation. Existing ways (19.8 miles) would slowly reclaim through natural processes.

Over the long term there would be no potential for loss of wilderness values due to development of new leases and mining claims.

The 2 to 7 percent annual increase in visitor use would be primitive in nature and would be managed so as to not result in loss of wilderness values. Visitor use may have to be restricted.

Overflights would continue to be an occasional annoyance that to some would detract from the quality of opportunities for solitude and primitive recreation in the WSA.

Conclusion: Wilderness designation would preserve the wilderness values in the WSA.

### • Impacts on Vegetation Including Special Status Species

With this alternative, there would be no surface disturbance from locatable mineral exploration or vegetation treatments thus, inadvertent disturbance of Astragalus cottamii, Astragalus monumentalis, Erigeron kachinensis, and Zigadenus vaginatus, all

special status plant species, would not occur with this alternative. No impacts to vegetation types in the WSA would not be altered.

Conclusion: The vegetation resource including threatened, endangered or other special status species would be preserved.

### • Impacts on Mineral and Energy Exploration and Production

#### • Leasable Minerals

Existing oil and gas leases of 1,880 acres would be phased out and future leasing would not be allowed. Therefore, exploration for small accumulations of oil and gas in the Pennsylvanian rocks underlying the WSA would not be allowed. Due to the small size of the potential deposits and the low certainty that they exist, there would be a low probability of development and production even if the area were explored. Therefore, wilderness designation would not result in a significant loss of oil and gas recovery.

#### • Locatable Minerals

There are presently no mining claims in the WSA. Claims can be located up to the time of designation, however, there is little or no potential for locatable mineral deposits in the WSA. Therefore, this alternative would not result in a significant loss of locatable mineral exploration or production.

#### • Salable Minerals

Mineral sales would not be allowed in the wilderness area. Therefore, any potential for development and production of salable minerals would be foregone. Because of low potential for deposits and the availability of better sources of material outside of the WSA, this alternative would not result in a significant loss of salable mineral production.

Conclusion: The potential for oil and gas exploration would be foregone. There would not be a significant loss in production of any mineral or energy resource.

## FISH CREEK CANYON WSA

- Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative there would be no surface disturbance from oil and gas exploration, ORV use, or the proposed 2,100-acre vegetation treatment. Thus, some wildlife species could benefit due to the preservation of solitude. Most threatened, endangered, or other special status species that may occur in the WSA would be provided additional protection with wilderness designation. However, the opportunity to provide habitat diversity (creation of ecotones and edges) for the ferruginous hawk and certain other species through vegetation treatment would be foregone.

Conclusion: Wilderness designation would preclude the opportunity to provide vegetation diversity and ecotones in the WSA but it would protect all species through additional opportunities for solitude.

- Impacts on Livestock Management

Grazing use could continue with no substantial change. The 15 operators with cattle use could continue to allow grazing of the estimated 1,073 AUMs within the WSA. The WSA contains an average of approximately 16 percent of the total allotments. The existing range projects (four fences, a 350-acre seeding, one spring, and three reservoirs) would continue to be maintained as in the past based on practical necessity and reasonableness. The 2,100 acres of proposed land treatments and potential increase of 500 AUMs would be foregone with designation. The closure of approximately 19.8 miles of ways would result in inconvenience and increased costs for livestock management for the 15 livestock permittees in three allotments.

Conclusion: The opportunity to increase livestock forage by 500 AUMs through vegetation treatment on 2,100 acres would be foregone. Restrictions on vehicle access would necessitate changes in livestock management and cause inconvenience to 15 livestock permittees.

- Impacts on Cultural Resources

No surface disturbance is expected with this alternative and vehicular access would be completely eliminated within the boundaries of the WSA. Very few intentional or unintentional impacts to cultural resources due to these agents would occur.

As recreational use of the unit increases in the future, site vandalism and collection of small transportable objects may increase. However, due to the lack of vehicular access, collection of large artifacts and illegal excavation of sites may decrease. If sites containing valuable artifacts or specific features are present in the WSA, the increased inaccessibility of wilderness designation may encourage large scale commercial looting. The Pueblo sites in the WSA may meet these requirements (Wylie, 1988). The benefits of protection of cultural resources from all ORV activity, vehicular access, and surface development would, however, probably outweigh any negative impacts that may result from increases in vandalism due to increased recreational use.

All cultural resource management procedures would be subject to the restrictions of wilderness designation (Neumann and Reinburg, 1988). Access to sites for stabilization, interpretation, or excavation may be limited or denied in order to protect other wilderness values.

Conclusion: The benefits of protection of cultural resources including 61 known sites, from most surface disturbance and all vehicular access would probably outweigh negative effects of increased vandalism due to increased future recreational use. Management may be restricted in scope and execution due to wilderness designation.

- Impacts on Recreation

Primitive recreation activities would be enhanced due to the limitation of surface-impacting activities and the elimination of motorized uses. As with the No Action/No Wilderness Alternative, primitive-recreation use of the WSA is estimated to increase about 2 to 7 percent per year over the foreseeable future. This could lead to an estimated increase in primitive recreational use to between 12,700 and 58,740 annual visitor days by the year 2020. Management provided through a Wilderness Management Plan would avoid destructive increases in future recreation use and levels of primitive recreation use may have to be curtailed before reaching the projected levels to protect wilderness and other resource values. Thus, the quality of the primitive recreation experience probably would not be negatively affected by the increased use.

The potential for an increase of up to 960 visitor days of ORV use in the WSA that would occur by the year 2020 without designation would be eliminated.

# FISH CREEK CANYON WSA

Because there are other suitable ORV play areas in San Juan County, ORV use would not experience an overall decline in the general vicinity of the WSA. Commercial outfitting would benefit from preservation and publicity that would come with designation. In addition to the existing commercial users, other commercial operations based on primitive recreational activities could apply for use of the WSA as demand increases.

Conclusion: The quality of the primitive recreation opportunity would be preserved and enhanced. Primitive recreation would continue to increase. Vehicle use would be precluded in the WSA, but opportunities for vehicular activities would not be significantly affected in the region. Opportunities for commercial outfitting for primitive-recreation use would be enhanced.

## • Impacts on Local Economic Conditions

Designation of this WSA as wilderness is not expected to result in any significant changes to existing patterns and trends of population and employment. However, an increase in local income distributions could be expected.

Although future mineral development and related employment would be foregone with designation, it is unlikely that minerals would ever be commercially produced from this WSA even without wilderness designation. (The WSA's most favorable mineral rating is a low potential for small oil and gas deposits.) Approximately \$3,760 of present annual Federal oil and gas leasing revenues (1,880 acres leased at \$2.00 per acre), and \$86,880 of lease fee revenue that could be collected from the remainder of the WSA if leased, would be foregone. Half of the foregone lease fee revenues would have been allocated to the State.

The area would continue to be used for grazing as in the past. New rangeland improvements would be allowed only if they were primarily for the purposes of resource protection and management and if wilderness protection criteria could be met (refer to Appendix 1 in Volume I). The planned 2,100-acre seeding with a potential increase of 500 AUMs would be foregone with designation, along with an estimated \$10,000 resulting increase in future livestock sales. An additional \$770 in grazing fee revenues (at \$1.54 per AUM) that would have been derived from the proposed seeding would be lost to the Federal Treasury under this alternative.

With the projected increase of primitive recreation visitor days of between 12,700 and 58,740 by the year 2020, expenditures associated with those visitors to the WSA would account for an estimated increase in local expenditures of up to \$240,800. Generally, these expenditures would be well distributed among businesses in San Juan County and would be of local significance. This increase would be slightly less than the \$244,800 estimated for the No Action/No Wilderness Alternative due to the elimination of ORV use. However, by increasing public awareness, designation could also increase the demand for and income to commercial outfitter services that may be based locally or nonlocally. The possible increased use by commercial outfitters would increase the Federal revenues collected from recreation use permits to be as much as \$8,800 by the year 2020.

Conclusion: Future local expenditures could increase to be up to \$240,800 annually as primitive recreation use increases. Up to \$101,410 in annual oil and gas lease fees and livestock sales and fees would be foregone.

## Partial Wilderness Alternative (Proposed Action) (40,160 Acres)

### • Impacts on Wilderness Values

Wilderness designation of 40,160 acres would contribute to preservation of the area's wilderness values. Wilderness values would be preserved in the designated area. Protection in the designated area would include management under VRM Class I (which generally allows for only natural ecological change), ORV closure including closure of 13.8 miles of way, and closure to future mineral leasing and location. Naturalness and outstanding opportunities for solitude and primitive recreation (all acres meet the standards for these values) and most special features, including all of the Class A scenery, endangered and sensitive species, archaeological values, and wildlife associated with wilderness, would be preserved (refer to the Cultural Resources, Wildlife and Vegetation Including Special Status Species sections).

No disturbance that would affect wilderness values is anticipated in either the designated portions of the WSA in the foreseeable future.

Elimination of ORV use in the designated area would improve naturalness and opportunities for solitude and primitive recreation in the WSA, although occasional vehicular use of 6 miles of way in the

## FISH CREEK CANYON WSA

nondesignated area would continue to detract from these opportunities during the period of activity.

The 2 to 7 percent increase in visitor use that would occur would be largely primitive in nature and would be managed so as not to impact wilderness values. Visitor restrictions may be necessary.

Overflights would continue to be an occasional annoyance that would detract from opportunities for solitude and primitive recreation in the WSA.

Conclusion: Wilderness values would be preserved in the designated area which is approximately 87 percent of the WSA. No disturbance that would affect wilderness values is anticipated anywhere in the WSA in the foreseeable future.

### • Impacts on Vegetation Including Special Status Species

Since there is no oil and gas exploration activity projected for this alternative and the proposed 2,100-acre vegetation treatment would be in the 40,160-acre designated area, the impacts on vegetation would be essentially the same as for the All Wilderness Alternative. However, in the nondesignated area (6,280 acres) there is a slight possibility of disturbance to threatened, endangered, and other special status species which may occur in the WSA due to ORV use. Two special status Astragalus species may inhabit the mesa tops on the eastern portion of the WSA and the mouth of Dry Wash. However, such disturbance would be inadvertent and is not expected to be extensive. Populations of these species would not be affected.

Conclusion: Vegetation types and threatened, endangered, or other special status species would be preserved on 87 percent of the WSA and would not be significantly affected in the nondesignated area.

### • Impacts on Mineral and Energy Exploration and Production

#### • Leasable Minerals

The 40,160-acre area that would be designated wilderness would be closed to new mineral leasing. Approximately 1,670 acres of the area are currently under lease. It is unlikely that existing leases would be developed or a showing of commercial quantities made prior to their expiration dates, and expired leases would not be reissued.

Therefore, exploration for small accumulations of oil and gas in the Pennsylvanian rocks underlying the designated area would not be allowed.

In the 6,280-acre nondesignated area existing leases (210 acres) and future leases could be explored subject to special stipulations on 2,580 acres, no surface occupancy on 3,300 acres (400 acres would be closed to leasing). However, due to the small size of the projected deposits and the low certainty that they exist, no exploration or development are anticipated for the foreseeable future. Thus, this alternative would not result in any significant loss in recovery of leasable minerals.

#### • Locatable Minerals

On the designated portion of the WSA (40,160 acres), lands would be closed to future prospecting and development (USDI, BLM, 1981). Claims that are filed in this area prior to designation (none currently exist) could be worked in accordance with valid existing rights, subject to unnecessary or undue degradation provisions.

On the undesignated portion of the WSA (6,280 acres), lands would remain open to mineral location and development. Development would not be limited by wilderness protection considerations.

Due to geologic unfavorability, this WSA has little or no potential for locatable minerals. Designation of 40,160 acres of the WSA would not significantly effect the recovery of locatable minerals.

#### • Salable Minerals

Mineral sales would not be allowed in the designated area. Therefore, any potential for development and production of salable minerals would be foregone. However, because of low potential for use of deposits within the WSA, this alternative would not result in a significant loss of salable mineral production.

Conclusion: The potential for oil and gas exploration would be foregone in the designated area. Restrictions on the nondesignated area would not change from those now in effect. There would not be a significant loss in production of any mineral or energy resource.



# FISH CREEK CANYON WSA

## • Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative there would be no surface disturbance from oil and gas exploration or the proposed 2,100-acre vegetation treatment. Over 87 percent (40,160 acres) of the WSA would be closed to ORV use with partial wilderness designation.

The special status wildlife species which may occur in the WSA are generally associated with riparian and wet meadow or cliff faces and deep canyons. Thus, it is not likely that continued vehicle use on the mesa tops on the eastern portion of the WSA would affect these species. There could be some inadvertent harassment of wildlife and damage to habitat with continued ORV use of the southeast portion of the WSA. However, BLM would monitor the use and determine if any threatened, endangered, or other special status species actually exist there and take necessary management actions to protect the habitat and populations of these species. Therefore, significant impacts to special status species would not occur.

The opportunity to provide habitat diversity (creation of ecotones and edges) for the ferruginous hawk through vegetation treatments would be foregone.

Conclusion: Partial wilderness designation would provide wildlife species with opportunities for solitude on 87 percent (40,160 acres) of the WSA. This alternative would preclude the opportunity to provide vegetation diversity and ecotones. Threatened, endangered, or other special status species which may occur in the WSA would not be significantly impacted.

## • Impacts on Livestock

Designating 40,160 acres of the WSA as wilderness would impact domestic livestock grazing essentially the same as with the All Wilderness Alternative. Of the 1,073 AUMs allocated, approximately 873 AUMs would be within the designated portion of the WSA and 200 AUMs would be within the nondesignated portion. Of the three allotments affected, approximately 14 percent of the total acreage would be in the designated area of the WSA and approximately 2 percent of the total acreage would be in the undesignated area. The existing range developments could continue to be maintained as in the past based on practical necessity and reasonableness. New rangeland improvement facilities in the designated portion could be restricted to preserve wilderness values. The 2,100-acre vegetation treatment planned in this portion of the WSA

probably would not be allowed. The 500 additional AUMs that could result from such a seeding would thus be foregone. Of the 19.8 miles of existing vehicular ways, about 13.8 miles are within the area that would be designated. This would result in increased operating costs and inconvenience to the 15 permittees who presently use the ways for livestock management.

In the nondesignated portion livestock facilities, including 6 miles of way and two stock reservoirs, would be available for use and maintenance without concern for naturalness, solitude, and primitive recreation values.

Conclusion: The opportunity to increase livestock forage by 500 acres through vegetation treatment on 2,100 acres would be foregone. Restrictions on vehicle access on 13.8 miles of way would necessitate changes in livestock management and cause inconvenience and slight increases in cost to 15 livestock permittees.

## • Impacts on Cultural Resources

Fifty-one of the recorded sites are located in the designated portion and would receive protection under wilderness management. No surface disturbance is expected in the foreseeable future and the entire designated portion would be closed to mineral location and leasing. The 40,160 acres composing the wilderness area would be closed to all vehicular access, thus, recorded and unrecorded sites would be protected from any potential damage due to vehicular traffic.

The remaining 10 recorded sites and all unrecorded sites in the nondesignated portion would be protected by existing Federal and State antiquities laws. The nondesignated area would remain open to mineral location and leasing, but degree and potential impacts to cultural resources are unknown. No surface disturbance is expected in the foreseeable future. Any development would be preceded by appropriate inventory and mitigation procedures.

Conclusion: Cultural resources including 51 of the 60 recorded sites would receive protection from wilderness designation under this alternative. Sites in the undesignated portion would continue to receive protection under existing laws.

## FISH CREEK CANYON WSA

### • Impacts on Recreation

Motorized recreation would not be allowed on 40,160 acres in the portion designated wilderness. About 13.8 miles of way that are now occasionally used by recreationists would be closed; however, other locations are available for this type of recreation use. Primitive-recreation use would be enhanced on 87 percent of the WSA due to the limitation of surface-impacting activities and the elimination of motorized uses. This would be significant inasmuch as the main features and canyons of the WSA would be included within the designated portion.

Motorized recreation could occur on 6,280 acres, including approximately 6 miles of way, in the nondesignated area. Vehicle use in this area currently is low.

Visitation to the WSA for primitive recreation would increase as described in the No Action/No Wilderness Alternative. Vehicular recreation would probably decrease. Although vehicular use would be eliminated from most of the WSA, the loss of the ORV opportunity would not be significant regionally.

Conclusion: The quality of primitive recreation would be preserved and enhanced on 87 percent of the WSA. Primitive-recreation use would increase. Vehicular recreation would be largely eliminated in the WSA, but would not be affected on a regional basis.

### • Impacts on Local Economic Conditions

Designation of 40,160 acres of this WSA as wilderness is not expected to result in any significant changes to existing patterns and trends of population and employment. However, an increase in local income distributions could be expected as described in the other two alternatives.

Although future mineral development and related employment would be foregone with designation, it is unlikely that minerals would ever be commercially produced from this WSA even without wilderness designation. The WSA's most favorable mineral rating is a low potential for a small oil and gas deposit. Approximately \$3,340 of present annual Federal oil and gas leasing revenues (1,620 acres leased at \$2.00 per acre), and \$78,880 of lease fee revenue that could be collected from the remainder of the designated area if leased would be foregone. Half of the foregone revenues would have been allocated to the State. In the nondesignated portion, 210 acres of existing leases would continue and could be reissued, and future

leases could be issued on 5,670 acres resulting in continuation of up to \$11,760 in annual Federal revenues.

The area would continue to be used for grazing as in the past, with income and revenues as shown in Table 10. New rangeland improvements would be allowed only if they were primarily for the purposes of resource protection and management and if wilderness protection criteria (refer to Appendix 1) could be met. As with the All Wilderness Alternative, the planned 2,100-acre vegetation project, with a potential increase of 500 AUMs, would be foregone with designation, along with the resulting potential increase of \$10,000 in livestock sales and \$770 in grazing fees.

Levels of recreation use would increase, probably at about the same rate described for the All Wilderness alternative. Local expenditures could increase to be about \$240,800 annually. The possible increased use by commercial outfitters would increase the Federal revenues collected from recreation use permits to be as much as \$8,800 by the year 2020.

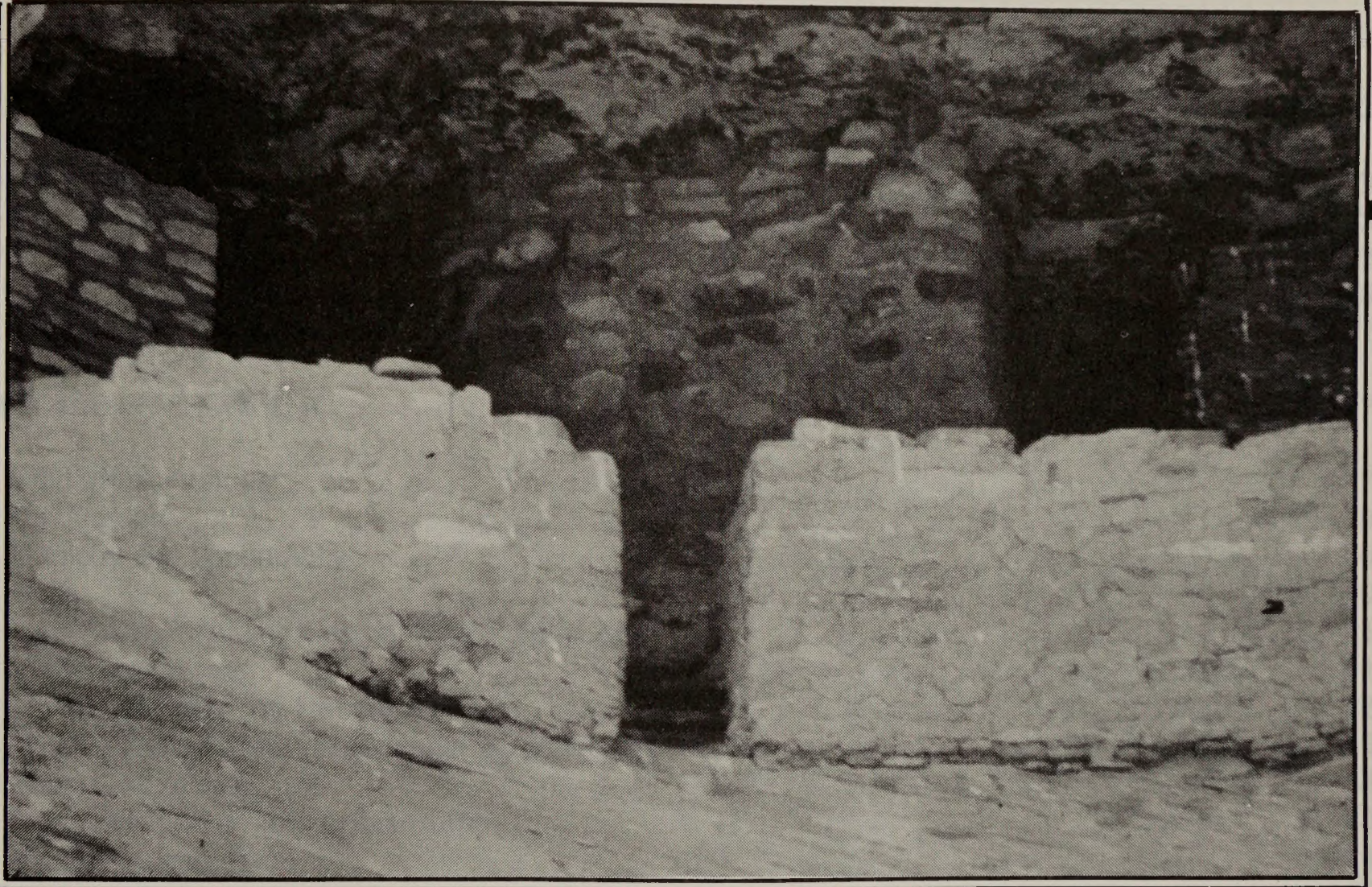
Present economic conditions would not be affected.

Conclusion: Future local annual expenditures could increase to be up to \$240,800 from increases in recreational use. Approximately \$92,190 in annual oil and gas lease fees and livestock sales and fees would be foregone.

# Mule Canyon WSA

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- Changes for the Final EIS
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# MULE CANYON WSA

(UT-060-205B)

## INTRODUCTION

### General Description of the Area

The Mule Canyon WSA is comprised of 5,990 acres of public land located in the south-central portion of San Juan County, approximately 30 miles west of Blanding, Utah. The unit was listed as 5,600 acres during the BLM Intensive Wilderness Inventory (USDI, BLM, 1980); however, a more accurate measurement established the acreage at 5,990 acres. The unit is approximately 5 miles long and 2.25 miles wide lying along a northwest to southeast axis. A railing on Texas Flat and a bladed dirt road form the north and east boundaries. The Manti-LaSal National Forest forms the west boundary and State Highway 95 (U-95) forms the south boundary.

The principal features of the WSA are two similar canyons typified by alternating bands of red and white sandstone and the presence of a rich variety of cultural resources. The predominant vegetation type is pinyon-juniper woodland. Small acreages of sagebrush and riparian vegetation are also present. Nearly half of the WSA is wasteland or slickrock.

Information on the climate of the WSA is limited because the nearest weather station is at Natural Bridges National Monument, 10 to 15 air miles from Mule Canyon. Since the elevation at Bridges and Mule Canyon are similar, it is assumed the weather is similar.

The annual average temperature in the area is 51 degrees Fahrenheit (F), the average annual low temperature is 37 degrees F, and the average annual high temperature is 65 degrees F. Annual precipitation ranges from 12 to 16 inches over Mule Canyon. January, May, and June are the driest months. July, August, and December are the wettest months. Annual total snowfall averages 40 inches.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume V, the following changes specific to the WSA have been made since publication of the Draft EIS.

1. A small portion of the northern boundary of the WSA (T. 39 S., R. 19 E., secs. 2 and 12) have been redrawn to correct an error in the Draft EIS maps.

This change did not require acreage adjustments because acreage calculations were based on the boundaries as shown in the inventory document and Final EIS.

2. The anticipated surface disturbance presented in the Draft EIS (160 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities projected to be feasible within the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of surface disturbance estimates from the 160 acres reported in the Draft EIS to 20 acres of surface disturbance for the Final EIS.

### Specific Issues Identified Through Scoping and Public Comment

#### • Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume VI (i.e., impacts on air quality, geology and topography, water rights, and land use plans and policies), the following issues or impacts specific to the Mule Canyon WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Soils: The public is concerned that without wilderness designation future activities in the WSA would result in soil disturbance and increases in soil erosion and loss of soil fertility. Because the disturbance estimate for the WSA has been reduced from 160 to 20 acres in the Final EIS, only 0.3 percent of the WSA would be disturbed and reclamation would be required. Perennial streams or other natural water sources are lacking the WSA. Therefore, there would not be



## MULE CANYON WSA

secondary impacts to water quality and sediment yield from the WSA would not increase. Therefore, impacts on soils are not significant issues for the Final EIS for the Mule Canyon WSA.

2. Vegetation Including Special Status Species: Estimates of surface disturbance without wilderness designation have been revised downward from the 160 acres reported in the Draft EIS to only 20 acres of mineral-related surface disturbance in the Final EIS. Given this new scenario, the impacts of direct disturbance of vegetation would be reduced and would not be significant with any of the alternatives (about 0.3 percent of the WSA). There are no threatened, endangered or proposed threatened or endangered plant species known to occur within the WSA. In any event, BLM would conduct site-specific clearances of potentially disturbed areas and consult with the FWS concerning impacts on threatened, endangered or other special status plant species. Therefore, impacts on vegetation are not analyzed in detail for the Mule Canyon WSA.

3. Water Resources: The public is concerned that wilderness designation would interfere with development of water. Future developments could also increase sediment yield and affect water quality. There are no perennial streams and only one spring in the WSA. Therefore, impacts on water uses and quality would be insignificant for the Mule Canyon WSA and they are not discussed in detail in the Final EIS.

4. Wildlife Including Special Status Species: The public is concerned that without wilderness designation mineral or other developments would destroy wildlife habitat and lead to reductions in wildlife populations. They are also concerned that use of ORVs would disturb wildlife and destroy habitat. Only 20 acres of disturbance is projected for the WSA in the foreseeable future. Vehicle-based recreation use is light, estimated at 100 visitor-days per year, and is related to other recreational pursuits such as hunting. The threatened, endangered, or other special status species that may occur in the area are mainly associated with cliff faces and canyon bottoms that would not be affected by mineral exploration or ORV use in the vicinity of Texas Flat. Given these conditions, impacts on wildlife habitat and populations are not significant issues for the Final EIS.

5. Forest Resources: The Navajo Indian Tribe has expressed concern that prohibition of firewood cutting on Cedar Mesa would adversely affect the availability of fuelwood for the reservation. However, the Mule

Canyon WSA is estimated to contain less than 530 cords of firewood. Additionally, the bulk of the fuelwood for the reservation comes from the National Forest above the BLM WSAs on Cedar Mesa. Only minimal firewood or other forest products have been harvested from the WSA, mainly along U-95 where there is easy access. For these reasons, impacts on forest resources are not significant issues for analysis in the Final EIS.

6. Livestock Management: The public is concerned that wilderness designation would interfere with livestock management by placing restrictions on access for maintenance of existing range improvements, moving of livestock, and by preventing future range improvements. Restrictions would be placed on predator control and livestock losses could increase in both the wilderness area and on adjacent lands. However, the Mule Canyon WSA comprises a portion of only one grazing allotment (2 percent of the total forage in the allotment), utilized by one permittee. There is only 0.3 miles of way in the WSA and vehicles are rarely, if ever, used in livestock management in the WSA. Existing rangeland developments are two fences, a gate, and a corral, all near the boundary of the WSA. There are no proposed rangeland developments. Predator control has not been necessary in the area for several years. For these reasons, impacts on livestock management are not significant issues for the Mule Canyon WSA.

7. Visual Resources: As discussed above, only 20 acres of surface disturbance is projected for the WSA in the Final EIS. Therefore, visual resources would not be significantly affected. Visual resources are not addressed in the Final EIS as a separate topic, but are addressed in relation to naturalness in the Wilderness Values section.

8. Recreation: The public has expressed concern that wilderness designation would change recreational use from motorized to primitive or conversely that without wilderness designation motorized recreation will eliminate or reduce opportunities for primitive recreation. Recreational use of the WSA is light (estimated 240 visitor-days per year) and would remain primarily primitive with or without wilderness designation due to the terrain of the WSA. Any vehicular use would be confined to the areas outside the main canyons. Therefore, impacts on recreation use would not be significant and they are not analyzed in detail in the Final EIS.



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9. Economic Conditions: The public, including State and local government, is concerned that wilderness designation would preclude mineral or other economic developments and adversely affect local economic conditions. Others believe that primitive recreation use would increase following wilderness designation and would contribute to the local economy.

There are no existing or anticipated mineral developments or proposals for lands or realty activities which would be impaired with or without wilderness designation. Because no economic developments are expected and because recreational use is only 240 visitor days per year, impacts on economic conditions for the Mule Canyon WSA are not significant issues for the Final EIS.

- Issues Analyzed in Detail

The significant issues for the Mule Canyon WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on mineral exploration and production.
3. Impacts on the preservation of cultural resources.

Comments made during the public comment period for the Draft EIS centered mainly on the need for, and adequacy of, the inventories of resource values; BLM's assessments of wilderness and mineral values; Navajo tribal rights to utilize the area; adequacy of the BLM Wilderness Inventory; and the potential affects of designation or nondesignation on cultural resources.

See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 49, for responses to specific comments about the Mule Canyon WSA.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated From Detailed Study

No alternatives were identified for this WSA through scoping and public comment other than those analyzed.

### Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action/No Wilderness; and (2) All Wilderness (Proposed Action) (5,990 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case. The analysis assumptions presented in the Introduction to Volume V are also applicable.

- No Action/No Wilderness Alternative

With this alternative, none of the 5,990-acre Mule Canyon WSA would be designated by Congress as part of the NWPS (refer to Map 1). Although BLM's land use plans are regularly updated and the South San Juan MFP (USDI, BLM, 1971) eventually will be replaced by the San Juan RMP, it is assumed that the area would continue to be managed in accordance with the MFP. No State, private or split-estate, lands are located within the WSA.

- Management Conditions and Constraints

All 5,990 acres would remain open to mineral location and sale. There are presently no mining claims in the WSA. Development work, extraction, and patenting would be allowed on future mining claims. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) without concern for wilderness values. However, there is little or no potential for locatable minerals and development is not anticipated. There are no oil and gas leases in the WSA. Future leases could be developed under stipulations issued at the time of leasing and future leases could be developed under leasing Category 2 (special stipulations) on 1,350 acres and Category 3 (no surface occupancy) on 4,550 acres. About 90 acres would continue to be closed to leasing (Category 4). Because there is potential for small accumulation of oil and gas in the Pennsylvanian rock under the WSA, limited oil and gas exploration is expected in the Category 2 area in the northern part of the WSA. Refer to Appendix 6 in Volume I for an explanation of mineral development projections. Development of oil and gas is not expected following exploration because the known resource potential and the probability of this development are too low to support a development assumption.

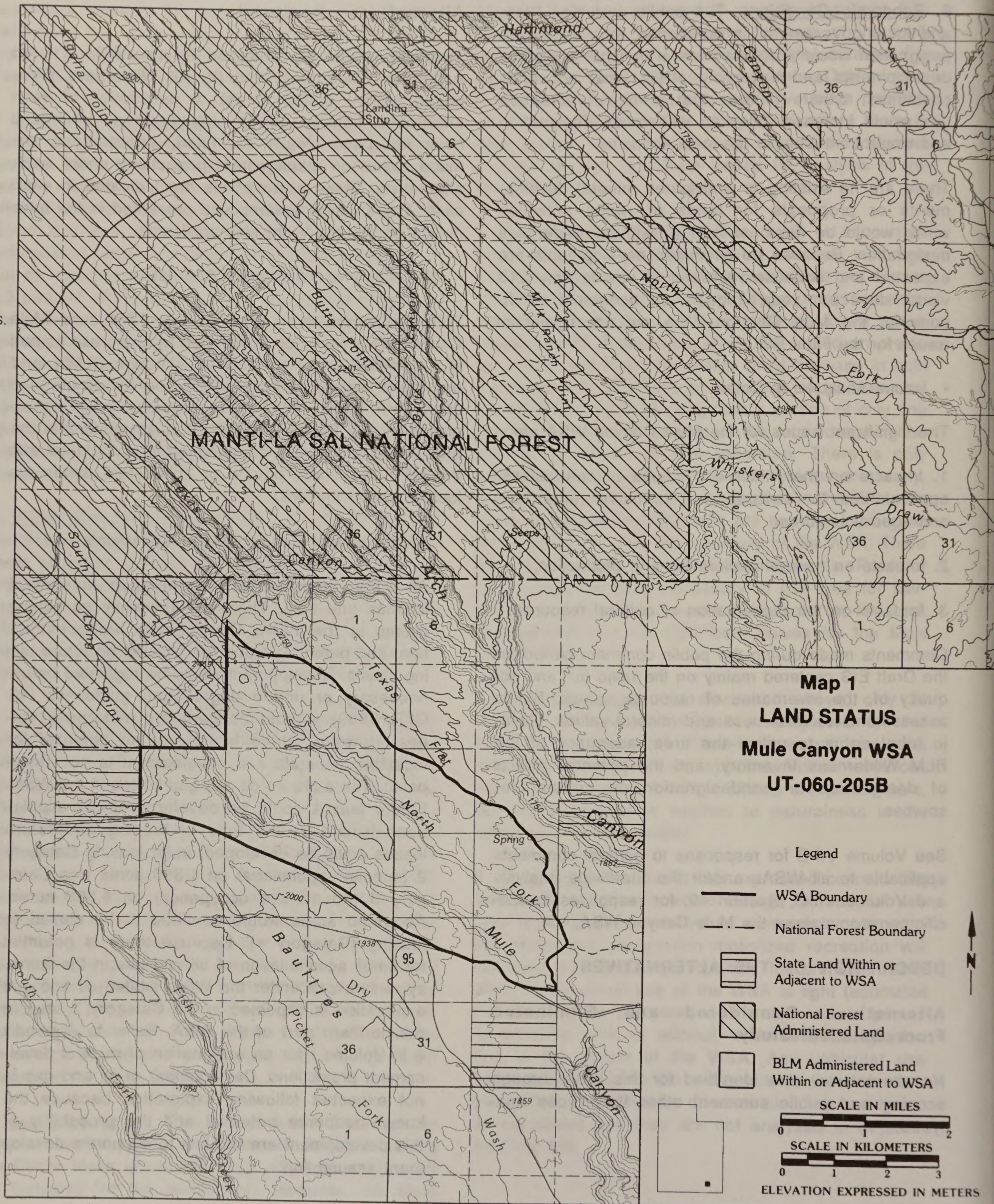
# MULE CANYON WSA

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R. 20 E.


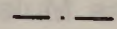



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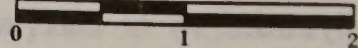


**Map 1**  
**LAND STATUS**  
**Mule Canyon WSA**  
**UT-060-205B**

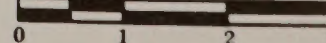
### Legend

-  WSA Boundary
-  National Forest Boundary
-  State Land Within or Adjacent to WSA
-  National Forest Administered Land
-  BLM Administered Land Within or Adjacent to WSA

SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS

## MULE CANYON WSA

The present domestic livestock grazing use of an estimated 37 AUMs in the WSA would continue as authorized. Access to and use of one corral, two fences, one gate, and the Dog Tanks Spring improvement, including 700 feet of buried pipeline, would continue. New rangeland developments are not planned.

The entire WSA acreage would be open to ORV use. Mule Canyon likely would be closed to ORV use in the future, as recommended in the MFP. However, it is projected that vehicles will continue to be used in association with hunting and other recreational pursuits in the Texas Flat area above the canyons. Vehicular use of 0.3 mile of vehicular way would continue.

The entire area (but primarily 4,500 acres of pinyon-juniper) would be open to woodland product harvest. There is no appreciable harvest of forest products at the present time. Increased harvest is not expected due to limited access and low quantity of wood available (less than 530 cords of firewood).

The area would continue to be managed as VRM Class II on 4,130 acres and Class III on 1,860 acres.

### • Action Scenario

It is projected that 20 acres would be disturbed in the WSA by oil and gas exploration. It is assumed that two exploratory wells would be drilled in the vicinity of Texas Flat where the WSA is open to surface occupancy. The location of drill sites would be determined through the interpretation of geophysical data. Each location would disturb up to 10 acres for up to 4 miles of access road and drill pad construction.

No rangeland, wildlife, or watershed protection developments are expected in the foreseeable future.

No disturbance due to ORV activity is anticipated. This is because much of the WSA is recommended for closure in the future, and the WSA is unsuitable for ORV use off of existing trails.

Recreation use is projected to increase over the current estimated use of 240 annual visitor days at a rate of 2 to 7 percent per year. Only about 25 of the current visitor days are thought to be

vehicular in nature, mostly involving use of about 0.3 miles of vehicular way. Future use would continue to be about 10 percent vehicular in nature.

### • All Wilderness Alternative (Proposed Action)

With the All Wilderness Alternative, all 5,990 acres of the Mule Canyon WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character. There are no State, private, or split-estate lands located in the WSA.

### • Management Conditions and Constraints

After wilderness designation, all 5,990 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of mining claims filed prior to designation that may be determined to be valid. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809), with consideration given to wilderness values. Because there is little or no potential for locatable minerals in the WSA, no exploration or development of locatable minerals is expected following designation. There are no oil and gas leases in the WSA and leasing would not be allowed in the wilderness. Therefore, oil and gas or other leasable mineral exploration or development would not occur.

Present domestic livestock grazing would continue as authorized. The estimated 37 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of range developments listed under the No Action/No Wilderness Alternative would continue in the same manner as in the past based on practical necessity and reasonableness. New range developments are not planned.

The entire 5,990-acre area would be closed to ORV use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR 8560; or (2) for occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. About 0.3 mile of existing vehicular ways in the WSA would not be available for vehicular use except as indicated above. About 11 miles of roads

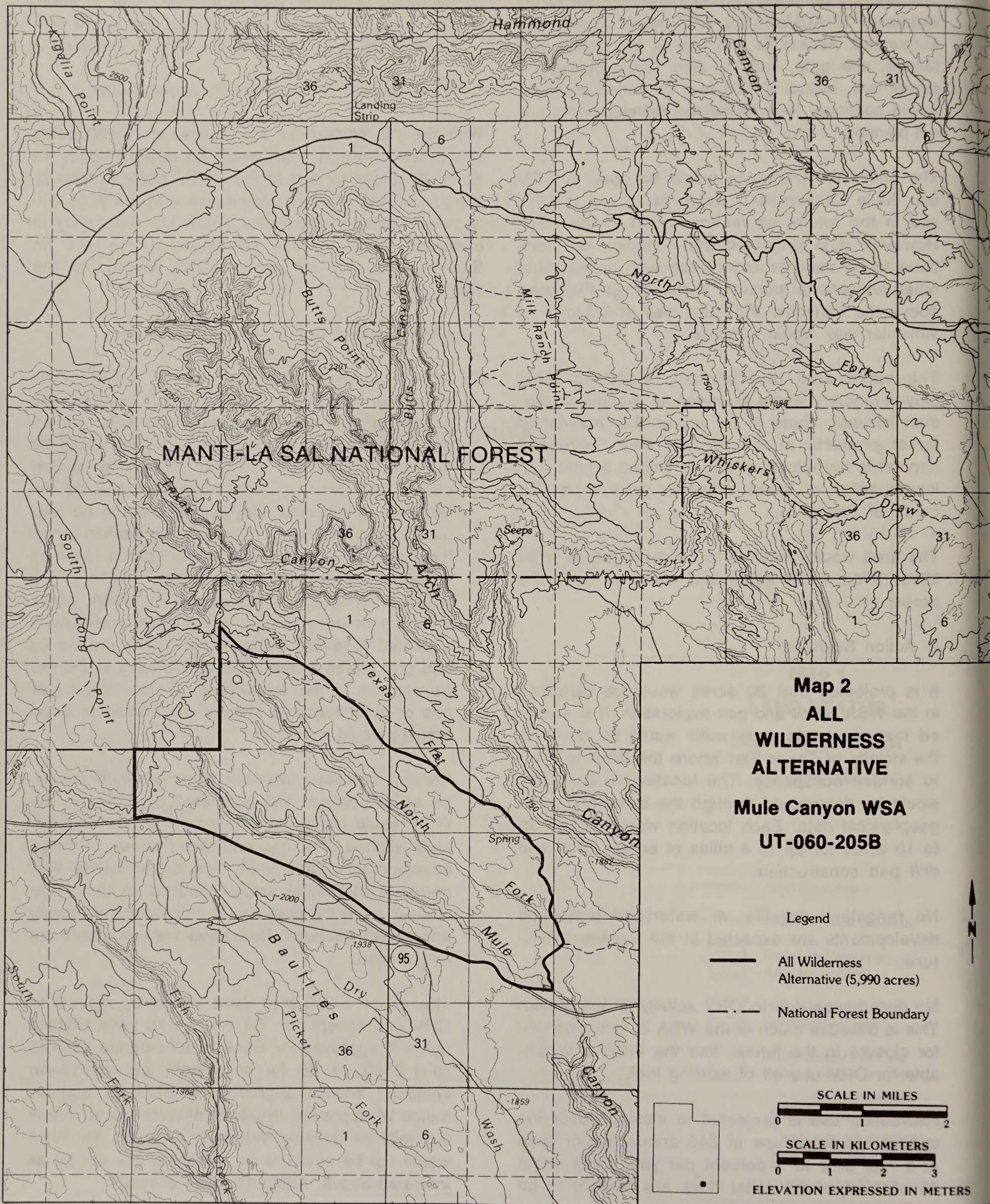
# MULE CANYON WSA

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R. 20 E.


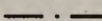
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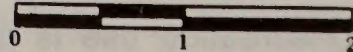


**Map 2**  
**ALL**  
**WILDERNESS**  
**ALTERNATIVE**  
**Mule Canyon WSA**  
**UT-060-205B**

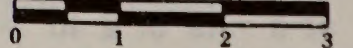
Legend

-  All Wilderness Alternative (5,990 acres)
-  National Forest Boundary

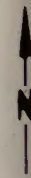
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



# MULE CANYON WSA

(including 6 miles of State Highway 95), which form part of the boundary of the WSA, would remain open to vehicular use.

Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means for use in the wilderness.

Visual resources would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

- Action Scenario

No surface-disturbing activities are projected for the area following wilderness designation.

Recreation use will be primitive in nature and will increase at a rate of 2 to 7 percent per year over the current primitive use of about 215 visitor use days per year.

## Summary of Environmental Consequences

Table 1 summarizes the environmental consequences of the alternatives analyzed in detail.

## AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

## Wilderness Values

- Size

The WSA, at 5,990 acres, meets the minimum size criterion for a WSA. The unit is approximately 5 miles long and 2.25 miles wide, along a northwest to southeast axis.

- Naturalness

The majority of the WSA appears predominantly natural and free of human imprints. Imprints on Texas Flat (a road, railing, and reservoir) were excluded from the WSA in the BLM Intensive Wilderness Inventory. The remaining imprints are all on the periphery and are so minor that they do not affect the naturalness of the WSA as a whole.

Dog Tank Spring was improved in 1971 by the installation of 700 feet of buried pipe, directing water into two metal troughs. A campsite is near this spring consisting of a short spurway from the boundary road, a small clearing, and a fire ring.

In the extreme southeast of the unit, adjacent to old U-95, is a pole-fence livestock corral.

Adjacent to U-95 is the Mule Canyon Ruins Rest Stop. This interpretive rest stop is just outside the WSA's boundary.

From the boundary road in Section 20 there is a way through the pinyon-juniper about 0.3 mile in length. Also, in a few places, vehicle tracks extend into the unit for short distances from U-95.

These imprints cover less than 1 percent of the WSA and meet the naturalness standard for areas under wilderness review. All 5,990 acres of the WSA are considered natural in character. There have not been any surface-disturbing activities in the WSA since the BLM Wilderness Inventory.

- Solitude

The north and south forks of Mule Canyon offer outstanding opportunities for solitude because of terrain and vegetation. The two forks are each about 5 miles long, cutting 500 feet into the mesa on the west and gradually shallowing to 80 feet where they leave the WSA. The pinyon, juniper, cottonwoods, Ponderosa, and Douglas fir trees combine with the topography to enhance a user's ability to find seclusion within the WSA.

The two canyons of the WSA are the main travel routes and provide only a limited number of travel locations. There are no major side drainages. With increased use the opportunities for solitude would be reduced as a single party could hike both canyons in a day's time.

# MULE CANYON WSA

**Table 1**  
**Summary of Environmental Consequences**

Alternatives	
Resources	No Action/No Wilderness
<p>Impacts on Wilderness Values</p>	<p>Wilderness values would not be protected by wilderness designation. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 20 acres and indirectly reduced in quality on up to 590 acres. Special features would not be significantly affected. Vehicular use including use of 0.3 mile of existing way and future mineral exploration roads, would detract from opportunities for solitude and primitive recreation.</p>
<p>Impacts on Mineral and Energy Exploration and Production</p>	<p>Implementation of the No Action/No Wilderness Alternative would not adversely affect mineral exploration or production because mineral could be leased, claimed and developed as at present.</p>
<p>Impacts on Cultural Resources</p>	<p>Little impact to cultural resources due to surface development is expected with this alternative. Continued vehicular access may cause increases in illegal artifact collection and excavation in the Northwestern part of the WSA. Cultural resource management would continue without regard to wilderness management.</p>
	<p>All Wilderness (5,990 Acres) (Proposed Action)</p>
	<p>Wilderness designation would preserve the wilderness values in the WSA.</p>
	<p>The potential for oil and gas exploration would be foregone. There would not be a significant loss in production of any mineral or energy resources because the probability of development is low even without wilderness designation.</p>
	<p>Cultural resources including 37 recorded sites would receive additional protection. The benefits of protection from most surface disturbance and all vehicular access would probably outweigh any negative effects from increased vandalism due to increased future recreational use. Management may be restricted in scope and execution in order to protect other wilderness values.</p>

# MULE CANYON WSA

Sights and sounds from the adjacent U-95 limit opportunities for solitude in the WSA up to the rim of the South Fork of Mule Canyon. This area encompasses about 800 acres that do not have outstanding opportunities for solitude. North into the unit, the pinyon-juniper forest and the deep canyons prevent the highway from being an influence beyond the rim of this canyon.

In summary, over 86 percent (5,190 acres) of the WSA has outstanding opportunities for solitude. About 800 acres do not meet the outstanding criterion.

## • Primitive And Unconfined Recreation

The WSA offers outstanding opportunities for primitive and unconfined recreation. The deep, narrow, winding canyons offer opportunities for hiking and exploration. The scenic contrasts of the Ponderosa and the Douglas fir trees against the rounded red sandstone of the canyons enhance the hiking, exploration, and camping opportunities.

Hiking in Mule Canyon offers varied levels of difficulty. In the middle and lower sections of the canyons, gravel wash bottoms and cattle trails facilitate hiking. The upper ends are more challenging, with boulders and Ponderosa trees choking the narrow canyon bottoms and rapid elevation changes.

The easy access to this WSA from U-95 on the south and Texas Flat road on the east enhances the opportunity for primitive recreation but could also detract from the recreation experience by facilitating excessive visitation.

The WSA contains two 5-mile segments of canyons that tend to channel users, limiting the unconfined nature of the recreation experience to an up-and-down canyon hiking experience.

Other opportunities for primitive and unconfined recreation include backpacking, rock climbing/scrambling, hunting, exploration, nature study, and observing features of geologic and archaeological interest.

All 5,990 acres meet the primitive and unconfined recreation criterion.

## • Special Features

Special features of the Mule Canyon WSA identified during the BLM Wilderness Inventory include archaeological and scenic values.

Archaeological values are high and are of special interest to visitors of the WSA. There are 37 known Anasazi sites within the WSA, most of which are cliff dwellings. These picturesque ancient structures add an element of discovery to the enjoyment of primitive recreation in this WSA. The understanding of a past people's use of this land is an educational feature of these cliff dwellings. Adjacent to the WSA, the Mule Canyon Ruins' interpretive rest stop on U-95 with its stabilized kiva tower base and room block, also aids understanding of the people who once inhabited these canyons.

Additionally, 53 percent of this WSA has Class A scenery characterized by smooth red sandstone with contrasting Ponderosa pine and Douglas fir. This unique scenery adds to the enjoyment of hiking in this naturally beautiful area.

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. There are two animal species (peregrine falcon and bald eagle) listed as endangered that may make occasional use of the WSA. There are seven animal species and two plant species that are considered sensitive that may occur in the WSA. Cougar, which is a wildlife species associated with wilderness, is found in the WSA. Refer to the Vegetation and Wildlife Including Special Status Species sections for additional information. The WSA also contains special geological features such as arches and natural bridges.

## • Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV types of juniper-pinyon woodland and pine-Douglas fir forest. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. The ecoregion and PNV types represented by this WSA are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

This WSA is not within a 5-hour drive from any standard metropolitan statistical area.

## Air Quality

The WSA has a PSD Class II air quality classification in accordance with the Clean Air Act, as amended. The WSA is within the Four Corners Interstate Air Quality Control Region, which includes several coal-

# MULE CANYON WSA

fired powerplants. However, none of the powerplants are within 100 miles of Mule Canyon. The air quality is good over the WSA. The nearest Class I air quality area is Canyonlands National Park some 32 air miles north of the WSA. However, the Abajo Mountains lie between the two areas isolating them. Visual range in the general vicinity averages between 100 to 132 miles during the summer (Aerocomp, Inc., 1984).

## Geology and Topography

The WSA is within the Canyonlands Section of the Colorado Plateau Physiographic Province, and straddles the Four Corners region. This section is the most rugged and least accessible within the province and is characterized by bare rock surfaces, plateaus, and steep-walled canyons. The many canyons are precipitous; escarpments separate dry plateaus and erosion has produced picturesque buttes, arches, and natural bridges.

Surface geology consists of flat-lying beds of the Cedar Mesa Sandstone Member of the Cutler Formation of the Permian age.

The Cedar Mesa is typically a white, fine-grained, calcareous and cross-bedded sandstone. It represents a near-shore shallow marine deposit that has been transported into the area by long shore currents from the northwest. The Cedar Mesa Sandstone interfingers eastward with the Cutler Formation.

The Cedar Mesa Sandstone is underlain in this area by the Halgaito Shale, a westerly tongue of the Cutler red beds that grades northwesterly into the marine Elephant Canyon Formation. Typically the Halgaito consists of reddish-brown, thin-bedded shaley siltstone and very fine-grained, silty sandstone. Some stratigraphers place the red shales (Halgaito) directly underlying the Cedar Mesa Sandstone into the Rico Formation. The Rico Formation was originally described as a gradational sequence changing upward from the marine strata of Pennsylvanian age to continental red beds of Permian age above. In the vicinity of Mule Canyon the entire Halgaito has been mapped as Rico. This would include all the sections between the Permian-Pennsylvanian unconformity and the Cedar Mesa Sandstone. All of the Moenkopi Formation of Triassic age has been eroded from the WSA.

Mule Canyon lies along the broad eastern limb of the Monument Upwarp, a major north-trending structural division of the Colorado Plateau.

Two forks of Mule Canyon run roughly parallel through the WSA. Between them is a sloping plateau with elevations that vary from 7,600 feet in the northwest to 6,000 feet in the southeast.

## Soils

The majority of the WSA consists of shallow soils and rock outcrop on the ledges, rims, and surface of the mesa above Mule Canyon. Small areas of very deep loamy soils occur on the surface of the mesa in concave slope positions and basins. Moderately deep and deep loamy soils, some of which are extremely stony and bouldery, occur on steep and very steep fans in the forks of Mule Canyon and below South Long Point. Deep and very deep alluvial soils occur along the Mule Canyon drainages. Table 2 gives soil characteristics and land types for Mule Canyon WSA.

Table 2  
Soil Characteristics and Land Types

Soil Characteristics and Land Type	Percent of the Area	Acres	Estimated Rate of Erosion (cubic yards/acre/year)	
			Present Condition	Bare Soil Surface
Rock Outcrop	15	897	0	0
Shallow and loamy soils on sloping structural benches and ledges	30	1,798	1	5
Deep loamy soils on gently sloping structural benches	20	1,198	0.1	1
Shallow and deep stony soils on steep canyon side	35	2,097	1	10
Totals	100	5,990		

Source: Hansen, 1985.

Under present conditions, soil losses from water erosion are expected to average 0.67 cubic yards/acre/year. Greatest losses are on the steep and very steep fans in Mule Canyon and below South Long Point. Table 3 summarizes soil erosion conditions for the WSA.

Soil salinity class estimates indicate that the area is non-saline to slightly saline and has an average salinity production of 15 lb of salt per acre per year.

Seeding potential on 80 percent of the WSA varies from unsuited to seeding to poor due to steep slopes, rock outcrops, sandy (droughty) and shallow soils. Twenty percent of the WSA is rated fair to good for seeding suitability because of deep loamy soils.



# MULE CANYON WSA

Table 3  
Erosion Condition

Erosion Class	Erosion Rate cubic yards/ acre/year	Annual Soil Loss Under Present Conditions			Annual Soil Loss if Disturbed		
		Percent of Area	Acres	Cubic Yards	Percent of Area	Acres	Cubic Yards
Very High	20	-	-	-	-	-	-
High	10	-	-	-	35	2,096	20,960
Medium	5	-	-	-	30	1,797	8,985
Low	1	65	3,893	3,893	20	1,198	1,198
Very Low	0.1	20	1,198	119	-	-	-
None	0	15	899	-	15	899	-
Totals		100	5,990	4,012 <sup>a</sup>	100	5,990	31,143 <sup>a</sup>

Source: Hansen, 1985.

Average annual soil loss in cubic yards per acre: 0.67 under present conditions; 5.2 if disturbed.

## Vegetation Including Special Status Species

Existing vegetation types in the WSA include pinyon-juniper woodland, sagebrush, and riparian and are summarized in Table 4.

The pinyon-juniper woodland type consists of mature trees up to 15 feet in height with an interspacing of 12 to 15 feet and a sparse understory. Understory species include sagebrush, Mormon tea, buffalo berry, cedar weed, serviceberry and mahogany.

Table 4  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Pinyon-juniper woodland	3,395	56.7
Sagebrush	50	0.8
Riparian	30	0.5
Barren (slickrock)	2,515	42.0
Total	5,990	100.0

Source: USDI, BLM, 1985.

The sagebrush type consists of big sagebrush approximately 2 feet in height with an interspacing of 3 feet and very little understory species. Understory includes bottlebrush, squirreltail, and annuals such as cheatgrass.

The slickrock-waste acres primarily include the canyon bottoms and slopes. This type includes some dense vegetation, as well as areas of bare sandstone and sparse vegetation. Vegetation includes pinyon-juniper woodland, rabbitbrush, mahogany, and serviceberry, as well as some Douglas fir. The Douglas

fir occurs primarily on the north slopes of the canyons and in isolated pockets along the west side of the unit.

The canyon bottoms include approximately 13 miles of riparian area (approximately 30 acres) that includes species such as cottonwood, rabbitbrush, and sagebrush.

No threatened or endangered plant species are known to occur in the WSA. However, one Category 2 candidate species, *Erigeron kachinensis*, and one sensitive species, *Astragalus cottamii* may occur in the WSA (see appendix 4 in Volume I).

The Mule Canyon WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNV types of the WSA are listed on Table 5.

Table 5  
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Juniper-pinyon woodland	4,500	76
Blackbrush	1,490	24
Total	5,990	100

Source: USDI, USGS, 1978.

## Water Resources

The Mule Canyon WSA is within the lower San Juan River basin, which is in the Upper Colorado River hydrologic subregion. Mule Canyon is a subbasin of Comb Wash drainage which empties into the San Juan River.

# MULE CANYON WSA

The drainages within the WSA are ephemeral; only flowing during times of rain, snowmelt, and thunderstorms. During the snowmelt or thunderstorm seasons, water is temporarily retained in slickrock pools. Dog Tank Spring which was developed for livestock is located immediately within the eastern boundary of the WSA. No water developments are proposed in the area.

The WSA is within Water Right Adjudication Area 09. The water is not fully appropriated (UDNRE, DWR, 1988). There is very little water development in this area because of its remoteness. Isolated springs may be open to appropriations not to exceed 0.015 cfs. Temporary and fixed time applications may exceed this limit.

The water quality standards for San Juan River and tributaries from Lake Powell to State line are: Class 1C (protected for domestic purposes with prior treatment); Class 2B (protected for boating, water skiing, and similar uses); Class 3B (protected for warm water species of game fish and other warm water aquatic life); and Class 4 (protected for agricultural uses including irrigation of crops and stockwatering). Water quality of the spring is suitable for livestock use.

## Mineral and Energy Resources

The energy and mineral resource rating summary for the Mule Canyon WSA is given in Table 6. Refer to Appendix 5 in Volume I for a description of the mineral and energy rating system.

Table 6  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f2	c2	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Uranium/Vandium	f1	c4	None
Copper	f1	c4	None
Manganese	f1	c4	None

Source: SAI, 1982; USDI, BLM, 1987a.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

There are no strategic or critical minerals known to occur within the WSA (USDoD, 1988).

## • Leasable Minerals

There are no known deposits of any leasable minerals in the WSA. Currently, there are no active drilling, mining, or exploration activities for leasable minerals.

## • Oil and Gas

No oil and gas wells have been drilled in the WSA, but six exploratory wells have been drilled nearby. Some reportedly had oil shows and stains in the lower part of the Paradox Formation, although they have all been abandoned. The dominant structural monocline, the Elk Ridge anticline, has been drilled west and south of the WSA to depths between 3,100 and 3,700 feet; all the wells were reportedly dry.

Despite the favorable stratigraphy in the vicinity of the WSA, broad uplifts beginning in late Cretaceous time have significantly lowered the oil and gas potential of the Paradox Formation in this area. As a result of this uplift, erosion has stripped away overlying Mesozoic sedimentary rocks across most of the Monument Upwarp. Within the WSA, the Paradox Formation is probably less than 1,000 feet below the surface. About 40 miles south, most or all of the Paradox Formation is exposed along canyon walls along the San Juan River. In addition, Pennsylvanian rocks are exposed about 30 miles to the north in Dark Canyon. It is, therefore, very unlikely that reservoir pressure exists in Pennsylvanian rocks throughout much of this area. If oil and gas existed in the Paradox Formation in this area, there is a good chance that it has drained away.

On the basis of the discussion above, Pennsylvanian and Permian rocks in the WSA probably do not contain large reserves of oil and gas. However, small accumulations that were effectively sealed from drainage into the San Juan River may still exist in Pennsylvanian rocks underlying the WSA.

On this basis, the WSA is assigned an oil and gas favorability of f2. The size of the hydrocarbon accumulation in such an environment is anticipated to be less than 10 million barrels of oil or less than 60 billion cubic feet of gas. Based on the available information, the certainty of occurrence for oil and gas is rated low (c2) (SAI, 1982).

# MULE CANYON WSA

Under the current land use plan, 1,350 acres of the WSA are in Category 2 (special stipulations); 4,550 acres are in Category 3 (no surface occupancy); and 90 acres are in Category 4 (closed to leasing). There are presently no oil and gas leases in the WSA.

## • Locatable Minerals

There are no known deposits of locatable minerals in the WSA, and there are presently no mining claims.

The principal uranium, vanadium, and copper-bearing units on the Colorado Plateau, which are the Morrison Formation (Jurassic) and the Chinle Formation (Triassic), have been removed from the WSA by erosion. Of the formations that are still in the WSA, only the Cutler Formation has been productive for uranium elsewhere in the region (at Lisbon Valley). The Cutler contains no known uranium anomalies in this area, as well as very little organic carbon and mudstone. On this basis, the WSA is assigned a uranium/vanadium favorability of f1 (an unfavorable environment for uranium deposits). The certainty that uranium deposits do not occur in the WSA is high (c4). This rating would also apply to any deposits of copper which might be associated with uranium (SAI, 1982).

Manganese deposits in southeastern Utah occur in the Morrison and Summerville formations (Jurassic). As these are eroded from the WSA, the favorability for manganese is rated f1, with a high (c4) degree of certainty (SAI, 1982).

## • Salable Minerals

The salable minerals within the WSA have little or no commercial potential, based on the poor quality and the remote location of the material. These deposits are not unique or economically significant due to the presence of ample similar materials outside the WSA.

## Wildlife Including Special Status Species

There are a few resident mule deer in the Mule Canyon WSA. The WSA is a transition zone along a deer migration route that is used primarily during the fall and spring months. Mountain lions also utilize the WSA. Cottontail rabbits, white-tailed antelope, squirrel, chipmunk, deer mice, and assorted bats are found throughout the area.

There is no waterfowl habitat in the WSA. No raptor nesting sites have been identified. The greatest

diversity of passerine bird species is found in the canyons during the spring migration. Great horned owl, Cooper's hawk, hairy woodpecker, ash-throated flycatcher, violet-green swallow, common raven, pinyon jay, titmice, rock wren, and mourning dove are the most common bird species.

The side-blotched lizard, northern plateau lizard, northern sagebrush lizard, and Great Basin gopher snake are the most abundant species in the WSA. There are no fish species in this portion of Mule Canyon.

The bald eagle and peregrine falcon, endangered species, may be transients through this area. The golden eagle, a BLM sensitive species, is found in the WSA. Other special status species that could occur in the WSA are six Category 2 candidate species. These are the Great Basin Silverspot butterfly, ferruginous hawk, southern spotted owl, Western yellow-billed cuckoo, long-billed curlew, and white-faced ibis (see Appendix 4 in Volume). There is no critical habitat identified in the WSA nor is any development or treatment for wildlife habitat proposed.

## Forest Resources

A pinyon-juniper woodland occupies approximately 3,395 acres in the WSA. These are low quality sites (20 cubic feet usable wood per acre) and are considered nonproductive forest land. No areas in the WSA have been designated as Christmas tree cutting areas.

During 1981, there were 323 free use firewood permits issued in the San Juan Resource Area, but it is unlikely that over 10 individuals gathered firewood from the WSA. Occasionally a limited quantity of fenceposts may be cut, mainly adjacent to U-95 just within the south boundary. There is estimated to be less than 530 cords of firewood in the WSA. Occasional recreationists may have gathered pinyon nuts, but there have been no commercial gathering permits issued near this WSA. Demand for forest products in the WSA is not expected to significantly increase in the foreseeable future because of the lack of access and better supplies in areas outside the WSA.

## Livestock and Wild Horses/Burros

The Mule Canyon WSA is within and encompasses about 9 percent of the Texas-Muley Grazing Allotment. Parts of two pastures, Dog Tanks and Texas Flat, are included in the WSA. Table 7 summarizes allotment grazing use data.

# MULE CANYON WSA

Table 7  
Livestock Grazing Use Data

Allotments	Total Acres	Acres in ISA <sup>a</sup>	Total AUMs	Number of AUMs in ISA	Number and Kind of Livestock	Season of Use	Number of Operators
Texas Muley	67,730	5,990	1,781	37	274 Cattle 4 Horses	11/15-05/31 12/01-03/31	1

Sources: BLM File Data.

The two pastures, including the WSA, are grazed by approximately 274 cattle from November 15 through May 31. Most of the grazing in these pastures occurs in the crested wheatgrass seedings on Texas Flat outside the boundary of the WSA.

Allowing 20 acres per AUM in the sagebrush type and 100 acres per AUM in the pinyon-juniper woodland type, it is estimated that the WSA produces 37 AUMs of livestock forage or about 2 percent of the total forage (1,781 AUMs) produced in the allotment. Estimated grazing use in the WSA is 25 cattle for the grazing season.

Existing developments in the WSA include the Dog Tanks Spring development, a vehicular way (0.3 mile), a corral, gate, and fence located along the northeast boundary, and a fence located on the National Forest boundary. No range improvement projects are proposed in the WSA.

Vehicular use occurs on the boundary roads and the existing way. Other than that, ORVs are rarely, if ever, used for livestock management in the WSA.

Predator control was not conducted during the 1986-1987 period in the grazing allotment that comprises the Mule Canyon WSA (USDA, APHIS, 1988).

There are no wild horses or burros in the WSA.

## Visual Resources

The character of the WSA is composed of a plateau divided by two forks of Mule Canyon. The major landforms are gently rolling to relatively flat tablelands, with exposed slickrock and two similar canyons that drain to the southeast. The meandering canyons are relatively shallow (80 feet) in the southeast and gradually deepen (to 240 feet) in the northwest portion of the WSA. The steep canyon walls are a series of sandstone ledges or terraces that create a horizontally layered appearance. The light pink-and-gray color

bands further reinforce this. The rock ledges have a smooth texture.

The vegetation on the tablelands is dense pinyon-juniper with open sagebrush parks. In the canyons, the vegetation includes cottonwood-willow along the drainages, Douglas fir-Ponderosa pine in the canyon bottoms and on the north-facing slopes, and pinyon-juniper on the sandstone ledges. Colors vary from dark to light greens to gray-greens and create an interesting contrast with the sandstone. Textures are coarse to fine.

The BLM Visual Resource Evaluation System was used to rate the Mule Canyon WSA's visual characteristics, as shown in Table 8. The WSA contains both VRM Class II and Class III areas and Class A and Class B scenery. The BLM VRM system is explained in Appendix 7 in Volume I.

Table 8  
Visual Resource Quality and Management Class

Element	Acres	Percent of WSA
<b>Scenic Quality</b>		
Class A	3,174	53
Class B	2,816	47
Class C	0	0
Total	5,990	100
<b>Management Class</b>		
Class I	0	0
Class II	4,130	69
Class III	1,860	31
Class IV	0	0
Total	5,990	100

Source: USDI, BLM, 1985

## Cultural Resources

Most of the limited inventory work thus far conducted in the Mule Canyon area was completed by the BLM during the 1977 field season. The purpose of the

# MULE CANYON WSA

inventory was to record sites and document the agents and trends of deterioration. The remaining work was primarily performed by a consultant doing cultural clearances for USDOE boreholes.

The Mule Canyon WSA contains a wealth of pristine cultural resources. A literature search revealed 37 recorded sites representing a predominance of Pueblo cultural manifestations (USDI, BLM, 1988). Most of these sites are cliff dwellings, which include habitation and/or storage structures (granaries). The remaining sites are open habitation camps on the mesa top.

There are no existing National Register sites and/or nominations in this WSA. However, based on estimates from similar settings in the area, it could be expected that up to 700 sites would be located in the WSA, of which an estimated 470 could be National Register eligible.

## Recreation

The recreational use of the WSA is currently estimated at 240 visitor days annually. No visitor days are related to commercial outfitting. Nearly all of the use is attributed to primitive activities.

Mule Canyon WSA is a relatively unknown hiking area. Since permits are not required and the number of hikers is so small, rangers did not keep track of visitation data until January 1982. As of September 1982, 88 visitor use days were recorded. The estimated current backpacking and hiking use is about 140 visitor days per year.

Hiking in Mule Canyon is relatively easy. One can enter either fork from the old U-95, which was realigned in 1976, where the canyons are shallow, and there is very little altitude gain as one proceeds up the canyon. The presence of cattle trails facilitates hiking. There are a few other access points from the new U-95 (which is 0.25 mile from the rim of the south fork), from the dirt road on Texas Flat, and down a small wash on the south rim of the north fork. These latter access points are moderately difficult; one must descend into the canyons by climbing down talus slopes. Because of the quick access from U-95, the canyons provide an excellent dayhiking location into a slickrock canyon system. The WSA also provides an opportunity for winter hikes in southern Utah because it is easily accessible from a paved road.

Rangers have not seen any other types of recreation use in the canyons. Motorcycle and vehicle tracks are often found along the Texas Flat road (north boundary), heading off towards the canyon. Vehicular use occurs occasionally on 0.3 miles of an existing way but such use is most likely in association with hunting rather than solely for ORV purposes. No more than 25 visitor days per year are attributed to recreational pursuits involving vehicles. The WSA is open to ORV use, but is recommended in the BLM land use plan to be closed to such use in the future.

Deer hunting occurs on a limited entry, buck only basis in this WSA. Hunting was very popular in the area in the past. The Dog Tank Spring area (Section 20) was a well used hunting area, with estimated use at about 100 user days.

## Land Use Plans

The WSA is entirely public lands administered by the BLM. There is one parcel of State land adjacent to the west boundary of the WSA, and the Manti-LaSal National Forest borders the north and northwest sides of the area. The forest lands are not under consideration for wilderness nor are any adjoining lands proposed as wilderness. No private or split-estate lands are located in the WSA.

Dog Tank Spring, located on the east WSA boundary, was withdrawn as a public water reserve. The withdrawal review has been completed and it has been recommended that the withdrawal be continued. The withdrawal is intended to protect and preserve bodies of water, springs, and water sources for public use. Valid and legitimate purposes for which water was reserved include stockwatering, human consumption, agriculture, fish, wildlife, and their habitat. Dog Tank Spring has been developed within the withdrawal to provide water for livestock.

There are no land use permits, leases, or licenses in the area.

U-95 forms the south boundary of the WSA and provides the public access to the WSA. There are some minor livestock trails used by hikers.

The San Juan County Master Plan recommends the area as open range and forest land (Planning and Research Associates, 1967). This plan predates wilderness considerations; however, the San Juan County Commission opposes any wilderness areas being legislatively or administratively designated in the

# MULE CANYON WSA

County (San Juan County Commission, 1980). The San Juan County Commission has also endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation for BLM lands in Utah.

The WSA is located in the BLM San Juan Resource Area. Land use planning is governed by the South San Juan MFP (USDI, BLM, 1971). San Juan RMP will replace the MFP. Current management has favored multiple use as described in the No Action/No Wilderness Alternative. Important features of the MFP include leaving the area open to mineral location and sale with certain restrictions; continuing domestic livestock grazing, harvest of forest products, Class II and III VRM management, and evaluating the WSA for possible primitive values. Neither the MFP or future RMP address wilderness designation. However, wilderness designation is part of the multiple use concept. The BLM land use plan is linked to the Statewide Wilderness EIS through analysis of the present plan as the No Action/No Wilderness Alternative.

## Socioeconomics

### • Demographics

The WSA is in central San Juan County. The nearest community is Blanding, approximately 30 miles away. The socioeconomic effects of designation or nondesignation would be confined mostly to San Juan County. The character of the county can be summarized as rural and sparsely populated.

Between 1970 to 1980, the population of San Juan County was fairly static, and grew by less than a 2 percent annual growth rate. The 1985 population was 12,500. Since 1983 the county's population has declined by approximately 500 (USDI, BLM, 1987b). The two largest communities in the county are Blanding (1980 population 3,118) and Monticello (1980 population 1,929). Approximately 40 percent of the county's population resides in these communities. Table 9 presents baseline and projected population data for San Juan County. Population projections for the county indicate that the number of people living in San Juan County in the year 2010 will be about 15,000 for about a 21-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

The major racial groups are caucasians (52.4 percent) and American Indians (45.7 percent). About 4 percent of the Navajo reservation's population live in San Juan County (USDI, BLM, 1987b).

Table 9  
Baseline and Projected Population and Employment Growth  
San Juan County

	1980	1990	2000	2010
Population	12,400	12,900	12,900	15,000
Employment	3,980	3,800	4,300	5,100

Source: Utah Office of Planning and Budget, 1987.

San Juan County is the largest county in Utah, comprising 5,045,760 acres or about 9.6 percent of the State's acreage. Approximately 86 percent of the county is administered by the Federal Government: 41 percent by the BLM; 24 percent by the Bureau of Indian Affairs (BIA) in conjunction with the Navajo tribe; and 20.9 percent by other Federal agencies. About 6 percent is in State ownership and about 8.1 percent is privately owned (University of Utah, BEBR, 1982; and USDI, BLM, 1987b).

### • Employment

Table 9 shows the baseline and projected total employment for the county to the year 2010. The government sector (Federal, State, and local) is the most important in terms of employment in the San Juan County economy. In 1987, mining made up about 16.5 percent of the total employment in the county. Tourism also generates a significant number of jobs (USDI, BLM, 1987b).

San Juan County is part of the Southeast MCD. Table 10 shows the baseline (1980) and projected employment by source for MCD to the year 2010.

Table 10  
Southeast Multi-County District  
Employment<sup>a</sup>

	1980	1990	2000	2010
Agriculture	1,203	1,100	1,100	1,100
Mining	8,368	3,500	4,500	5,700
Construction	1,360	700	900	1,100
Manufacturing	551	800	700	800
Transportation, Utilities	1,583	1,800	2,000	2,200
Trade	3,289	3,600	4,000	4,800
Finance, Insurance, Real Estate	424	400	400	500
Services	2,067	3,200	4,000	5,300
Government	3,994	4,100	3,800	4,400
Nonfarm Proprietors	1,715	2,000	2,200	2,800
Totals	22,534	21,000	23,600	28,700

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Carbon, Emery, Grand, and San Juan Counties.

# MULE CANYON WSA

In 1980 the leading employment sectors for the MCD were mining (28 percent), government (18 percent), and trade (15 percent). It is projected that by the year 2010 employment in the MCD will increase by about 27 percent. Services will increase to 18 percent, trade to 17 percent, and government to 15 percent of the total. While the mining, agriculture, and construction sectors will decline (Utah Office of Planning and Budget, 1987).

## • Sales and Revenues

Past activities in the WSA that could be of some local economic consequence include livestock production, hunting, and dispersed nonmotorized recreation. Table 11 summarizes local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Table 11  
Local Sales and Federal Revenues

Source	Annual Local Sales <sup>a</sup>	Annual Federal Revenues
Livestock Grazing	\$ 740	\$57
Recreational Use	\$ 984	No commercial permits
Total	\$1,724	\$57

Sources: USDI, BLM, 1974; Volume I, Appendix 9.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

One livestock operator has grazing privileges in the WSA. Based on the consumption of about 37 AUMs of forage by cattle, it is estimated that the WSA accounts for \$740 of livestock sales, including \$185 of ranchers' returns to labor and investment.

The WSA was a popular hunting area in the past. Although there are no use statistics for the WSA itself, hunter-related expenditures were well distributed among businesses in the county and were locally insignificant.

The WSA's nonmotorized and motorized recreational use is low and related local expenditures are low and insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that Statewide average local expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for

the Mule Canyon WSA is estimated as about 240 visitor days per year.

No oil and gas or mineral production has occurred in the WSA. There are no mining claims in the WSA. Therefore, mineral and energy resource production from the WSA does not contribute to local employment or income.

Some woodland products are harvested from the WSA; however, the harvests have been small and are insignificant to the local economy and only of minor significance to those involved in the harvest.

The WSA generates revenues to the Federal Treasury from grazing. Based on 37 AUMs of forage consumed by livestock in the WSA, with the current annual grazing fee of approximately \$1.54 per AUM, the WSA annually accounts for about \$57 of grazing fee Federal revenues. Half of this is allocated back to the local BLM district for construction of range development projects.

## ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. The analysis is based on the BLM management actions and anticipated activities presented in the Introduction to Volume V and the Description of the Alternatives for the Mule Canyon WSA.

### No Action/No Wilderness Alternative

#### • Impacts on Wilderness Values

Because the WSA would not be designated wilderness, the identified wilderness values would not receive the degree of protection afforded by application of the BLM Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities (i.e., VRM Class II management on 4,130 acres, management under oil and gas leasing Category 4 (closed to leasing) on 90 acres, and oil and gas leasing Category III (no surface occupancy) on 4,550 acres.

In the foreseeable future, disturbance of approximately 20 acres from oil and gas exploration near Texas Flat in the northeastern portion of the WSA would result in a direct loss of naturalness and opportunities for solitude and primitive, unconfined recreation

## MULE CANYON WSA

in the disturbed areas. Special features including Class A scenery, geological features, archaeological values, endangered or sensitive species, and wildlife associated with wilderness, would not be significantly affected because the disturbance would be minor involving only 0.3 percent of the WSA, and would generally not be located where the special features are located. In addition, appropriate measures would be taken to protect endangered and sensitive species and cultural values prior to any surface-disturbing activity. Refer to the Cultural section for more information.

During the period of activity, the visual and audible disturbance from energy exploration would reduce the quality of opportunities for solitude and primitive recreation not only on directly disturbed areas but also indirectly on adjacent portions of the WSA. As much as 10 percent (590 acres) of the WSA could be so affected in the foreseeable future.

Most future vehicular use would be limited by terrain to the existing 0.3 mile of vehicular way. However, some additional disturbance from vehicle activity is anticipated in the future in the area between U-95 and the south rim of Mule Canyon and in the Texas Flat area because of accessibility. This use plus the continued and increased use of the existing 0.3 miles of way would occasionally detract from opportunities for solitude and primitive recreation.

The 2 to 7 percent annual increase in visitor use that would occur over time would be expected to reduce the quality of wilderness values because although the additional use would be 90 percent primitive in nature, the WSA is small. Some vandalism of archaeological sites could be expected (refer to Cultural Resources section). Visitor restrictions or other control may be necessary to protect wilderness and cultural values.

The degree to which wilderness values would be lost over the long term is not accurately known. Loss would occur as intrusions increase.

Conclusion: Wilderness values would not be protected by wilderness designation, and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 20 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to 590 acres. Special features, including Class A scenery, endangered and sensitive species, archaeological values,

and wildlife associated with wilderness, would not be significantly affected.

### • Impacts on Mineral and Energy Exploration and Production

The WSA would remain open to exploration and development of mineral and energy resources without consideration of wilderness values. Approximately 76 percent of the WSA would be closed to leasing or surface occupancy under the land use plan. However, because there is a potential for small accumulations of oil and gas in the Pennsylvanian rocks underlying the WSA, it is projected that in the foreseeable future limited oil and gas exploration will occur in the northern portion of the WSA in the vicinity of Texas Flat. Because exploration would be allowed, mineral and energy resources would not be significantly affected by the No Action/No Wilderness Alternative.

Conclusion: Implementation of the No Action/No Wilderness Alternative would not adversely affect mineral exploration or production.

### • Impacts on Cultural Resources

In the foreseeable future 20 acres of surface disturbance is expected in the northwestern portion of the WSA due to oil and gas exploration. Some loss of cultural resources may occur as a result of these activities. The unit would remain open to mineral location and leasing, but no significant development is projected. All sites in the WSA would continue to be protected under existing State and Federal antiquities laws and appropriate inventory and mitigation procedures would precede any surface disturbance.

The unit would remain open to ORV activity and general vehicular access. Currently there is little ORV activity in the WSA and due to topographic constraints no increases are expected in the future. Vehicular traffic may increase in the northwestern portion of the unit due to surface development. Increased vehicular access would provide opportunities for artifact collection and illegal excavation (Nickens, et al., 1981).

With this alternative, archaeological sites would be subject to standard cultural resource management procedures (Neumann and Reinburg, 1988). Stabilization, interpretation, and excavation could proceed without the restrictions of wilderness values maintenance.



## MULE CANYON WSA

Conclusion: Little impact to cultural resources due to surface development is expected with this alternative. Continued vehicular access may cause some secondary impacts to archaeological sites in accessible areas of the WSA. Cultural resource management would continue without regard to wilderness management.

### All Wilderness Alternative (Proposed Action) (5,990 Acres)

#### • Impacts on Wilderness Values

Designation and management of all 5,990 acres as wilderness would preserve the wilderness values in the Mule Canyon WSA. The potential for surface-disturbing activities would be eliminated through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness and outstanding opportunities for primitive, unconfined recreation would be preserved on all 5,990 acres. Solitude would be preserved on approximately 5,190 acres that meet and 800 acres that do not meet the standards for outstanding opportunities. Resources that could be considered special features in the WSA, including Class A scenery, geologic features, archaeological values, endangered and sensitive species, and wildlife associated with wilderness, would also be preserved.

With this alternative, wilderness values would be preserved. No disturbance or resulting loss of wilderness values would occur.

Vehicular use of the 0.3 miles of existing way and other ORV activity in the area between U-95 and the south rim of Mule Canyon would cease with ORV closure, improving opportunities for solitude and primitive recreation.

The 2 to 7 percent annual increase in visitor use that would occur with time would be primitive in nature and would be managed so as to not result in loss of wilderness values. To protect wilderness values, visitation may be restricted or other control taken.

Conclusion: Wilderness designation would preserve the wilderness values in the WSA.

#### • Impacts on Mineral and Energy Exploration and Production

##### • Leasable Minerals

None of the WSA is leased for oil and gas and future leasing would not be allowed. Therefore, exploration for small accumulations of oil and gas in the Pennsylvanian rocks underlying the WSA would not be allowed. Due to the small size of the potential deposits and the low certainty that they exist, there would be a low probability of development and production even if the area were explored. Therefore, it is concluded that wilderness designation would not result in a significant loss of oil and gas recovery.

##### • Locatable Minerals

There are presently no mining claims in the WSA. Claims can be located up to the time of designation, however, there is little or no potential for locatable mineral deposits in the WSA. Therefore, it is concluded that this alternative would not result in a significant loss of locatable mineral exploration or production.

##### • Salable Minerals

Mineral sales would not be allowed in the wilderness area. Therefore, any potential for development and production of salable minerals would be foregone. Because of low potential for deposits and the availability of better sources of material outside of the WSA, it is concluded that this alternative would not result in a significant loss of salable mineral production.

Conclusion: The potential for oil and gas exploration would be foregone. There would not be a significant loss in production of any mineral or energy resource.

#### • Impacts on Cultural Resources

Little or no surface disturbance is expected with this alternative and vehicular access would be completely eliminated within the boundaries of the WSA. Very few intentional or unintentional impacts to cultural resources would occur under this alternative.

As recreational use of the unit increases in the future, site vandalism and collection of small transportable objects may increase. However, due to the lack of vehicular access, collection of large artifacts and

# MULE CANYON WSA

illegal excavation of sites may decrease. If sites containing valuable artifacts or specific features are present in the WSA, the increased inaccessibility of wilderness designation may encourage large scale commercial looting. The Pueblo sites in the WSA may meet these requirements (Wylie, 1988). The benefits of protection of cultural resources from all ORV activity, vehicular access, and surface development would, however, probably outweigh the negative effects of any increases in vandalism due to increased recreational use.

All cultural resource management procedures would be subject to the restrictions of wilderness designation (Neumann and Reinburg, 1988). Access to sites for stabilization, interpretation, or excavation may be limited or denied.

**Conclusion:** Cultural resources including 37 recorded sites would receive additional protection by wilderness designation. The benefits of protection from most surface disturbance and all vehicular access would probably outweigh the negative effects of increased vandalism due to increased future recreational use. Management may be restricted in scope and execution due to wilderness designation.

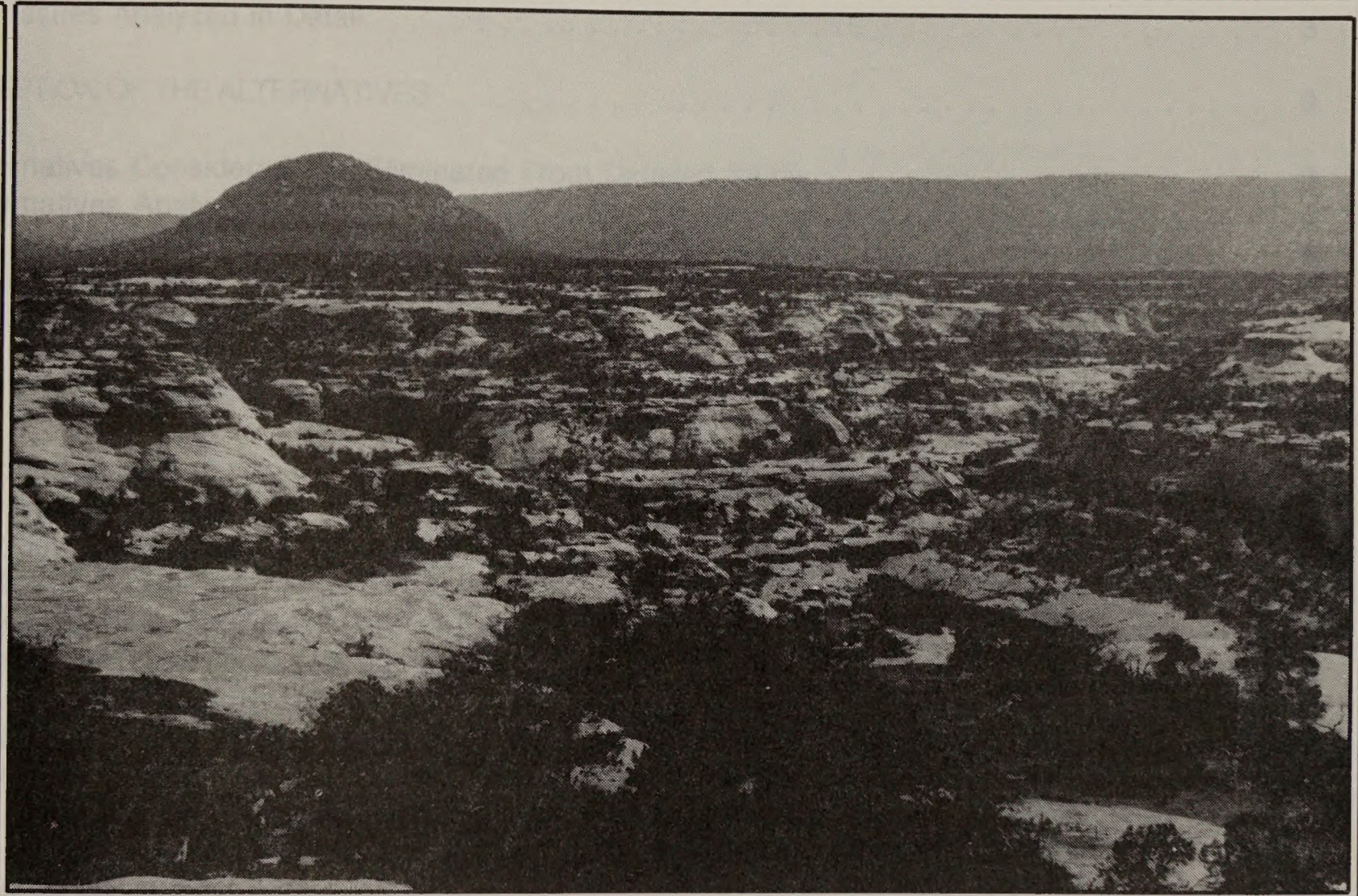
# Cheesebox Canyon WSA

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- Special Issues Identified Through Scoping and Public

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# CHEESEBOX CANYON WSA

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# CHEESEBOX CANYON WSA

(UT-060-191)

## INTRODUCTION

### General Description of the Area

Cheesebox Canyon WSA contains 15,410 acres of canyon and mesa land administered by the BLM. Acreage variations from the BLM Intensive Wilderness Inventory (USDI, BLM, 1980) are due to more accurate measurement methods. The WSA is in San Juan County, about 34 miles west of the community of Blanding. Oriented in a northeast-to-southwest manner, it is about 8 miles long from north to south, and ranges from less than 1 to 5 miles wide.

Cheesebox Canyon cuts into a relatively flat mesa that includes Ram Mesa, Lone Butte, and Cheesebox Butte. White, Hideout, and K&L Canyons are also included in the WSA. The canyons and buttes are very steep-sided throughout the unit, with flat to rolling terrain on the intermediate plateau and on top of the highlands. There are large expanses of exposed slick-rock in this WSA, especially in the canyon walls and areas on the plateau adjacent to the canyons. Most of the sandstone in the unit is light buff to gray colored, although several of the buttes, including the Cheesebox, are predominantly the characteristic reddish-brown of the Moenkopi Formation.

Vegetation in the canyon bottoms varies from very sparse in Cheesebox, Hideout, and K&L Canyons to scattered cottonwoods and tamarisk in White Canyon, with lush vegetation around seeps. On the steep slopes at the heads of the forks of Cheesebox drainages and on the north-facing slope of Pinyon Point (from 7,200 to 8,000 feet), Douglas fir and Ponderosa pine predominate. Vegetation on the plateau between the canyons is pinyon pine and juniper, with various desert shrubs interspersed.

The average annual temperature near the WSA is 51 degrees Fahrenheit (F), with an average low of 37 degrees F and an average high of 65 degrees F. The record low is -2 degrees F, and the record high is 101 degrees F. Temperatures reflect a 3 degree F increase in temperature per 1,000-foot decrease in elevation.

Annual precipitation ranges from 10 to 16 inches over Cheesebox Canyon. January, May, and June are the driest months. July, August, and December are

the wettest months. Annual total snowfall ranges from 15 to 50 inches.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume V, the following changes specific to the WSA have been made since publication of the Draft EIS:

1. A small portion of the boundary of the WSA (T. 36 S., R. 16 E., secs. 15, 21, and 22) have been redrawn to correct an error in the Draft EIS maps. This change did not require acreage adjustments because acreage calculations were based on the boundaries as shown in the inventory document and Final EIS.

2. The anticipated surface disturbance presented in the Draft EIS (180 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities projected to be feasible within the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of surface-disturbance estimates from the 180 acres reported in the Draft EIS to 2 acres of surface disturbance for the Final EIS.

### Specific Issues Identified Through Scoping and Public Comment

#### • Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume V (i.e., impacts on air quality, geology and topography, water rights, and land use plans and policies), the following issues or impacts specific to the Cheesebox Canyon WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

STATEWIDE  
POCKET MAP  
WSA  
NO. **50**  
SEE VOL. I

## CHEESEBOX CANYON WSA

1. Soils: The public is concerned that without wilderness designation, mineral development, land treatment, or ORV use would occur on soils that are not easily reclaimed, leading to unacceptable increases in soil erosion. Estimates of surface disturbance due to minerals activities without wilderness designation have been revised downward from 180 acres reported in the Draft to none for the Final EIS. Only 2 acres would be disturbed with construction of rangeland projects. Terrain and surface features generally restrict vehicles to existing ways. Therefore, impacts on soil erosion are not significant issues for the Cheesebox Canyon WSA.

2. Vegetation Including Special Status Species: As discussed above for soils, estimates of total surface disturbance without wilderness designation have been revised downward from the 180 acres reported in the Draft EIS to 2 acres for the Final EIS. Given this new scenario, the impacts of direct disturbance vegetation would be reduced and would not be significant with either of the alternatives.

No threatened or endangered plant species are known to occur within the WSA. However, one Category 2 candidate species and three other special status species may occur in the WSA. Before initiating any surface-disturbing activity for the construction of rangeland projects (one reservoir and 0.5 mile of fence), BLM would conduct site-specific clearances of the potentially disturbed areas. If any threatened or endangered species are located, BLM would initiate consultation with FWS as required by the Endangered Species Act and BLM policy. BLM would request a biological opinion when appropriate (see Appendix 4 in Volume I). Appropriate mitigation measures, such as avoidance of sensitive areas, would be implemented. Because necessary measures would be taken to protect these species, the viability of populations of threatened, endangered, or other special status plant species would be preserved with any alternative. Therefore, impacts on vegetation are not analyzed in detail for the Final EIS.

3. Water Resources: The public is concerned that wilderness designation would interfere with development of water. There are no perennial streams and only one livestock reservoir proposed for the Cheesebox Canyon WSA. Existing water developments could be maintained as in the past and would not be affected. Therefore, the impacts on water uses are not discussed in detail.

4. Mineral Resources: The public has expressed concern that wilderness designation would interfere with or prevent mineral exploration, development and production.

There are no existing oil and gas leases within the WSA. Potential oil and gas deposits are small with a very low certainty that they exist. Even though there are 98 mining claims inside the WSA, projected uranium and other locatable mineral deposits are thought to be very small with a high certainty that they do not exist. More accessible deposits of salable minerals exist outside the WSA. For these reasons, mineral exploration or development would not occur in the foreseeable future with or without wilderness designation (see Appendix 6 in Volume I). Therefore, impacts on mineral and energy exploration and production are not analyzed in detail in the Final EIS.

5. Wildlife Including Special Status Species: The public is concerned that without wilderness designation mineral or other developments would destroy wildlife habitat and lead to reductions in wildlife populations. They are also concerned that use of ORVs would disturb wildlife and destroy habitat. The Cheesebox Canyon WSA provides habitat for a variety of animal species, including bighorn sheep. Two endangered and six other special status animal species may occur in the WSA.

Because no mineral developments are expected in the WSA in the foreseeable future, and only 2 acres would be disturbed due to construction of rangeland projects, wildlife habitats would not be lost. Terrain and surface features generally restrict the use of ORVs to the 5 miles of way in the WSA. Recreation use is low (estimated 1,000 visitor days use per year) and is two-thirds primitive. Prior to initiating any surface-disturbing activities associated with construction of rangeland projects (0.5 mile fence and one reservoir), BLM would conduct site-specific clearances of potentially disturbed areas and consult with the FWS concerning impacts to threatened or endangered species which may occur there. Given these conditions, impacts on wildlife habitat and populations including special status species are not significant issues for the Final EIS.

6. Forest Resources: The only forest resources in the WSA are 6,300 acres of scattered pinyon pine and juniper trees and a few small stands of Douglas fir and Ponderosa pine. Demand is low and there is limited access. For these reasons, impacts on forest



# CHEESEBOX CANYON WSA

resources are not significant issues for analysis in the Final EIS.

7. Livestock Management: The public is concerned that wilderness designation would interfere with livestock management by placing restrictions on access for maintenance of existing range improvements, moving of livestock, by preventing future range improvements, and placing restrictions on predator control. However, under the BLM Wilderness Management Policy (BLM Manual 8560) there shall be no curtailments in grazing simply because an area is wilderness. Grazing reductions have already been imposed as a result of a grazing EIS.

The only proposed rangeland development which would be precluded by wilderness designation is a stock reservoir. Five miles of way would be closed should the area be designated as wilderness. However, motorized vehicles are used very little in livestock management, and little effect on management of livestock grazing is expected. Even though spring loaded cyanide guns (M-44s) would be prohibited, several methods of predator control would be allowed in designated wilderness. In addition, predators haven't been controlled in the WSA for several years. For these reasons, impacts on livestock management are not significant issues for the Cheesebox Canyon WSA.

8. Visual Resources: As discussed above for soils and vegetation, the estimates of surface disturbance have been reduced for the Final EIS. Therefore, the impacts on visual resources would be less than described in the Draft EIS. Minor impacts on visual resources would occur from construction of one stock reservoir and a 0.5 mile of fence. In the Final EIS, impacts on visual resources are not addressed under the heading of Visual Resources, but are addressed as part of the discussion of naturalness and special features in the Wilderness Values sections.

9. Cultural Resources: As discussed in the Draft EIS cultural resources could be disturbed or destroyed by surface-disturbing activities. There are 12 recorded sites in the Cheesebox Canyon WSA and the potential for finding additional sites is high. Surface disturbance estimates for the No Action/No Wilderness Alternative have been reduced from 180 acres to 2 acres for the Final EIS. Dispersed disturbance from ORVs is prevented by the steep terrain in the WSA. In addition, inventories for the purpose of site recordation and mitigation of impacts would take place prior to any surface disturbance. Given these conditions, im-

acts on cultural resources are not significant issues for the Cheesebox Canyon WSA.

10. Economic Conditions: The public, including State and local government, is concerned that wilderness designation would preclude mineral or other economic developments and adversely affect local economic conditions. Others believe that primitive recreation use would increase following wilderness designation and would contribute to the local economy. There are no existing or anticipated mineral or other developments for the Cheesebox Canyon WSA. An increase of recreational visitors of 2 to 7 percent a year could be expected. However, this increased level of visitor use would not result in significant impacts to the local economy.

## • Issues Analyzed in Detail

The significant issues for the Cheesebox Canyon WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.

2. Impacts on recreational use of the WSA.

Comments made during the public comment period for the Draft EIS centered mainly on the need for, and adequacy of, the rationale for the BLM Proposed Action; the need for further inventories of resource values; and BLM's assessments of wilderness values, bighorn sheep habitat, recreational opportunities, and mineral values. See Volume VII-B for responses to general comments applicable to all WSAs and/or the State-wide analysis and Volume VII-C, Section 50, for responses to specific comments about the Cheesebox Canyon WSA.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated From Detailed Study

Public comments suggested that alternatives that would add up to 9,590 acres of Federal and State lands primarily to the east and south of the WSA be considered in the Final EIS. These alternatives were not analyzed because the inclusion of State lands is not consistent with BLM's wilderness review guidelines (refer to Volume VII-B, General Comment Response 6.4) and because other public lands were

## CHEESEBOX CANYON WSA

dropped from study during the inventory phase (refer to Volume VII-B, General Comment Response 3.1).

### Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action/No Wilderness (Proposed Action); and (2) All Wilderness (15,410 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case. The analysis assumptions presented in the Introduction to Volume V are also applicable.

- No Action/No Wilderness Alternative (Proposed Action)

With this alternative, none of the 15,410-acre Cheesebox Canyon WSA would be designated by Congress as part of the NWPS. The WSA is in the BLM San Juan Resource Area and is managed according to the South San Juan MFP (USDI, BLM, 1971). Even though the San Juan RMP will replace the MFP it is assumed that the WSA would continue to be managed according to the MFP. Neither the MFP or RMP address wilderness designation. Wilderness designation is part of the multiple-use concept and the BLM land use plan is linked to the Statewide Wilderness EIS through analysis of the present plan as the No Action/No Wilderness Alternative. No State, private, or split-estate lands are located within the WSA (refer to Map 1). The figures and acreages given for this alternative are for Federal lands only.

- Management Conditions and Constraints

All 15,410 acres would remain open to mineral location, leasing, and sale. Development work, extraction, and patenting would be allowed on 98 existing mining claims (1,960 acres) and future mining claims. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) without concern for wilderness values. No oil and gas leases currently exist in the WSA, but future leases could be developed under leasing Category 1 (standard stipulations) on about 8,870 acres, Category 2 (standard and special stipulations) on about 6,040 acres, and Category 3 (no surface occupancy) on 500 acres.

Although mineral resources would be managed as described above, no locatable or leasable mineral exploration or development is projected for the

WSA because the level of known resources and the probability of their development are too low to support development assumptions. Appendix 6 in Volume I explains the methodology for mineral exploration and development projections.

The present domestic livestock grazing use of 157 AUMs in the WSA would continue as authorized in the South San Juan Planning Unit MFP, until that plan is superseded by the San Juan RMP, and by the White Canyon Allotment Management Plan. Use of the existing range developments (three stock trails, one corral, 90 acres of seeding, 0.5 mile of fence, and one spring) would continue. New rangeland improvements (one stock reservoir and about 0.5 mile of fence) could be implemented without wilderness considerations.

The entire WSA acreage would be open to ORV use and new access routes for development would be allowed. The White Canyon area could be closed to ORV use in the future, as recommended in the MFP.

The entire area (but primarily 6,300 acres of pinyon-juniper woodland) would be open to woodland product harvest. There is no appreciable harvest of forest products at the present time, nor is any planned.

The entire 15,410-acre area would continue to be managed as VRM Class II.







- Action Scenario

Given the management plans described above and the resources described in the Affected Environment section, BLM projects that implementation of the No Action/No Wilderness Alternative would result in approximately 2 acres of surface disturbance in the foreseeable future. This disturbance would result from the construction of two 0.25 mile segments of livestock fence and one reservoir development. Both fence segments would be in the northern portion of the WSA (T. 35 S., R. 17 E., secs. 15 and 22) and the reservoir would be located in unsurveyed T. 36 S., R. 12 E., sec. 12. A period of 3 weeks would be necessary to construct these projects. No other rangeland, wildlife habitat, or watershed projects are planned. No surface disturbance is anticipated from locatable or leasable minerals exploration or development in the foreseeable future.

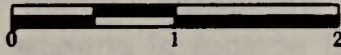
# CHEESEBOX CANYON WSA

## Map 1 LAND STATUS Cheesebox Canyon WSA UT-060-191

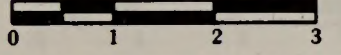
Legend

-  WSA Boundary
-  Natural Bridge National Monument Boundary
-  National Forest Boundary
-  National Park Service and National Forest Administered Land
-  State Land Within or Adjacent to WSA
-  BLM Administered Land Within or Adjacent to WSA

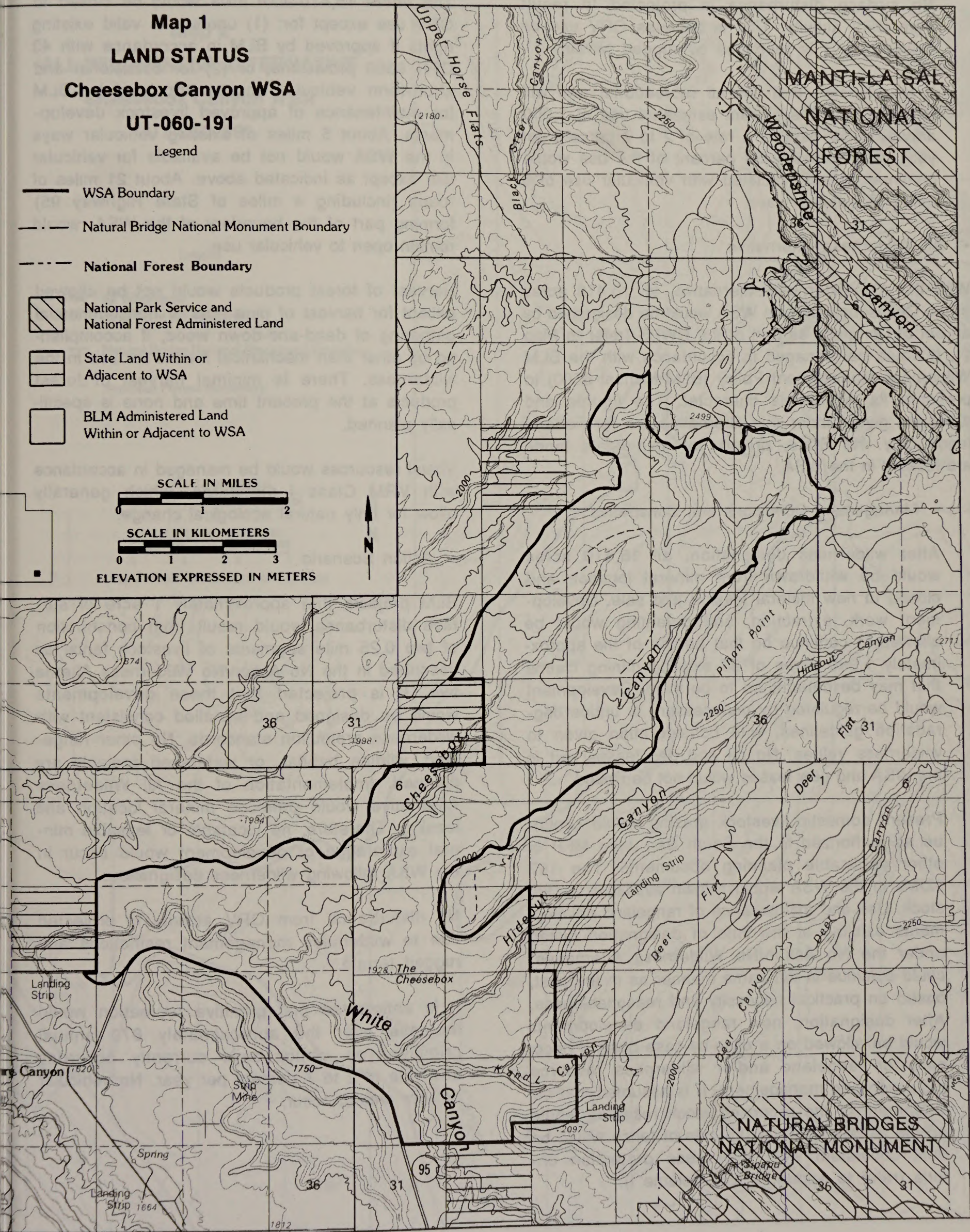
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



## CHEESEBOX CANYON WSA

No surface disturbance is projected to result from ORV activity. This is because ORV use on existing ways is restricted by rugged terrain.

It is projected that overall recreational use will increase over the current estimated use of 1,000 annual visitor days at a rate of 2 to 7 percent per year. Approximately 33 percent of the use would continue to be associated with vehicular use of 5 miles of existing ways.

- All Wilderness Alternative

With the All Wilderness Alternative, all 15,410 acres of the Cheesebox Canyon WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character. The figures and acreages given under this alternative are for Federal lands only. No State, private, or split-estate lands are located in the WSA.

- Management Conditions and Constraints

After wilderness designation, all 15,410 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 1,960 acres of 98 existing mining claims that may be determined to be valid. Development would be regulated by unnecessary or undue degradation guidelines, with consideration given to wilderness values. No oil and gas leases exist in the WSA and new leases would not be issued.

Present domestic livestock grazing would continue as authorized in the South San Juan MFP or other applicable planning documents. The 157 AUMs in the WSA would remain available to livestock. Use and maintenance of rangeland developments existing at the time of designation (listed under the No Action/No Wilderness Alternative) could continue in the same manner as in the past, based on practical necessity and reasonableness. After designation, new rangeland developments would be allowed on a case-by-case basis if necessary for rangeland and/or wilderness resource protection and management. It is assumed that development of the proposed stock reservoir would not be allowed, but the 0.5 mile of fence would be built consistent with wilderness protection criteria (refer to Appendix 1 in Volume I).

The entire 15,410-acre area would be closed to ORV use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR 8560 provisions; or (2) for occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. About 5 miles of existing vehicular ways in the WSA would not be available for vehicular use except as indicated above. About 21 miles of roads (including 4 miles of State Highway 95) forming part of the boundary of the WSA, would remain open to vehicular use.

Harvest of forest products would not be allowed except for harvest of pine nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means for use in the wilderness. There is minimal harvest of forest products at the present time and none is specifically planned.

Visual resources would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

- Action Scenario

BLM projects that approximately 1 acre of surface disturbance would result from construction of two 0.25 mile segments of livestock fence as described in the No Action/No Wilderness Alternative. It is projected that these developments would be designed and installed consistent with wilderness protection standards. No other rangeland, wildlife habitat, or watershed projects are planned. Implementation of the All Wilderness Alternative would preclude mineral location and leasing. Therefore, no locatable or leasable mineral exploration or development would occur in the WSA following wilderness designation.

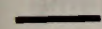
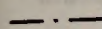
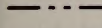
No disturbance from ORV activity is projected due to wilderness management restrictions and rugged terrain.

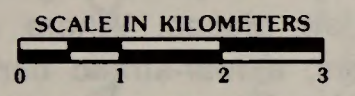
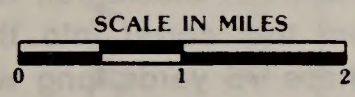
It is anticipated that primitive recreation would increase over the approximately 670 annual primitive-type visitor days currently occurring at a rate of 2 to 7 percent per year. No vehicular activity would occur.

# CHEESEBOX CANYON WSA

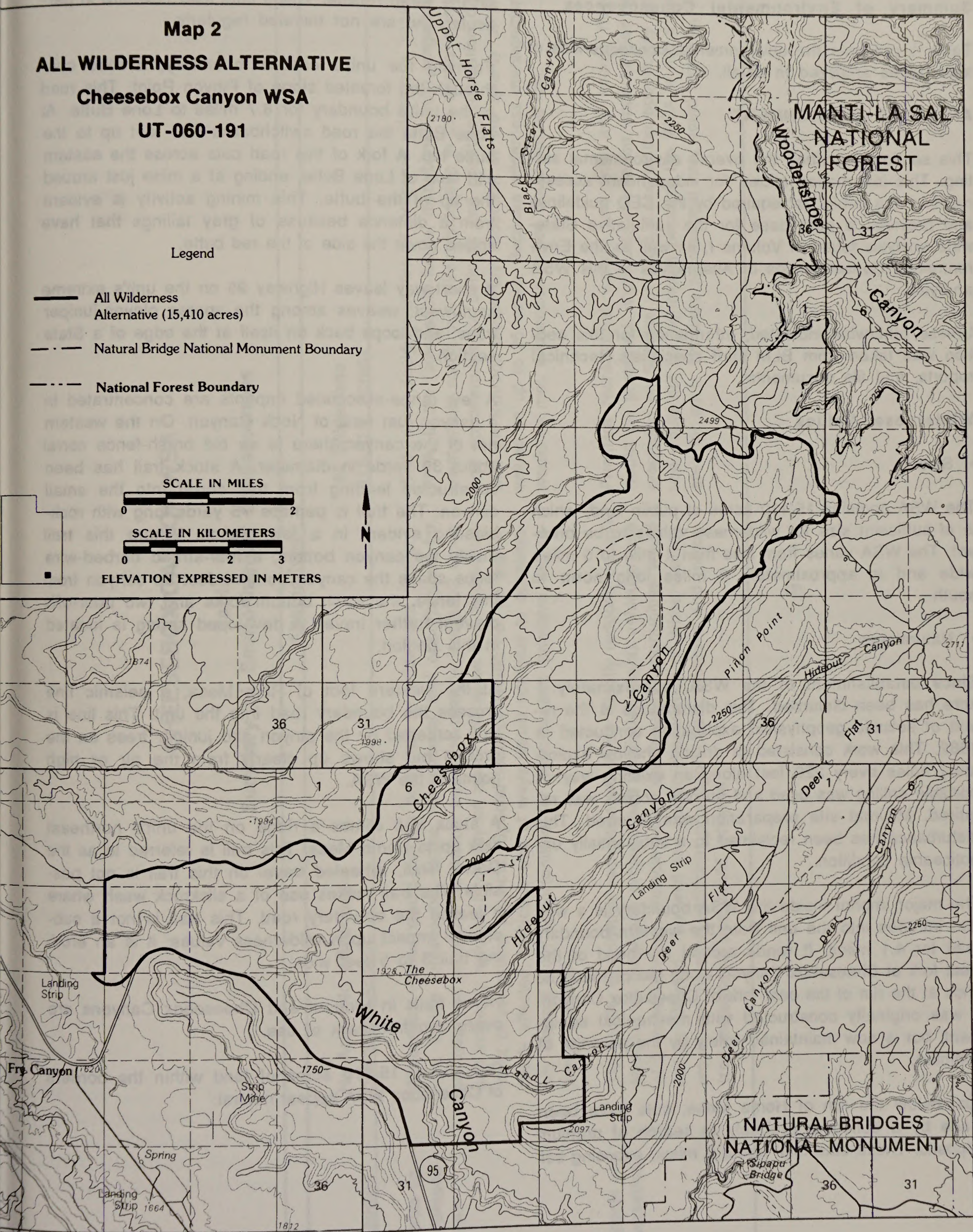
**Map 2**  
**ALL WILDERNESS ALTERNATIVE**  
**Cheesebox Canyon WSA**  
**UT-060-191**

**Legend**

-  All Wilderness Alternative (15,410 acres)
-  Natural Bridge National Monument Boundary
-  National Forest Boundary



ELEVATION EXPRESSED IN METERS



T. 35 S.

T. 36 S.

R. 16 E.

R. 17 E.

# CHEESEBOX CANYON WSA

## Summary of Environmental Consequences

Table 1 presents the environmental consequences of alternatives analyzed in detail.

## AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

### Wilderness Values

- Size

The WSA contains 15,410 acres of public land, which is of sufficient size for wilderness values to be present. The WSA varies from less than 1 mile to 5 miles wide and is approximately 8 miles long north to south.

- Naturalness

Since establishment of the WSA, approximately 1 acre has been disturbed. This disturbance is the result of seismic geophysical exploration conducted in 1982. This work consisted of drilling shallow exploratory holes every 220 feet along an existing way. A portable drilling was used and no new access was required. Minimal site preparation was required. This disturbance has been reclaimed to a substantially unnoticeable condition.

The major imprint inside the WSA boundary is a way that intrudes into the unit from the western boundary road for 4.1 miles. It winds around the head of the west fork of Cheesebox Canyon along the plateau and ends at the rim of the east fork of Cheesebox Canyon. It was originally constructed with mechanical equipment, but is now maintained solely by the passage of vehicles.

Just below the rim of Home Mesa, cuts have been made by a bulldozer probably in search of uranium deposits. These cuts total about 2 miles, exposing soil

on the steep hillside. These cuts lead nowhere in particular and are not traveled regularly.

Forming the unit's eastern boundary, a road cuts through the forested slope of Pinyon Point. This road is the unit's boundary for 6.7 miles to Lone Butte. At Lone Butte the road switchbacks 600 feet up to the butte top. A fork of this road cuts across the eastern cliff face of Lone Butte, ending at a mine just around the tip of the butte. This mining activity is evident from a distance because of gray tailings that have spilled down the side of the red butte.

A short way leaves Highway 95 on the unit's extreme southwest, weaves among the sparse pinyon-juniper trees, and loops back on itself at the edge of a State section.

A few range-associated imprints are concentrated in a canyon just east of Nook Canyon. On the western rim of the canyon there is an old brush-fence corral about 30 yards in diameter. A stock trail has been constructed leading from this corral into the small canyon. The trail is perhaps 75 yards long with rock-blasting evident in a few places. Where this trail meets the canyon bottom, a four-strand barbed-wire fence spans the canyon bottom. Just up canyon from this fence, the wash bottom forks and two pour-offs prevent further travel. A developed spring is located in this portion.

At the western foot of Ram Mesa, a seismic line crosses the boundary road into the unit. This line is well screened by the pinyon and juniper trees on the ground but shows up clearly from the air or high points of the WSA.

A stock trail climbs a ridge on the unit's northeast side up to Home Mesa. This trail is referred to as the Gravel Trail. Wheeled travel on this trail is not possible. The trail makes use of a slickrock wash where it leaves the boundary road. This trail is not a substantial impact upon wilderness values; it is an eroding trail 3 to 5 feet wide.

Horse trails in Hideout and Cheesebox Canyons are overgrown from lack of use.

Overall, all 15,410 acres of land within the borders of Cheesebox WSA appear natural.

# CHEESEBOX CANYON WSA

Table 1  
Summary of Environmental Consequences

Alternatives	
Resources	All Wilderness (15,410 Acres)
No Action/No Wilderness (Proposed Action)	Wilderness designation would preserve wilderness values, in the WSA. In the foreseeable future, disturbance from rangeland development would result in a direct reduction in the quality of naturalness and opportunities for solitude and primitive recreation on 1 acre, and an indirect temporary reduction in the quality of wilderness values on up to 25 acres. Because wilderness management criteria would be met, wilderness values would not be lost.
Impacts on Wilderness Values	Wilderness values would not be protected by wilderness designation. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 2 acres and indirectly reduced in quality on about 154 acres due to development of rangeland projects. Special features would not be significantly affected. Vehicular use of ways would continue to occasionally detract from opportunities for solitude and primitive recreation in the WSA.
Impacts on Recreation	Primitive recreational values and wild and scenic river values would be protected. Vehicular recreation opportunities would be precluded on 5 miles of ways. Loss of the opportunity for vehicle use would not be significant because the WSA is not a destination area for such. Primitive recreational use would increase.
	The quality of primitive recreation would be slightly reduced by construction of rangeland projects and continued (light) vehicular use of 5 miles of ways. Vehicle-based recreational opportunities would not be affected. The wild and scenic river values of White Canyon would not receive additional protection. Both primitive and motorized recreational use would increase.

# CHEESEBOX CANYON WSA

- Solitude

About 24 miles of deep, narrow, and tightly meandering canyons provide opportunities for solitude.

Cheesebox Canyon cuts into relatively flat pinyon-juniper covered terrain that is enclosed by highlands rising 550 to 1,000 feet above this intermediate plateau. The eastern and western boundary roads run along the bases of these higher mesas and comprise substantially noticeable cuts through the forested mesa land and intrude upon a visitor's feeling of isolation. The uranium mines and exploration cuts on the mesa cliff slopes of Home Mesa, Pinyon Point, Lone Butte, Fry Mesa (across Highway 95), and Found Mesa also comprise highly visible imprints of human activity outside, yet near, the unit.

Major commercial airline traffic over the WSA, although high and not always heard, is fairly constant daily. Its impact on wilderness solitude is negligible, although contrails sometimes streak the sky.

The cuts and fills of Highway 95 can be seen from as far as the northern end of the unit. Although traffic is not heavy on this highway, sights and sounds of highway traffic are an influence into the WSA for a substantial distance. Headlights at night are especially noticeable in the unit. Due to the above factors, a substantial portion of the WSA (6,100 acres) does not offer outstanding opportunities for solitude. Within the canyons of this unit, however, these outside influences are largely blocked. Even part of White Canyon, less than 1 mile from the highway, is sufficiently deep and narrow to block outside sights and sounds.

Overall, in over 60 percent of the WSA (9,310 acres) the opportunities for solitude meet the outstanding criteria.

- Primitive and Unconfined Recreation

The canyons and buttes rising above the plateau offer varied challenges to the primitive recreationist. Traversing the canyons is sometimes very challenging due to pour-offs or pools of water, and getting out the sides is often very difficult. Hiking and camping opportunities include backpacking, dayhiking, rock scrambling, swimming in the plunge pools, hunting, and exploring and discovering side canyons, seeps, pools, sculptured sandstone formations, and ancient Indian ruins. Nature study and sightseeing pursuits are also available.

The WSA has an irregular boundary, becoming less than 1 mile wide in places. Additionally, in the southern half of the WSA, only the area within the canyons offers outstanding solitude, further confining the area's primitive recreation opportunities. Approximately 6,100 acres do not meet the outstanding recreation criteria.

The outstanding opportunities within the canyons and northern portion of the WSA (9,310 acres) allow this WSA to meet the outstanding primitive and unconfined recreation criteria.

- Special Features

Cheesebox Canyon WSA contains special features including archaeological sites, early cowboy use, wildlife habitat, and scenic values.

There are 12 recorded archaeological sites within the unit. Late 19th and early 20th century cowboys roamed the canyons of southeast Utah herding cattle. Hite was a popular Colorado River crossing in those days and the rim of White Canyon was used as a route to points further east. Outlaws also used these canyons, disappearing in Hideout Canyon occasionally.

The WSA is within the White Canyon-Red Canyon Desert Bighorn Sheep Habitat Management Area. Desert bighorn sheep utilize the upper ends of Cheesebox Canyon, as well as Found Mesa and Fry Point. Each year a limited number of desert bighorn sheep permits are issued to hunters on a once-in-a-lifetime basis. The sheep are a prized big game trophy.

Natural Bridges National Monument is less than 2 miles to the east and includes part of White Canyon. Hikers from the monument sometimes extend their trips into the WSA portion of White Canyon.

The entire WSA is rated Class A for scenic quality. In the canyons is sculptured rock with swirling patterns, carved pools, and sheer rock walls. Views from the WSA include the cliffs of the highlands to the east, the Wingate Buttes, Navajo Mountain, the Henry Mountains, and the valley of White Canyon, all features outside the unit.

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. There are two animal species (peregrine falcon and bald eagle) listed as endangered that may make occasional use of the WSA. There are seven animal species and four plant species



# CHEESEBOX CANYON WSA

that are considered sensitive that may occur in the WSA. The WSA has populations of cougar and desert bighorn sheep which are wildlife species associated with wilderness. Refer to the Vegetation and Wildlife Including Special Status Species sections for additional information. The WSA contains special geologic features such as arches and natural bridges. Although there is no perennial stream present, White Canyon is a Nationwide Rivers Inventory Segment for possible Wild and Scenic River designation. Refer to the Recreation Section.

## • Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV types of saltbush-greasewood and blackbrush. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. The Ecoregion and PNV types represented by this WSA are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

This WSA is not within a 5-hour drive from any standard metropolitan statistical area.

## Air Quality

The Utah Division of Health has a network of air monitoring stations throughout the State. The closest monitoring station to the WSA is about 35 miles west at Bullfrog Marina on Lake Powell, where only particulate and sulfur dioxide concentrations are measured.

Only the short-term (24-hour) particulate standard has been exceeded at the Bullfrog station. These 24-hour violations were probably associated with conditions of high winds and blowing dust (resulting from the sparse vegetation and large areas of exposed sand). Sulfur dioxide concentrations measured at Bullfrog Marina are low and well under the applicable ambient standards.

Generally the air quality is very good over the WSA, allowing for long vistas where topography and vegetation permit. Visual range in the general vicinity averages between 100 to 132 miles during the summer (Aerocomp, Inc., 1984).

The WSA is in a PSD Class II area under the provisions of the Clean Air Act as amended. The classification allows for moderate increases in air pollution levels. The nearest PSD Class I area is Canyonlands National Park approximately miles to the north.

## Geology and Topography

The WSA is within the Canyonlands Section of the Colorado Plateau Physiographic Province. This section is characterized by bare rock surfaces, plateaus, and steep-walled canyons. It is the section that is most rugged and least accessible. The canyons are precipitous. Escarpments separate dry plateaus, and erosion has produced picturesque buttes, arches, and natural bridges.

Surface geology of the WSA consists almost exclusively of flat-lying beds of the Cedar Mesa Sandstone Member of the Cutler Formation of Permian age. A few small islands of the overlying Moenkopi (and, in one place, the Chinle) Formation of Triassic age are preserved toward the northern end of the unit.

The Cedar Mesa is typically a white, fine-grained, calcareous, and cross-bedded sandstone. It represents a near-shore shallow water marine deposit that has been transported into the area by long-shore currents from the northwest. The Cedar Mesa Sandstone interfingers eastward with the Cutler Formation.

The Moenkopi Formation represents a variety of depositional environments, including floodplain, tidal flats, alluvial, deltaic, and shallow marine. A continental environment predominated on the east side of the Paradox Basin area, and marine environments predominated on the west side during deposition of the Moenkopi.

The WSA is west of the axis of the Monument Upwarp, a broad north-trending structural division of the Colorado Plateau. The Monument Upwarp is located in the south-central part of the Colorado Plateau. The upwarp is 100 miles long, 50 miles wide, and trends northeast.

The WSA, which ranges in elevation from 5,200 to 8,200 feet, consists of a mesa cut by four meandering steep-walled canyons. Three canyons (Cheesebox, Hideout, and K&L) drain southwesterly to White Canyon, which drains southwest. The mesa itself dips gently to the southwest and is almost featureless except for a number of small buttes that rise several hundred feet. The slickrock sandstone canyons are extremely steep and rugged, plunging between 200 and 400 feet below the mesa.

# CHEESEBOX CANYON WSA

## Soils

The majority of this WSA consists of shallow, well-drained Rizno soils and exposures of rock outcrop. Deep and very deep, very stony, and bouldery soils occur on steep fans surrounding Cheesebox Butte and other buttes, below the escarpment of the Mesa below Woodenshoe Canyon and in White and Cheesebox Canyons. Some deep and very deep sandy and loamy soils occur on the sloping pediments above Cheesebox and White Canyons where eolian materials have accumulated (refer to Table 2).

The shallow, well-drained Rizno soils have textures ranging from fine sandy to sandy clay loam. They are intermixed with rock outcrop and are moderately susceptible to water erosion. Near White and Cheesebox Canyons, the proportion of rock outcrop increases dramatically. Deep and very deep Yarts and Mespun soils occur in basins and on the leeward side of ridges where eolian material has accumulated. These soils are subject to slight or moderate water erosion, but are subject to severe wind erosion when disturbed.

The deep and very deep soils on steep fans in canyons and below escarpments are generally very stony and bouldery. In places, they are sandy where sand drifts have accumulated. These soils are subject to moderate or severe water erosion. The soils on the floors of White and Cheesebox Canyons are highly variable in soil depth, texture, and rock fragment content.

Table 2  
Soil Characteristics and Land Types

Soil Characteristics and Land Type	Percent of the Area	Acres	Estimated Rate of Erosion (cubic yards/acre/year)	
			Present Condition	Bare Soil Surface
Rock Outcrop	20	3,080	0	0
Shallow loamy soils on sloping structural benches	20	3,080	0	5
Deep loamy soils on dissected sloping structural benches	40	6,170	1	1
Deep stony soils on steep canyon sides	20	3,080	1	10
Totals	100	15,410		

Source: Hansen, 1985.

Erosion conditions are shown in Table 3. Under present conditions, average soil losses from erosion average an estimated 0.8 tons per acre per year.

Soils in the WSA are slightly saline with an average salt production of 44 lb per acre per year.

Approximately 70 to 80 percent of the WSA is unsuitable for seeding because of rock outcrop, shallow soils or steep slopes. Seeding potential is fair to good on 20 to 30 percent of the WSA where there are deeper soils on gentle slopes.

Table 3  
Erosion Condition

Erosion Class	Erosion Rate cubic yards/acre/year	Annual Soil Loss Under Present Conditions			Annual Soil Loss if Disturbed		
		Percent of Area	Acres	Cubic Yards	Percent of Area	Acres	Cubic Yards
Very High	20	-	-	-	-	-	-
High	10	-	-	-	20	3,082	3,082
Medium	5	-	-	-	30	9,246	46,230
Low	1	80	12,328	12,328	-	-	-
Very Low	0.1	-	-	-	-	-	-
None	0	20	3,082	-	20	3,082	-
Totals		100	15,410	12,328 <sup>a</sup>	100	15,410	49,312 <sup>a</sup>

Source: Hansen, 1985.

Average annual soil loss in cubic yards per acre: 0.8 under present conditions; 3.2 if disturbed.

# CHEESEBOX CANYON WSA

## Vegetation Including Special Status Species

The existing vegetation types in the WSA include desert shrub, pinyon-juniper woodland, and a seeding as shown in Table 4. The desert shrub type includes blackbrush and fourwing saltbush with an understory of curly grass, Indian ricegrass, and other grass species. Small stands of Douglas fir and Ponderosa pine which occur on the north-facing slopes at the heads of the forks of Cheesebox drainages and Pinyon Point have not been included in the totals. The pinyon-juniper woodland is dominated by mature trees about 10 to 15 feet in height. Understory is sparse. The barren slickrock areas are basically bare rock or soil and have drainages with pinyon pine, juniper, and cliffrose. A 90-acre area that was chained and seeded to crested wheatgrass in the early 1950s now consists of scattered pinyon-juniper woodland and serviceberry-sagebrush vegetation. There is no riparian vegetation in the WSA.

Table 4  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Desert shrub	950	06
Grasses (seeding)	90	01
Pinyon-juniper woodland	6,300	41
Barren (slickrock)	<u>8,070</u>	<u>52</u>
Total	15,410	100

Source: USDI, BLM, 1985.

No threatened or endangered plant species are known to occur in the WSA. However, one Category 2 candidate species, Erigeron kachinensis, and three sensitive species, Astragalus cottomii, Astragalus monumentalis, and Zigadenus vaginatus, may occur in the WSA (see Appendix 4 in Volume I).

The Cheesebox Canyon WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNV types in the WSA are shown on Table 5.

## Water Resources

The Cheesebox Canyon WSA is a subbasin of the White Canyon basin which drains into Lake Powell in the Upper Colorado River hydrologic subregion. Three canyons (Cheesebox, Hideout, and K&L) are ephemeral drainages. There is very little water within this unit. One developed spring is utilized by livestock in the west side of the WSA. During the snowmelt or thun-

derstorm seasons, water is held in numerous slick-rock pools. Wildlife utilize these temporary pools of water.

Table 5  
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Blackbrush	9,250	60
Saltbush-greasewood	<u>6,160</u>	<u>40</u>
Total	15,410	100

Source: USDI, USGS, 1978.

The WSA is within Water Right Adjudication Area 99. The water is not fully appropriated (UDNRE, DWR, 1988). There is very little water development in this area because of its remoteness. Isolated springs may be open to appropriations not to exceed 0.015 cfs. Temporary and fixed time applications may exceed this limit.

The water quality standards for tributaries to Lake Powell are: Class 2B (protected for boating, water skiing, and similar uses); Class 3B (protected for warm water species of game fish and other warm water aquatic life); and Class 4 (protected for agricultural uses, including irrigation of crops and stockwatering). Water quality of the springs is suitable for livestock use.

## Mineral and Energy Resources

The energy and mineral rating summary for the Cheesebox Canyon WSA is given in Table 6. Appendix 5 in Volume I describes the mineral and energy resource rating system.

Table 6  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Uranium/Vandium	f1	c4	None
Copper	f1	c4	None
Manganese	f1	c4	None

Source: SAI, 1982; USDI, BLM, 1987a.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

## CHEESEBOX CANYON WSA

There are no strategic or critical minerals known to occur within the WSA (USDoD, 1988).

- Leasable Minerals

There are no known deposits of any leasable minerals in the WSA. Currently, there are no active drilling, mining, or exploration activities for leasable minerals.

- Oil and Gas

Only a few exploratory wells have been drilled in the vicinity of the WSA. Most of the wells were drilled in the late 1950s and early 1960s following the large discoveries at Aneth and Lisbon Valley outside the WSA. Although all wells that have been drilled in this area are now abandoned, oil staining has been reported from Mississippian and Pennsylvanian rocks north of the WSA, and oil shows in Devonian, Mississippian, and Pennsylvanian rocks have been reported from wells south of the unit.

Despite the favorable stratigraphy in the vicinity of the WSA, broad uplifts beginning in late Cretaceous time have significantly lowered the oil and gas potential of the Paradox Formation in this area. As a result of this uplift, erosion has stripped away overlying Mesozoic sedimentary rocks across most of the Monument Upwarp (remnants of these Mesozoic rocks are preserved in the WSA). Furthermore, much of the Pennsylvanian section is exposed to the north in Cataract Canyon and to the south along the San Juan River. It is, therefore, very unlikely that reservoir pressure exists in Pennsylvanian rocks throughout much of this area. If oil and gas existed in the Paradox Formation and overlying units in this WSA, there is a good chance that it has drained away.

On the basis of the discussion above, Pennsylvanian and Permian rocks in the WSA probably do not contain large reserves of oil and gas. However, small accumulations that were effectively sealed from drainage into the San Juan River may still exist in Pennsylvanian rocks underlying the WSA.

On this basis, the WSA is assigned an oil and gas favorability of f2. The size of the hydrocarbon accumulation in such an environment is anticipated to be less than 10 million barrels of oil or less than 60 billion cubic feet of gas. Based on the available information, the certainty of occurrence

for oil and gas is rated very low (c1) (SAI, 1982).

Under the current land use plan, 8,870 acres are in Category 1 (standard stipulations); 6,040 acres of the WSA are in Category 2 (special stipulations); and 500 acres are in Category 3 (no surface occupancy). There are presently no oil and gas leases in the WSA.

- Locatable Minerals

There are no known deposits of locatable minerals in the WSA. There are presently 98 mining claims, covering 1,960 acres.

The WSA is within the White Canyon uranium mining district. The uranium deposits are concentrated in the Shinarump Member of the Chinle Formation, and they generally contain vanadium and copper as associated minerals. White Canyon is one of the most productive districts in Utah. By mid-1965, a few thousand metric tons of uranium oxide had been extracted from the area, primarily from the Happy Jack Mine (located about 10 miles west of the WSA).

Despite being surrounded by favorable strata of the Chinle Formation, the WSA has limited potential for uranium deposits. Most of the Chinle, except in one small knoll (totalling about 10 acres), has been eroded away. The boundaries of the WSA extend up to the edge of the Chinle in many areas. Of the formations that are still in the WSA, only the Cutler Formation has been productive for uranium elsewhere in the region (at Lisbon Valley). The Cutler, however, contains no known uranium anomalies in the area of the WSA. On this basis, the WSA is assigned an uranium/vanadium favorability of f1 (an unfavorable environment for uranium deposits). The certainty that uranium deposits do not occur in the WSA is high (c4). This rating would also apply to any deposits of copper which might be associated with uranium (SAI, 1982).

Manganese deposits in southeastern Utah occur in the Morrison and Summerville Formations (Jurassic). As these are eroded from the WSA, the favorability for manganese is rated f1, with a high (c4) degree of certainty (SAI, 1982).

- Salable Minerals

The salable minerals within the WSA have little or no commercial potential, based on the poor quality and the remote nature of the material. These deposits are

## CHEESEBOX CANYON WSA

not unique or economically significant due to the presence of ample similar materials outside the WSA.

### **Wildlife Including Special Status Species**

The WSA provides habitat for animals commonly found in rocky pinyon-juniper woodland areas of southeastern Utah.

A few mule deer inhabit the northeast end of the WSA yearlong. Most of the use is during the winter months. The WSA is in Deer Herd Unit 31B, which was closed to hunting in the early 1980s due to low herd productivity. It is now part of a limited entry buck-only area for which only 440 permits were issued in 1988.

The WSA is within the White Canyon-Red Canyon Desert Bighorn Habitat Management Area. Desert bighorn sheep utilize the upper ends of Cheesebox Canyon. The bighorn sheep use this area along with Found Mesa and Fry Point. The 15,410 acres in the WSA are considered crucial yearlong bighorn sheep habitat.

Cougar, bobcat, and spotted skunk inhabit these canyons but are rarely observed. Coyote, cottontail rabbit, whitetail antelope, squirrel, chipmunk, deer mice, whitethroat woodrat, and assorted bats (mostly western pipistrel) are found throughout the area.

There is no waterfowl habitat in the WSA. No raptor nesting sites have been identified. Mourning dove probably nest in the area. Chukar, a game bird introduced from Asia, may utilize portions of the WSA. Hairy woodpecker, violet-green swallow, pinyon jay, titmice, rock wren, red-tailed hawk, and ravens utilize the pinyon-juniper woodland area.

In the WSA the most common reptile and amphibian species are the side-blotched lizard, plateau lizard, and Hopi rattlesnake.

Bald eagles, an endangered species, are winter transients in the area; however, no roosting sites have been identified. The FWS has also determined that the peregrine falcon, another endangered species, may occasionally use this WSA. The golden eagle, a BLM sensitive species, is found in the WSA. Other sensitive species that could occur in the WSA are six Category 2 candidate species. These are the Great Basin Silverspot butterfly, ferruginous hawk, southern spotted owl, Western yellow-billed cuckoo, long-

billed curlew, and white-faced ibis (see Appendix 4 in Volume I).

There are no existing wildlife management facilities or proposed vegetation treatments for wildlife enhancement in the WSA.

### **Forest Resources**

A pinyon-juniper woodland occupies approximately 6,300 acres in the WSA. These are low quality sites (20 cubic feet usable wood per acre) and are considered nonproductive forest land. There are less than 980 cords of fuelwood in the WSA. No areas in the WSA have been designated as Christmas tree cutting areas. It is unlikely that over 10 individuals have gathered firewood from the WSA. It is also unlikely that any fenceposts have been cut in this WSA.

Occasional recreationists may have gathered pine nuts in the WSA, but no commercial gathering permits have been issued. Demand for forest products in the WSA is not expected to significantly increase in the foreseeable future.

### **Livestock and Wild Horses/Burros**

The WSA is within and encompasses about 6 percent of the White Canyon Grazing Allotment. The entire allotment is operated by one grazing permittee with a year-round grazing preference for 450 cattle and 12 horses for a total of 5,544 AUMs. The small strip of seeding is grazed in the spring (June 1 to June 30) and fall (November 1 to December 1). The remainder of the area is winter grazing (December 1 to April 10). Table 7 summarizes livestock grazing use data.

Estimated forage production in the WSA is approximately 157 AUMs. Estimated cattle use in the WSA is 31 cows for 5 months. Existing developments in the WSA include a 90-acre seeding, a developed spring, a 1-mile-long gravel trail, horse trails in Hideout and Cheesebox Canyons, a corral, and a 0.5 mile fence. Proposed rangeland improvements include a reservoir and two short fences. No land treatments are proposed. The existing vehicular way is not extensively used to manage livestock.

Predator control was not conducted during the 1986 to 1987 period in the grazing allotments that comprise the Cheesebox Canyon WSA (USDA, APHIS, 1988). There are no wild horses or burros in this WSA.

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Table 7  
Livestock Grazing Use Data

Allotments	Total Acres	Acres in ISA*	Total AUMs	Number of AUMs in ISA	Number and Kind of Livestock	Season of Use	Number of Permittees
White Canyon	248,757	15,410	5,544	157	450 Cattle 12 Horses	11/01-05/30	1

Sources: BLM File Data.

## Visual Resources

The landscape character of the WSA consists primarily of four steep-walled canyons: White, Cheesebox, Hideout, and K&L. The canyon bottoms are very narrow and undulating. Smooth-textured walls have truncated ledges with some broken rock. Dark-brown desert varnish stains create interesting color contrasts with the predominantly gray sandstone.

The tablelands between the canyons are composed of flat to low rolling hills. Colors are pinks, reds, light browns, and grays. Vegetation is open pinyon-juniper stands with some desert shrubs. Textures are coarse to fine.

The existing cultural modifications present in the WSA (refer to Wilderness Values, Naturalness section) create low contrast with the characteristic landscape.

The entire WSA (15,410 acres) is Class A scenery. Class A scenery combines the most outstanding characteristics of the physiographic region. The WSA contains both low and high sensitivity areas. The WSA contains foreground/middleground, background, and seldom seen distance zones. The WSA is a VRM Class II area. Appendix 7 in Volume I describes BLM's VRM rating system.

## Cultural Resources

No general archaeological inventory work has been conducted in the WSA. However, a small number of cultural resource clearances, primarily related to seismic activity, have been performed here. Where work has been completed, sites have been found.

Because of difficulty in accessing the area, this WSA potentially contains numerous pristine cultural resources. BLM records show twelve recorded sites representing a predominance of Pueblo cultural manifestations occur in the WSA (USDI, BLM, 1988). Most

of these sites are cliff dwellings that include habitation and/or storage structures (granaries).

There are no existing National Register sites and/or nominations in this WSA. However, based on estimates from similar settings in the area, it could be expected that 600 sites would be located in the WSA of which up to 400 could be National Register eligible.

Historic activity in the WSA primarily relates to use of the range for cattle and sheep grazing. Physical evidence remaining from this land use consists of scatters of cans, bottles, and other debris situated on the rim of White Canyon where stock was trailed to points east.

## Recreation

Limited access and the rugged topography of this WSA restrict the recreational use to hardy individuals. Hiking and backpacking use is estimated at less than 670 user days per year. Occasional hiking use occurs in White Canyon. Hikers originate at Natural Bridges National Monument approximately 2.5 miles upstream from the southeastern boundary of the WSA. White Canyon extends approximately 6 miles through the WSA.

White Canyon is a Nationwide Rivers Inventory Segment with potential for study and possible addition to the National Wild and Scenic River System (USDI, NPS, 1982). The inventory found that this segment is an excellent example of intermittent stream in this region and passes through Natural Bridges National Monument. Since it is an inventory segment, BLM must avoid or mitigate any adverse impacts to the canyon and intermittent stream and consult with the NPS before taking any action that could foreclose wild, scenic, or recreational river status (CEQ, 1980).

Desert bighorn sheep are found in the unit, which is a part of the South San Juan Bighorn Sheep Hunting Unit. Mule deer hunting has occurred in the past,

# CHEESEBOX CANYON WSA

generally adjacent to roads that border the west and north portions of the WSA. Cheesebox is a portion of the UDWR Deer Hunting Unit 31-B, which was closed to deer hunting during the early 1980s. It is now part of a limited entry buck-only area for which only 440 permits were issued in 1988. Estimated hunting use accounts for less than 100 of the user days per year.

Vehicular use of the unit is associated with access for other activities rather than solely for ORV purposes and occurs on 5 miles of existing ways. Vehicular activities do not occur in the canyons due to rugged terrain.

Overall, it is estimated that total current recreation use in the WSA does not exceed 1,000 visitor days per year. Approximately 33 percent of the use (330 visitor days annually) involves vehicular access. About 200 of the total visitor days are associated with commercial use.

## Land Use Plans

The WSA is in the BLM San Juan Resource Area and is managed according to the South San Juan MFP (USDI, BLM, 1971). The San Juan RMP will replace the MFP. Neither the MFP or RMP address wilderness designation. However, wilderness designation is part of the multiple-use concept. The BLM land use plan is linked to the Statewide Wilderness EIS through analysis of the present plan as the No Action/No Wilderness Alternative.

The WSA is BLM-administered public land. There are no State-of-Utah owned lands in the WSA. There are no private lands in the WSA. No withdrawals are known to exist in this WSA. There are existing mining claims (refer to the Mineral and Energy Resources section for a more detailed discussion). There are no other permits, leases, or licenses for land uses in the WSA.

Legal access to the WSA is gained by U.S. Highway 191 and State Highway U-95, the southwest boundary of the WSA, and from county roads that form the northwest and northeast boundaries. Only one vehicular way is actually within the WSA.

There are no lands contiguous to the WSA being considered for wilderness. However, lands within 0.25 miles of the northeast boundary of the WSA comprise the National Forest Dark Canyon Wilderness Area.

The San Juan County Master Plan emphasizes multiple use of public lands and zones the WSA as open range and forest land (Planning and Research Associates, 1967). The policy of the San Juan County Commission is to oppose any legislative or administrative designations of wilderness in the County (San Juan County Commission, 1980). The commission has also endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah.

## Socioeconomics

### • Demographics

The WSA is in western San Juan County. The nearest community is Blanding, approximately 60 road miles away.

Between 1970 and 1980, the population of San Juan County was fairly static, and grew by less than a 2 percent annual growth rate. The 1985 population was 12,500. Since 1983 the county's population has declined by approximately 500 (USDI, BLM, 1987b). The two largest communities in the county are Blanding (1980 population 3,118) and Monticello (1980 population 1,929). Approximately 40 percent of the county's population resides in these communities. Table 8 presents baseline and projected population data for San Juan County. Population projections for the county indicate that the number of people living in San Juan County in the year 2010 will be about 15,000 for about a 21-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 8  
Baseline and Projected Population and Employment Growth  
San Juan County

	1980	1990	2000	2010
Population	12,400	12,900	12,900	15,000
Employment	3,980	3,800	4,300	5,100

Source: Utah Office of Planning and Budget, 1987.

The major racial groups are caucasians (52.4 percent) and American Indians (45.7 percent). About 4 percent of the Navajo reservation's population live in San Juan County (USDI, BLM, 1987b).

San Juan County is the largest county in Utah, comprising 5,045,760 acres or about 9.6 percent of the State's acreage. Approximately 86 percent of the county is administered by the Federal Government: 41 percent by the BLM, 24 percent by the Bureau of

## CHEESEBOX CANYON WSA

Indian Affairs (BIA) in conjunction with the Navajo tribe, and 20.9 percent by other Federal agencies. About 6 percent is in State ownership and about 8.1 percent is privately owned (University of Utah, BEBR, 1982; and USDI, BLM, 1987b).

### • Employment

Table 8 shows the baseline and projected total employment for the county to the year 2010. The government sector (Federal, State, and local) is the most important in terms of employment in the San Juan County economy. In 1987 mining made up about 16.5 percent of the total employment in the county. Tourism also generates a significant number of jobs (USDI, BLM, 1987b).

San Juan County is part of the Southeast MCD. Table 9 shows the baseline (1980) and projected employment by source for MCD to the year 2010. In 1980 the leading employment sectors for the MCD were mining (28 percent), government (18 percent), and trade (15 percent). It is projected that by the year 2010 employment in the MCD will increase by about 27 percent. Services will increase to 18 percent, trade to 17 percent, and government to 15 percent of the total. While the mining, agriculture, and construction sectors will decline (Utah Office of Planning and Budget, 1987).

Table 9  
Southeast Multi-County District  
Employment<sup>a</sup>

	1980	1990	2000	2010
Agriculture	1,203	1,100	1,100	1,100
Mining	6,368	3,500	4,500	5,700
Construction	1,360	700	900	1,100
Manufacturing	551	600	700	800
Transportation, Utilities	1,563	1,800	2,000	2,200
Trade	3,289	3,600	4,000	4,800
Finance, Insurance, Real Estate	424	400	400	500
Services	2,067	3,200	4,000	5,300
Government	3,994	4,100	3,800	4,400
Nonfarm Proprietors	<u>1,715</u>	<u>2,000</u>	<u>2,200</u>	<u>2,800</u>
Totals	22,534	21,000	23,600	28,700

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Carbon, Emery, Grand, and San Juan Counties.

### • Sales and Revenues

Past activities in the WSA that could be of some local economic consequence include mining claim assessment, livestock production, hunting, and dispersed nonmotorized recreation.

The WSA has 98 mining claims. Regulations require a \$100 per claim annual expenditure for labor and improvements to keep the claim current. Some of these expenditures are made within the local economy.

One livestock operator has grazing privileges in the WSA. Based on the consumption of 157 AUMs of forage by livestock, it is estimated that the WSA accounts for \$3,100 of livestock sales, including \$1,785 of ranchers' returns to labor and investment.

Historical hunting pressure in the WSA has been low, and its local economic importance is insignificant. Other recreation use is low and related expenditures locally insignificant. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that the Statewide average local expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Cheesebox Canyon WSA is estimated to be about 1,000 visitor days per year.

Currently, the WSA generates revenues to the Federal Treasury from livestock grazing and commercial recreation. Since all oil and gas leases have been phased out of the WSA, no Federal revenues are mineral-generated. Based on 157 AUMs of forage consumed by livestock in the WSA, with the current annual grazing fee of approximately \$1.54 per AUM, the WSA annually accounts for approximately \$242 of grazing fee revenues to the Treasury. Half of this is allocated back to the local BLM District for construction of range improvement projects. About \$200 of Federal revenues are collected annually from commercial recreation use. Sales and revenues from the WSA are summarized on Table 10.

Table 10  
Local Sales and Federal Revenues

Source	Annual Local Sales <sup>a</sup>	Annual Federal Revenues
Mining Claim Assessment	\$ 9,800	None
Livestock Grazing	\$ 3,140	\$242
Recreational Use	<u>\$ 4,100</u>	<u>\$200</u>
Total	\$1,724	\$442

Sources: USDI, BLM, 1974; Appendix 9 in Volume I.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.



# CHEESEBOX CANYON WSA

## ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis assumptions and guidelines for the two alternatives are described in the Introduction to Volume V. The following analysis is based on implementation of the Action Scenarios presented in the Description of the Alternatives section.

### No Action/No Wilderness Alternative (Proposed Action)

#### • Impacts on Wilderness Values

Because the WSA would not be designated wilderness, the identified wilderness values would not receive the degree of protection afforded by application of the Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities (i.e., VRM Class II management on all 15,410 acres, management under oil and gas leasing Category 3 (no surface occupancy) on 300 acres, and ORV closure within White Canyon).

In the foreseeable future, disturbance of approximately 2 acres from development of rangeland projects would result in a loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas at least until reclamation is complete. Special features, including archeological sites, historical sites, scenic values, endangered and sensitive species, wildlife species associated with wilderness, and geologic features, would not be significantly affected because the direct disturbance would be minor (involving 0.01 percent of the WSA) and the disturbance would generally not be located where the special features are located. Appropriate measures would be taken to protect endangered and sensitive species and cultural values prior to any surface-disturbing activity. Class A scenery would be reduced in quality in the disturbed areas.

During the period of activity, the visual and audible disturbance from construction of rangeland developments would reduce the quality of opportunities for solitude and primitive recreation not only on directly disturbed areas but also indirectly on adjacent portions of the WSA. As much as 1 percent (154 acres) of the WSA could be so affected in the foreseeable future. The indirect affect would be temporary.

Because future vehicular use would generally be limited by terrain to 5 miles of existing vehicular

ways, no additional disturbance from ORV activity is anticipated in the future. The continued and increased use of existing ways would occasionally detract from opportunities for solitude and primitive recreation.

The 2 to 7 percent annual increase in visitor use that would occur would be expected to eventually reduce opportunities for solitude and primitive recreation because of the small size of the WSA, and the limited length of the narrow canyons. This is in spite of the fact that the use will be largely primitive in nature.

The loss of wilderness values that would occur over the long term from disturbance is not accurately known. Loss would occur as intrusions increase.

Conclusion: Wilderness values would not be protected by wilderness designation. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 2 acres and indirectly reduced in quality on up to 154 acres. Special features would not be significantly affected, although Class A scenery would be somewhat reduced in quality in disturbed areas.

#### • Impacts on Recreation

Vehicular-based recreation would continue with this alternative. Primitive recreational opportunities and quality would be diminished only temporarily where the proposed rangeland projects would be constructed, and would also be occasionally diminished in the vicinity of the 5 miles of way which could be used by motorized vehicles.

The wild and scenic values of White Canyon, which is a nationwide river inventory segment would not receive additional wilderness protection but no loss in values is anticipated.

The future increase in recreational use of the WSA is unknown. However, based on a review of several projections (UDNRE, ORA, 1980; UDNRE, DPR, 1985; Utah Office of Planning and Budget, 1984; Cordell and Hendee, 1982; Jungst, 1978; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 to 7 percent per year over the next 30 years. At this rate, overall annual recreational use is expected to increase from 1,000 current visitor days per year to between 1,885 and 8,715 visitor days at the end of 30 years. Primitive recreational use would constitute at least 67 percent of the estimated increase. Vehicular activities would increase but only the 5 miles of vehicular ways are

## CHEESEBOX CANYON WSA

suitable for use. Commercial outfitting would continue to be a factor in the area.

Conclusion: The quality of primitive recreation would be slightly reduced. Vehicle-based recreational opportunities would not be affected. The wild and scenic river values of White Canyon would not be affected. Both primitive and motorized recreational use would increase.

### All Wilderness Alternative (15,410 Acres)

#### • Impacts on Wilderness Values

Designation and management of all 15,410 acres as wilderness would preserve the wilderness values in the Cheesebox Canyon WSA. The potential for surface-disturbing activities would be eliminated through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness would be preserved on all 15,410 acres. Solitude and primitive, unconfined recreation would be preserved on approximately 9,310 acres that meet and 6,100 acres that do not meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA, including archaeological sites, historical values, endangered and sensitive species, wildlife species associated with wilderness, and Class A scenery, would also be preserved.

In the foreseeable future, direct disturbance of about 1 acre (0.007 percent of the WSA) is anticipated from development of rangeland projects. Rangeland projects would be designed to meet wilderness management criteria and upon completion would not be substantially noticeable in the area as a whole.

Visual and audible disturbance during the period of construction would indirectly and temporarily reduce the quality of opportunities for solitude and primitive recreation on up to 25 acres. The total direct and indirect reduction in wilderness values would involve much less than 1 percent of the WSA. Special features would not be significantly affected by the disturbance.

Vehicular use of existing ways would cease with ORV closure, improving opportunities for solitude and primitive recreation.

The 2 to 7 percent annual increase in primitive-type visitor use would eventually decrease opportunities

for solitude and primitive recreation because of the relatively small size of the WSA and limited length of the narrow canyons. A wilderness management plan would identify specific management actions to regulate the use so that outstanding opportunities for solitude and primitive and unconfined recreation would be preserved.

Conclusion: Wilderness designation would preserve the wilderness values of the WSA.

#### • Impacts on Recreation

Although primitive recreation use is currently low (approximately 1,000 visitor days per year), the WSA has high primitive recreational values. If designated, the opportunities for dayhiking and general sightseeing would be recognized, managed, and preserved. Conflicting vehicular activity would be eliminated.

As discussed for the No Action/No Wilderness Alternative, recreational use of the WSA is projected to increase about 2 to 7 percent per year over the next 30 years in relation to population increases and current trends of recreational use. Publicity of the WSA that would likely follow wilderness designation could lead to a temporary increase in primitive recreational use above the current rate. Management provided through a wilderness management plan would regulate destructive increases in future recreation use. Commercial outfitting would benefit slightly although opportunities for commercial enterprise are limited.

Wilderness designation would provide additional protection for 6 miles of White Canyon, a Wild and Scenic River Inventory segment (USDI, NPS, 1982).

The impact of precluding vehicular use on 5 miles of ways would not be significant. The WSA is not a destination area for vehicular use.

Conclusion: The quality of the primitive recreational opportunity would be preserved. Vehicular recreation opportunities would be precluded, but the loss is not significant regionally. The Wild and Scenic river values of White Canyon would receive additional protection.

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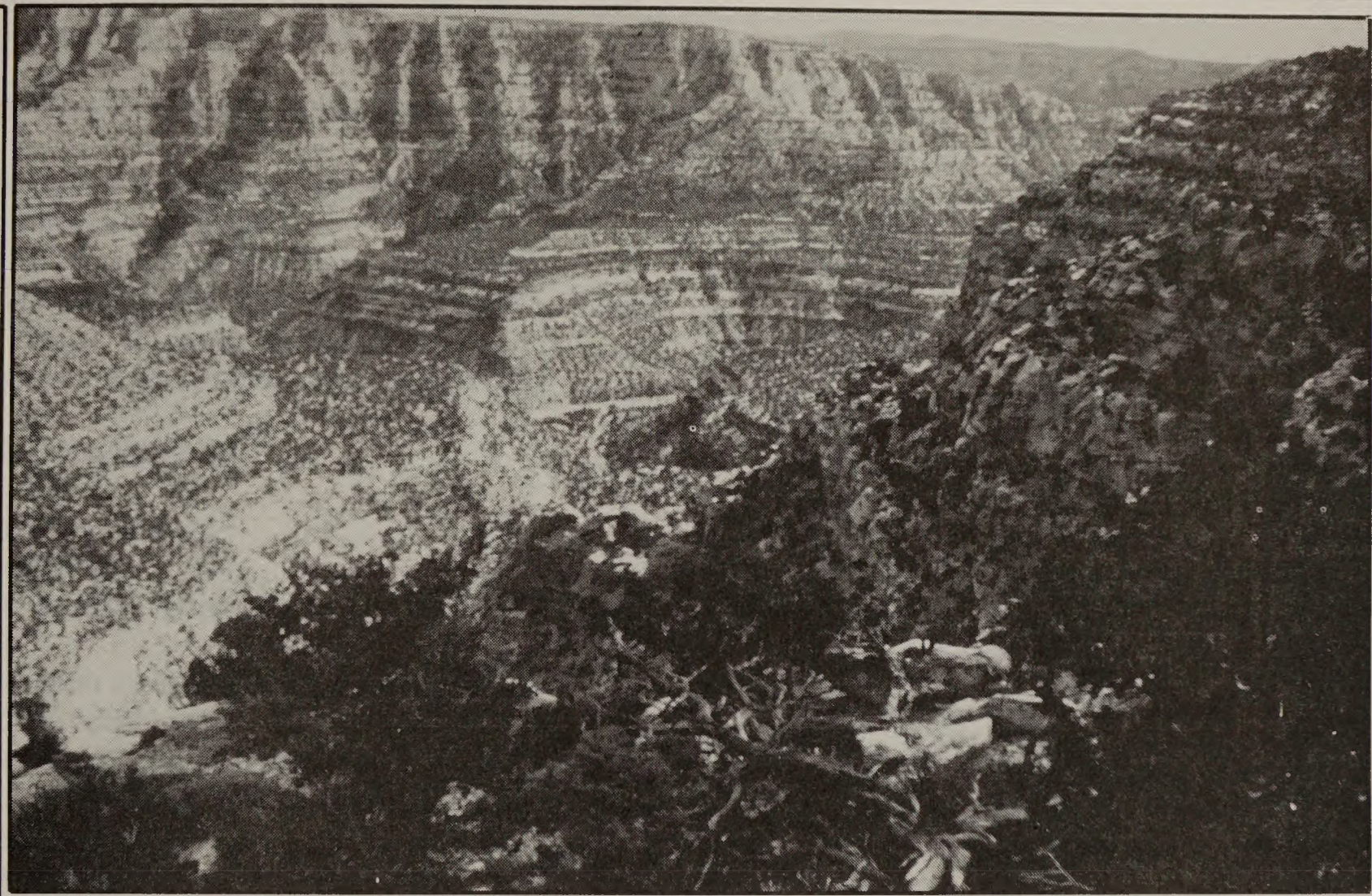
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# Dark Canyon Complex



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## INTRODUCTION

### General Description of the Area

Originally the Dark Canyon ISA was coincident with the boundaries of the existing Dark Canyon Primitive Area. That area and the Middle Point WSA have been combined for this analysis because most of the boundary of Middle Point WSA is contiguous with that of Dark Canyon ISA (refer to Map 1). No roads or features separate the two. The existing Dark Canyon Primitive Area contains approximately 62,040 acres and the Middle Point WSA contains 5,990 acres of BLM-administered land. Together the two units comprise 68,030 acres of public land. For ease of reference, the entire area is referred to in this document as the Dark Canyon Complex, ISA Complex, or ISA.

Dark Canyon is approximately 45 miles southwest of Moab, Utah, and 30 miles west of Monticello, Utah. It is entirely within San Juan County.

The ISA Complex has a main portion and an isolated part to the north. This is because in the original primitive area withdrawal order (1970, U-12307) there were 74,317 acres of contiguous lands bordering on Lake Powell. When Congress established the Glen Canyon NRA in 1972 (P.L. 92-593), the BLM primitive area was separated due to the inclusion of the middle part in the NRA.

The main (or southern) portion of the primitive area consists of a labyrinth canyon system occupying an irregular area that extends roughly 15 miles on both the east-west and north-south axis. The smaller portion lies about 2 miles to the north.

The southern portion is bounded on the west and north-west by the NPS administratively endorsed (proposed) Dark Canyon Wilderness (18,100 acres) in Glen Canyon NRA. The southeastern-most extremity of the unit is contiguous with the Dark Canyon Woodenshoe Wilderness Area, designated in 1984, in the Manti-LaSal National Forest (60,000 acres).

The isolated northern portion of the BLM Dark Canyon Primitive Area (2,000 acres) is north of Imperial Valley and Beef Basin and is contiguous with the Canyonlands National Park administratively endorsed Maze Wilderness on the north (105,980 acres) and the Glen Canyon NRA proposed Dark Canyon Wilderness on the west.

In the complex of canyons included within the Dark Canyon ISA, seven stand out as the most significant: Dark Canyon itself with tributaries of Black Steer, Youngs, Lost, and Lean-To Canyons. Separated from Dark Canyon there are the Bowdie Canyon and Gypsum Canyon/Fable Valley drainages. All the canyons are tributary to the Colorado River (Lake Powell).

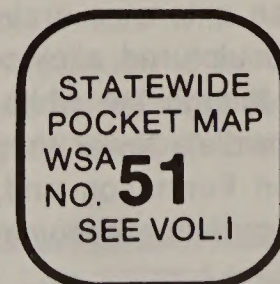
Dark Canyon is a place of varied scenery. It is an important physical landmark of the area. The canyon winds through 13.7 miles of the BLM primitive area. The canyon is about 2,000 feet deep throughout its length within the BLM primitive area. Dark Canyon begins near Elk Ridge to the east and empties into the upper end of Lake Powell to the west.

The upper reaches of the canyon are wide, with many large, open clearings. These upper drainages cut through the Cedar Mesa Sandstone Member of the Cutler Formation. Here, the canyon has red-and-white banded walls with occasional buff hues.

Near the BLM/FS boundary, the Ponderosa pine and Douglas fir trees give way to pinyon-juniper woodland and cottonwoods. The canyon is generally sparsely vegetated with rocky ledges being its main feature. The limestone benching in Dark Canyon provides for easy hiking and beautiful waterfalls. The sense of being enclosed in numerous walls and ridges, each reaching higher than the one in front, stays with the hiker down the canyon but is gradually overshadowed in the lower reaches, as the innermost walls tower to a height of over 1,400 feet.

Dark Canyon is set apart from most other canyons in this region by an abundant supply of flowing water and deep plunge pools. This is a key natural resource which enhances both recreational values and wildlife habitat.

Black Steer Canyon is the first major drainage encountered down Dark Canyon from its junction with Woodenshoe Canyon. It is a narrow canyon with walls 1,400 feet high. The canyon bottom is covered with



## DARK CANYON ISA COMPLEX

rocks near the mouth. There are occasional springs in Black Steer Canyon with associated willows, cattails, and rushes.

Youngs Canyon is the next encountered, coming in from the north. Where it meets Dark Canyon there is a 30 foot waterfall. There is flowing water for about 1 mile up from the mouth.

Lost Canyon is a southern tributary of Dark Canyon roughly 7 miles long. Lost Canyon is best characterized by its extreme variety. Gently sloping walls and wide valleys give way to narrows too steep and thin to walk in. The lower reaches of Lost Canyon drop rapidly forming sheer dark walls nearly 1,200 feet high. There is gray limestone near the mouth but it soon rises into the red and white of the Cedar Mesa Sandstone. Many alcoves, pinnacles, and buttes are visible on the walls along the skyline.

At the junction with Lean-To Canyon of Dark Canyon, the canyon opens up somewhat and the walls are sloping rather than sheer. The walls of Lean-To Canyon rise a sheer 1,500 feet from the streambed to the rim. Not only is this canyon deep, it is also narrow with a number of dry pouroffs, one being approximately 300 feet high. The canyon bottom varies between sandy wash and gravels, large boulders, and smooth limestone exposures. These factors combine to make Lean-To a scenic canyon.

Vegetation in the canyons is generally sparse. Cactus, pinyon-juniper woodland, serviceberry, and other small shrubs are characteristic except around ground seeps or springs. Near water, Gambel's oak, cottonwoods, ferns, and other riparian types sometimes form thickets. Low pinyon-juniper woodland covers most of the canyon rims and canyon valleys. Toward the rim areas over Dark Canyon, tree cover diminishes and desert scrub and blackbrush become more dominant. A wide variety of typical desert shrubs is present.

Separated from the Dark Canyon drainage are the Bowdie Canyon and Gypsum Canyon/Fable Valley drainages.

Bowdie Canyon is an extensive drainage creating low meanders through sculptured slickrock. Bowdie Canyon is cut primarily through the white rock of the Cutler Formation. In Bowdie's lower third the red rock of the Elephant Canyon Formation and, to a limited extent, the Hermosa Formation become prominent. In its

lowermost reaches Bowdie Canyon has high walls above over a narrow, rapidly dropping channel.

Gypsum Canyon is a dramatic canyon where the topography and geology are the main focus of attention. Gypsum Wash winds 5.9 miles through Dark Canyon Primitive Area. The scenic values are high in both the deep and narrow Gypsum Canyon and the more shallow, broad, Fable Valley.

Between Fable Valley and the Glen Canyon NRA boundary, the Gypsum Canyon is the most scenic. The inner canyon is cut some 800 feet deep through the redrock benches of the Elephant Canyon Formation and Hermosa Group. Here the canyon becomes its narrowest. Waterfalls are frequent and pools in the slickrock before and after waterfalls are common.

Fable Valley, a tributary of Gypsum Canyon, differs in being a wider and shallower valley. It runs 9.7 miles from Sweet Alice Spring to Gypsum Canyon. The 500 foot cliffs have talus slopes which grade the cliffs into the broad sage-covered valley floor. A 30 foot wash gully meanders through this alluvial valley. There are a number of small mesas or "islands" in this valley. Ponderosa pines are in the upper Fable Valley drainage and some scattered pinyon-juniper woodland in the mid section.

The Middle Point area is about 4 miles long and averages 2.50 miles wide. The area is situated on the extreme western end of the Dark Canyon Plateau. It consists of two sloping pinyon pine and juniper-covered mesas separated by the upper drainage of Rockfall Canyon that, west of the unit, drops 2,200 feet in 3 miles to meet Lake Powell in Cataract Canyon. From Middle Point, this canyon passes through Dark Canyon Primitive Area (ISA) and Glen Canyon NRA.

The two mesas, Middle Point and Lean-to Point, slope to the west from 6,500 feet down to 6,000 feet. They are covered with moderately dense pinyon and juniper with occasional clearings of sage.

Information on the climate of the ISA Complex is based on the nearest weather station at Natural Bridges National Monument, about 25 air miles away from Dark Canyon. The average annual temperature at Bridges is 51 degrees Fahrenheit (F), with an average low of 37 degrees F and an average high of 65 degrees F. The record low is -2 degrees F, and the record high is 101 degrees F. Annual precipitation ranges from 8 to 12 inches over Dark Canyon.



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January, May, and June are the driest months. July, August, and December are the wettest months. Rainfall usually comes associated with thunderstorms which can be quite intense, producing flash flooding. Annual total snowfall ranges from 20 to 40 inches.

## Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume V, the following changes specific to the ISA have been made since publication of the Draft EIS.

1. Small portions of the boundary of the ISA; T. 31 S., R. 18 E., sec. 32; and T. 33 S., R. 18 E., secs. 7, 17, 18, and 20; have been redrawn to correct errors in the Draft EIS maps. These changes did not require acreage adjustments because acreage calculations were based on the boundaries as shown in the inventory document and Final EIS.
2. The anticipated surface disturbance presented in the Draft EIS (12 acres) was based on the assumption that all mineral and other resources potentially within the ISA Complex would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities projected to be feasible within the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of surface disturbance estimates from the 12 acres reported in the Draft EIS to no surface disturbance for the Final EIS.

## Specific Issues Identified Through Scoping and Public Comment

### • Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume V (i.e., impacts on air quality, geology and topography, water rights, and land use plans and policies), the following issues or impacts specific to the Dark Canyon ISA Complex were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Soils: The public is concerned that without wilderness designation, future activities in the ISA Complex would result in soil disturbance and increases in soil erosion and loss of soil fertility. Because the disturbance estimate for the ISA Complex has been reduced from 12 to no disturbance in the Final EIS; about 91

percent of the area (62,040 acres) is closed to ORV use; and the terrain and surface features generally restrict vehicles to existing trails, ways, and cherry-stemmed roads in the remaining 5,990 acres, impacts on soils are not significant issues for the Dark Canyon ISA Complex.

2. Vegetation Including Special Status Species: As discussed above, no surface disturbance has been projected for the ISA Complex in the Final EIS. No threatened or endangered plant species are known to occur in the ISA and the limited amount of ORV use which occurs would not threaten the continued existence of the any populations of special status species. Therefore, impacts on vegetation are not analyzed in detail for the Dark Canyon ISA Complex.

3. Water Resources: The public is concerned that wilderness designation would interfere with development of water. Future developments could also increase sediment yield and affect water quality. There are no projected future developments which would result in decreases in existing water quality. Since the headwaters of the flowing water in Dark Canyon are located in designated wilderness, there would be no conflict with upstream uses if the Dark Canyon ISA Complex was designated as wilderness. Major uses of water inside the ISA Complex are livestock, wildlife, and recreation. These uses would be compatible with wilderness management. Therefore, impacts on water quality and uses are not significant issues for the Dark Canyon ISA Complex.

4. Mineral Resources: The public has expressed concern that wilderness designation would interfere with or prevent mineral exploration, development, and production.

There are no existing oil and gas leases within the ISA. Potential oil and gas deposits are small with a low certainty that they exist. There are no mining claims in the ISA and projected uranium and other locatable mineral deposits are thought to be small with a moderate certainty that they do not occur in the ISA. More accessible deposits of gypsum and salable minerals exist outside the ISA. For these reasons, mineral exploration or development would not occur in the foreseeable future with or without wilderness designation (see Appendix 6 in Volume I). Therefore, impacts on mineral and energy exploration and production are not analyzed in detail in the Final EIS.

5. Wildlife Including Special Status Species: The public is concerned that without wilderness designation,

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mineral or other developments would destroy wildlife habitat and lead to reductions in wildlife populations. They are also concerned that use of ORVs would disturb wildlife and destroy habitat. No surface disturbance is projected for the ISA in the foreseeable future. Vehicle based recreation use is light, estimated at 100 visitor days per year, and is related to other recreational pursuits such as hunting. The special status species that may occur in the area are mainly associated with cliff faces and canyon bottoms that would not be affected by ORV use in the vicinity of Middle Point. Big horn sheep habitat will not be impacted by surface disturbance or additional areas being made available to ORV use.

6. Forest Resources: The only forest resources in the ISA are 34,370 acres of scattered pinyon and juniper trees. Demand is low and there is limited access. For these reasons, impacts on forest resources are not significant issues for analysis in the Final EIS.

7. Livestock Management: The public is concerned that wilderness designation would interfere with livestock management by placing restrictions on access for maintenance of existing range improvements, moving of livestock, and by preventing future range improvements and placing restrictions on predator control. However, under the Wilderness Management Policy (BLM Manual 8560) there shall be no curtailments in grazing simply because an area is wilderness.

There are no proposed rangeland developments which would be precluded by wilderness designation. One-half mile of way would be closed should the area be designated as wilderness. However, since motorized vehicles are used very little in livestock management, little effect on management of livestock grazing is expected. Several methods of predator control would be allowed in designated wilderness. For these reasons, impacts on livestock management are not significant issues for the Dark Canyon ISA Complex.

8. Visual Resources: As discussed above, no surface disturbance is projected for the ISA in the Final EIS. Therefore, visual resources would not be significantly affected. Visual resources are not addressed in the Final EIS as a separate topic, but are addressed in relation to naturalness and special features in the Wilderness Values sections.

9. Cultural Resources: Since no surface disturbance is projected for the ISA in the foreseeable future, there would be no impacts on cultural resources from

minerals or other surface-disturbance activities. ORV use is precluded on 61,097 acres and motorized vehicle use is light on the remaining 6,123 acres (estimated 100 visitor days use per year). This use is generally confined to existing trails, ways, and cherry-stemmed roads because of rough terrain and other surface features. Therefore, impacts on cultural resources are not significant issues for the Final EIS.

10. Recreation: The public has expressed concern that wilderness designation would change recreational use from motorized to primitive or, conversely that without wilderness designation motorized recreation will eliminate or reduce opportunities for primitive recreation. Recreational use of the ISA is estimated at 6,000 visitor days per year and would remain about 95 percent primitive with or without wilderness designation due to existing ORV closures and rugged terrain. Therefore, impacts on recreation use would not be significant and are not analyzed in detail in the Final EIS.

11. Economic Conditions: Some, including State and local governments, are concerned that wilderness designation would preclude mineral or other economic developments and adversely affect local economic conditions. Others believe that primitive recreation use would increase following wilderness designation and would contribute to the local economy.

There are no existing or anticipated mineral developments or proposals for lands or realty activities which would be impaired with or without wilderness designation. Because no economic developments are expected and because recreational use would not be significantly affected, impacts on economic conditions for the Dark Canyon ISA Complex are not significant issues for the Final EIS.

### • Issues Analyzed in Detail

The significant issues for the Dark Canyon ISA Complex are impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.

Comments made during the public comment period for the Draft EIS centered mainly on BLM's Wilderness Inventory, State lands, the need for further inventories of resource values, and mineral values.

See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis

# DARK CANYON ISA COMPLEX

and Volume VII-C, Section 51, for responses to specific comments about the Dark Canyon ISA Complex.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated from Detailed Study

Alternatives that would add up to 51,270 acres (approximately 36,130 BLM, 10,700 acres FS and 4,440 acres of State) on the south and east of the ISA were suggested in the public comments. These alternatives are not analyzed because the inclusion of State and Forest Service lands is not consistent with BLM's wilderness review guidelines (refer to Volume VII-B, General Comment Response 6.4) and because other public lands were dropped from study during the inventory phase (refer to Volume VII-B, General Comment Response 3.1).

### Alternatives Analyzed

Three alternatives are analyzed for this ISA: (1) No Action/No Wilderness; (2) All Wilderness (Proposed Action) (68,030 acres); and (3) Partial Wilderness (62,040 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on projections under each alternative. These assumptions are indicated in each case. The analysis assumptions presented in the Introduction to Volume V are also applicable.

#### • No Action/No Wilderness Alternative

With this alternative, none of the 68,030-acre Dark Canyon ISA Complex would be designated by Congress as part of the NWPS. Although BLM's land use plans are regularly updated and the San Juan RMP will replace the Beef Basin, it is assumed that the area will continue to be managed according to the MFP. Neither the MFP or RMP address wilderness designation. However, wilderness designation is part of the multiple-use concept and the BLM land use plan is linked to the Statewide Wilderness EIS through analysis of the present plan as the No Action/No Wilderness Alternative. No State, private, or split-estate lands are within the ISA Complex (refer to Map 1).

#### • Management Conditions and Constraints

The 62,040 acres of the Dark Canyon Primitive Area would remain closed to mineral location, mineral leasing, and mineral sale. The Middle

Point area of 5,990 acres would remain open to mineral location. Although no mining claims now exist, development work, extraction, and patenting would be allowed on any future valid mining claims in the 5,990-acre area. Development would be regulated by unnecessary or undue degradation regulations (43 CFR 3809) without concern for wilderness values. There are no existing oil and gas leases. About 63,290 acres would remain closed to oil and gas leasing. The remaining 4,740 acres, located in the Middle Point area, would be open to leasing in Category 2 (standard and special stipulations). The special stipulations would be intended to protect deer winter range.

Although mineral resources would be managed as described above for the Middle Point Area, no locatable or leasable minerals exploration or developments are projected for the ISA Complex because the level of known resources and the probability of their development are too low to support such assumptions. Appendix 6 in Volume I explains the mineral exploration and development projections.

The present level (775 AUMs) of domestic livestock grazing use of the 68,030-acre ISA Complex would continue as authorized in the MFP. Existing livestock developments (one spring development and an 80-acre seeding) could be maintained in a routine manner, with vehicle access. New rangeland developments are not proposed.

The 62,040 acres of the existing primitive area, including about 7.0 miles of ways and abandoned jeep trails, would remain closed to ORV use. The remaining 5,990 acres in the Middle Point area, including about 0.5 mile of existing way, would remain open to ORV travel.

The 62,040-acre primitive area is closed to woodland product harvest. Only the 5,990-acre Middle Point area would continue to be potentially open to woodland product harvest. There is no harvest of forest products at the present time, nor is any projected because of the extreme remoteness of the area.

The area would continue to be managed under VRM Class I on 62,040 acres and Class IV on 5,990 acres.

Hunting would be allowed subject to applicable State and Federal laws and regulations. Use of

# DARK CANYON ISA COMPLEX

vehicles for hunting would not be allowed in the 62,040 acres closed to ORV use.

With the No Action/No Wilderness Alternative for wilderness, it is assumed that the existing Dark Canyon Primitive Area would not continue as a designated primitive area. It would, however, be considered for other special designation (e.g., ONA or ACEC). It is assumed that current management actions (e.g., closure to mineral leasing and location and to ORV use) would continue. Management of the designated primitive area under another special designation would be a separate action that is not dependent on the wilderness review process and is not discussed further in this wilderness document, except as current management practices are integrated with the No Action/No Wilderness Alternative.

- Action Scenario

Given the management plans described above and the resources described in the Affected Environment, BLM projects that implementation of the No Action/No Wilderness Alternative would not result in any surface disturbance from development.

No disturbance from ORV activity is anticipated because of management restriction and rugged terrain.

Visitor use is projected to increase at a rate of 2 to 7 percent annually over the current estimated use of 6,325 visitor days per year. Approximately 95 percent of the use would continue to be primitive in nature.

- All Wilderness Alternative (Proposed Action)

With this alternative, all 68,030 acres of the Dark Canyon ISA Complex would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character. No State, private or split-estate lands are located within the ISA Complex. The figures and acreages given for this alternative are for Federal lands only.

- Management Conditions and Constraints

After wilderness designation, all 68,030 acres would be withdrawn from mineral location and

closed to new mineral leasing and mineral sale (62,040 acres are already withdrawn). Although no mining claims now exist, development work, extraction, and patenting would be allowed to continue on any valid mining claims that may be located in the Middle Point area prior to wilderness designation. It is assumed that such claims would not be located. There are no existing oil and gas leases and no new leases would be issued.

The present level of domestic livestock grazing would be allowed to continue as authorized in the Beef Basin MFP until that plan is superseded by the San Juan RMP. The 775 AUMs in the ISA Complex would remain available to livestock as presently allotted. The use and maintenance of rangeland developments existing at the time of designation (one spring project, 7.5 miles of stock trail, and an 80-acre seeding) could continue based on practical necessity and reasonableness.

The entire 68,030-acre area would be closed to ORV use except for users with valid existing rights if approved by BLM in accordance with 43 CFR 8560 provisions. About 7.5 miles of existing vehicular ways would not be available (7 miles of these ways currently are not available) for vehicular use except as indicated above. About 8 miles of the ISA Complex boundary follow existing dirt roads and these would remain open to vehicular travel. Two roads totaling about 6 miles on Middle Point and Lean-to Point would be cherry-stemmed and remain open to vehicle use.

Visual resources on 68,030 acres would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

- Action Scenario

BLM projects that no surface disturbance would occur with the All Wilderness Alternative.

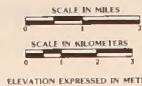
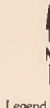
Primitive-type visitor use is projected to increase over the current estimated 6,009 visitor days of primitive use annually at a rate of 2 to 7 percent per year.

- Partial Wilderness Alternative

With this alternative, 62,040 acres of the Dark Canyon ISA Complex would be designated as wilderness (refer to Map 3). The objective of this alternative is

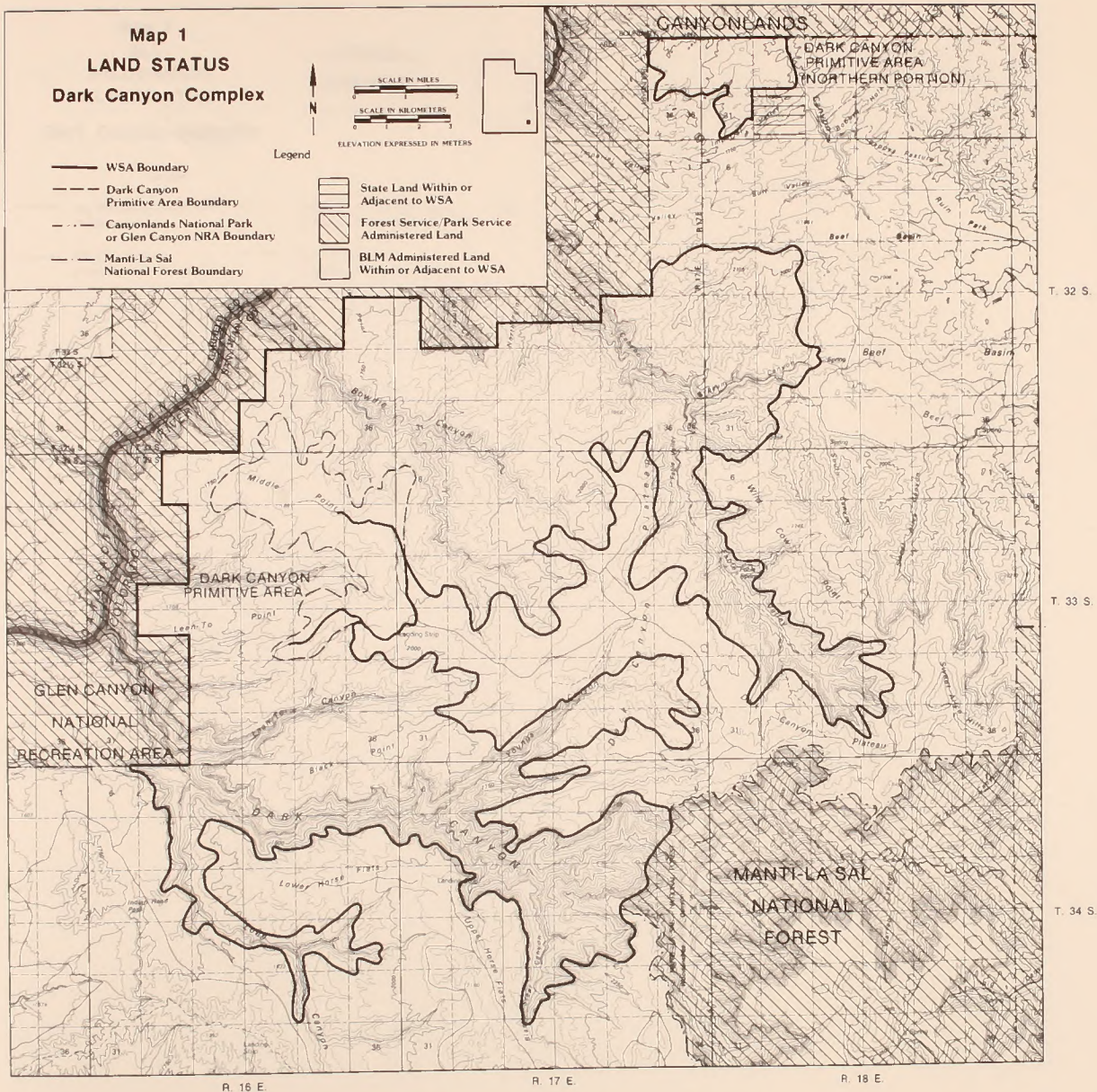
# DARK CANYON COMPLEX

**Map 1**  
**LAND STATUS**  
**Dark Canyon Complex**



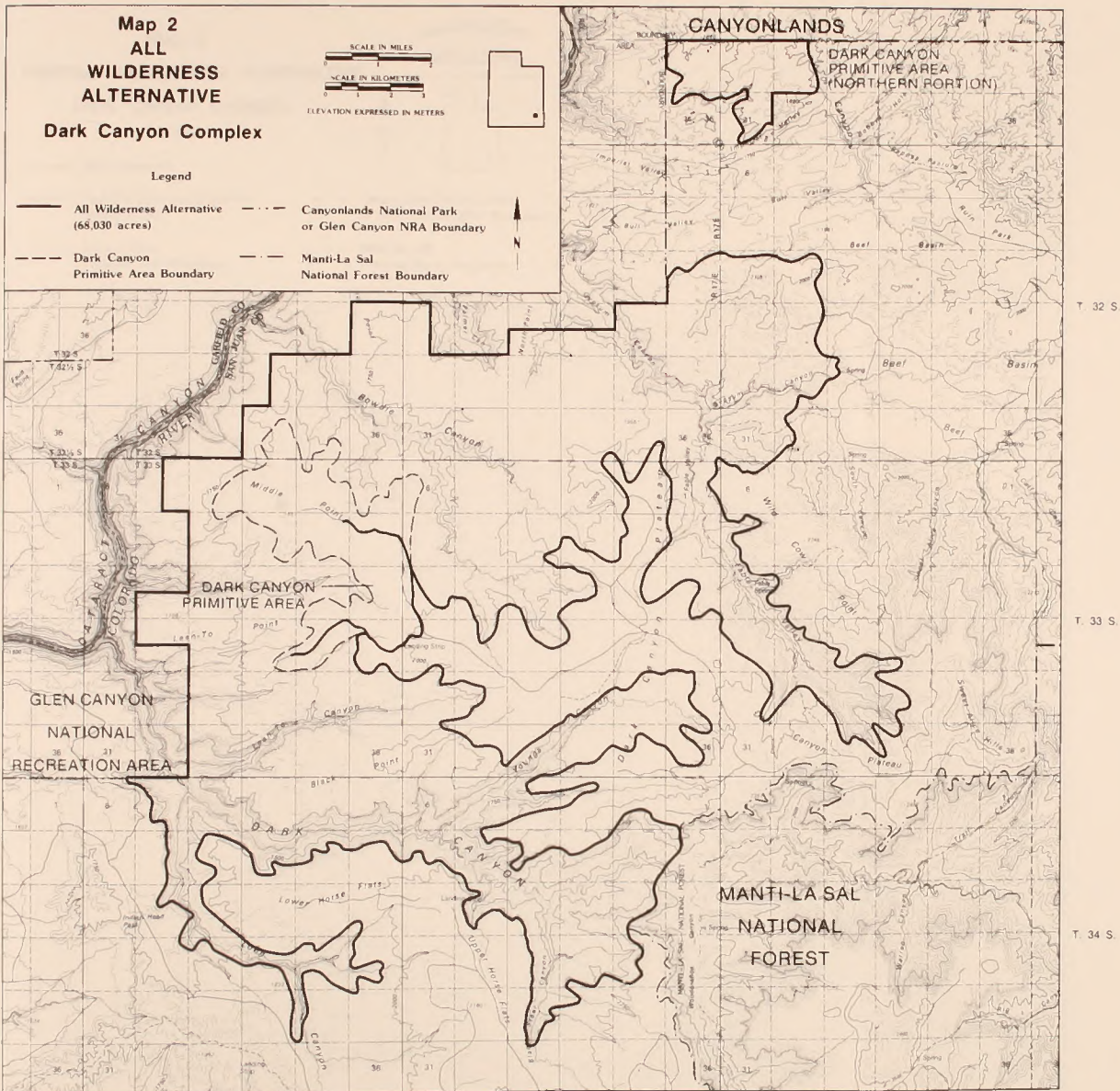
Legend

- WSA Boundary
- - - Dark Canyon Primitive Area Boundary
- · - · Canyonlands National Park or Glen Canyon NRA Boundary
- · - · Manti-La Sal National Forest Boundary
- ▨ State Land Within or Adjacent to WSA
- ▧ Forest Service/Park Service Administered Land
- BLM Administered Land Within or Adjacent to WSA





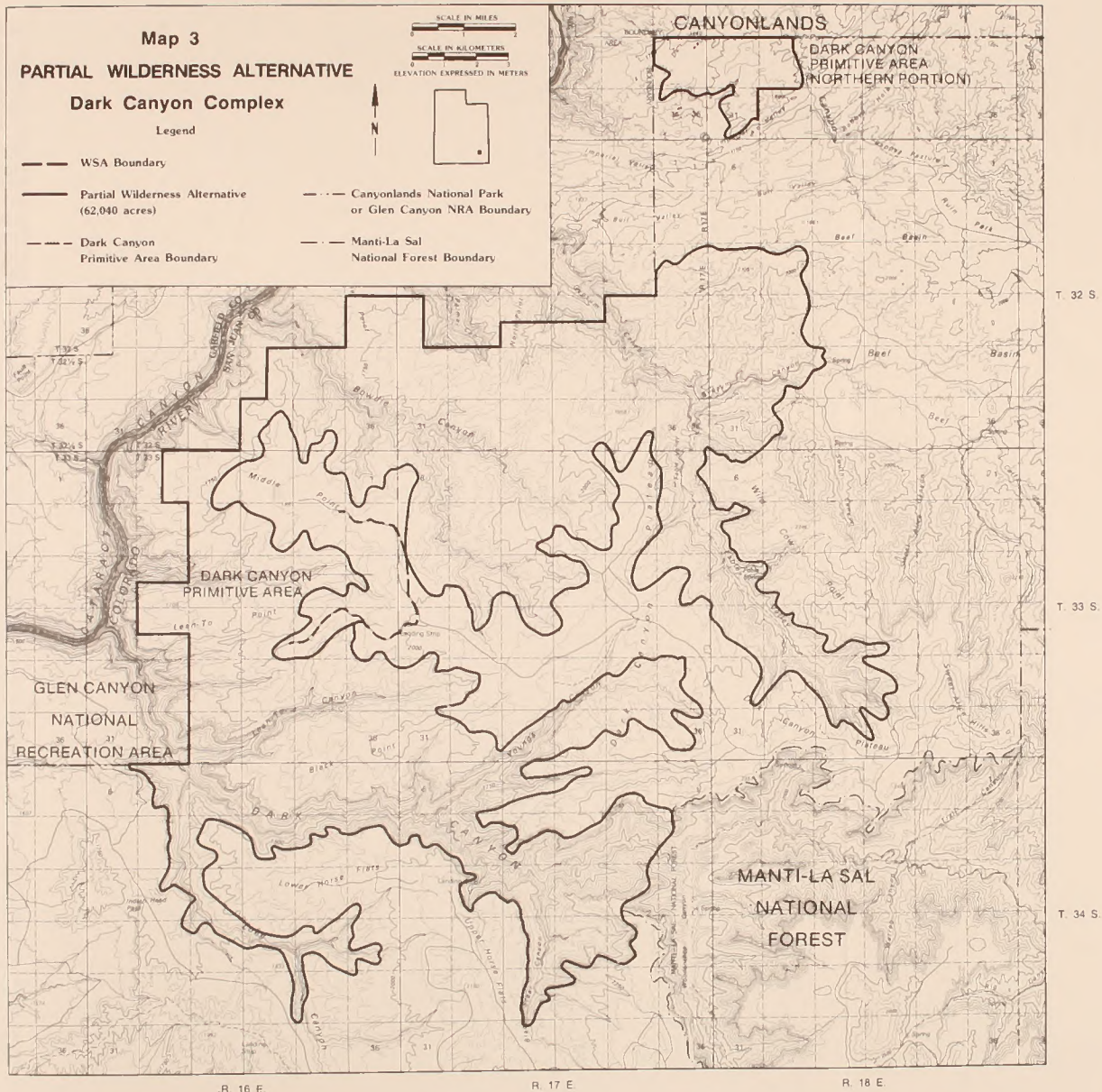
# DARK CANYON COMPLEX







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## DARK CANYON ISA COMPLEX

to present the option of designating only that portion of the ISA Complex which is within the existing Dark Canyon Primitive Area. The acres analyzed as wilderness with this alternative include the steep canyon portions of the ISA. The 5,990 acres in the Middle Point and Lean-to Point area within the ISA but outside of that portion designated as wilderness would be managed in accordance with the Beef Basin MFP as described for the No Action/No Wilderness Alternative. The 62,040-acre area designated as wilderness would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) as described in the All Wilderness Alternative. There are no State, private, or split-estate lands within the ISA.

### • Management Conditions and Constraints

The 62,040-acre wilderness would continue to be withdrawn from mineral entry and closed to new mineral leasing and mineral sale. There are no existing mining claims due to the existing withdrawal. The 62,040-acre area would continue to be closed to oil and gas leasing. There are no existing oil and gas leases or other leases. The 5,990-acre area within the ISA Complex not designated wilderness (refer to Map 3) would be open to future mineral location, leasing, and sale. In the 5,990-acre area, development work, extraction, and patenting of future mining claims could occur without wilderness consideration if claims are valid. The area not designated would be managed as oil and gas leasing Category 2 (standard and special stipulations) on 4,740 acres and Category 4 (closed to leasing) on 1,250 acres. Even though mineral resources in the nondesignated areas would be managed as described above, no locatable or leasable mineral exploration or developments are projected because the level of known resources and the probability of their development are too low to support such assumptions.

Domestic livestock grazing would continue to occur in the 62,040-acre wilderness area. The 706 AUMs in the 62,040-acre area would remain available to livestock as presently allotted. The use and maintenance of existing range developments (7.5 miles of stock trail) would continue based on practical necessity and reasonableness. In the 5,990-acre nonwilderness area, grazing use of 69 AUMs would continue and existing range developments (one spring project and an 80-acre seeding) would be maintained in a routine manner. New rangeland developments are not planned.

The canyons that would comprise the 62,040-acre wilderness would continue to be closed to ORV use. About 7 miles of existing ways (currently closed) would not be available for vehicular use except in situations described under the All Wilderness Alternative. The remainder of the unit, including the existing .5 mile of way as well as the roads bordering the ISA, would remain open to vehicular travel. No roads would be cherry-stemmed, as they would be within the 5,990-acre nondesignated area.

Harvest of forest products in the 62,040-acre wilderness would not be allowed except for harvest of pine nuts or noncommercial gathering of dead-and-down wood for use in the wilderness, if accomplished by other than mechanical means. The remaining 5,990 acres would be open to commercial woodland harvest, although none is expected.

Visual resources on the 62,040-acre wilderness would be managed in accordance with VRM Class I standards which generally allow for only natural ecological change. The remaining 5,990 acres would be managed as VRM Class IV.

### • Action Scenario

Surface disturbance from development would not occur in either the designated or nondesignated area in the foreseeable future.

No surface disturbance is projected to occur from ORV activity because of management restrictions and rugged terrain.

Visitor use is projected to increase at a rate of 2 to 7 percent annually over the current estimated use of 6,325 visitor days per year. Approximately 95 percent of the use would continue to be primitive in nature.

## Summary of Environmental Consequences

Table 1 presents the environmental consequences of alternatives analyzed in detail.

## AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative

## DARK CANYON ISA COMPLEX

**Table 1  
Summary of Environmental Consequences**

Alternatives	
Resources	No Action/No Wilderness
<p>Impacts on Wilderness Values</p>	<p>Wilderness values would not be protected by wilderness designation. However, no disturbance that would affect wilderness values is anticipated. In the foreseeable future. Continued vehicular use of 0.5 miles of way would continue to be an occasional annoyance that would detract from opportunities for solitude and primitive recreation in the ISA Complex. This alternative would not complement or enhance wilderness uses, values, or management of contiguous FS and NPS lands, which are either designated wilderness or proposed for wilderness designation.</p>
	<p>Wilderness designation would preserve the wilderness values in the ISA Complex. This alternative would complement and enhance wilderness values, uses, and management of contiguous FS and NPS areas which are either designated wilderness or proposed for wilderness designation.</p>
	<p>Wilderness values would be preserved in the designated area which is approximately 91 percent of the ISA. Naturalness and outstanding opportunities for solitude and primitive recreation and most special features are in the designated portion and would be preserved. No disturbance is anticipated, in the foreseeable future, that would affect wilderness values in either the designated or nondesignated area. This alternative would enhance and complement wilderness values, uses, and management of contiguous FS and NPS lands that are either designated wilderness or proposed for wilderness designation.</p>
	<p>Partial Wilderness (62,040 Acres)</p>

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Statewide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

## Wilderness Values

### • Size

The Dark Canyon ISA Complex contains 68,030 acres of public land. This large size greatly enhances the wilderness values present. The main (or southern) part of the ISA Complex is about 15 miles long (north to south) and up to 15 miles wide (east to west).

### • Naturalness

Dark Canyon was declared a primitive area by the BLM in December of 1970 to protect its outstanding natural beauty and unspoiled condition. The area has only a few ways involving a total of about 7.5 miles, projecting short distances across the unit's boundary. For the most part, the primitive area boundaries were drawn along the canyon rims. Thus, the steep and rugged terrain has precluded human influence and the land retains its primeval character.

Seven miles of the 7.5 miles of ways in the ISA Complex are within the Dark Canyon Primitive Area, and are closed to vehicular use. These are as follows:

1. Four-wheel drive vehicle tracks extend 1.3 miles through the separated northern portion of the Dark Canyon ISA Complex. The tracks continue for 0.7 mile into Canyonlands National Park.

2. Four-wheel drive tracks protrude 0.2 mile to a small campsite and small arch at the head of Gypsum Canyon.

3. A way, maintained only by the travel of vehicles, enters the area for 0.4 mile at the head of Gypsum Canyon.

4. A way cuts through sparse pinyon-juniper at the head of Bowdie Canyon. It forks within the unit, the north fork being 0.4 mile and the south fork 0.3 mile long.

5. In a BLM Cooperative Agreement a road was constructed from Wild Cow Point into Fable Valley (Pro-

ject No. 0687). It was completed in 1958 but sometime before 1977 a rockslide blocked vehicle travel into the primitive area. Considered a way beyond the rockslide, it protrudes 2.5 miles into the Fable Valley arm of the ISA. It consists of eroded wheel tracks, that are overgrown with vegetation in places.

6. A once constructed way, now badly eroded, leads to the head of a cow trail into Fable Valley. It enters the ISA for only 0.1 mile.

7. Wheel tracks wind among the pinyon-juniper trees out Black Point for 1.8 miles into the unit. A ledge, dropping perhaps 50 feet, stops travel beyond that point.

The majority of the Middle Point area appears predominantly natural, free of human imprints. A road forms part of the unit's eastern border, then is cherry-stemmed for 3 miles out Middle Point. Another road forms part of the unit's southern boundary, then is cherry-stemmed for 3 miles out Lean-To Point. These seldom-traveled dirt roads are thus not within the ISA Complex. Imprints within the ISA Complex are a chaining, an old Geological Survey Vertical Angle Bench Mark, a drill pad site, and a developed spring and associated way. Vehicle tracks also fork off the southern road for approximately 0.50 mile and are a minor imprint.

The chaining at the end of the Middle Point road was done in 1956. Approximately 80 acres of sage flat with scattered pinyon and juniper trees were chained and seeded for improved livestock grazing. This 33-year-old chaining is no longer a substantial imprint. With deadfall decomposing and sage and young trees reestablishing, it appears to the average visitor as a natural sage flat.

In the northeast quarter of T. 33 S., R. 16 East, sec. 11; adjacent to the cherry-stemmed road on Middle Point, is a drill pad site built in the 1960s. The site is marked by a steel drill hole plug and is revegetating with snakeweed and grasses. It is not a substantial imprint; the average visitor could easily overlook the pad and marker. Five other oil and gas wells in the ISA Complex have also been rehabilitated and are substantially unnoticeable.

A spring in a small drainage in Section 13 was improved sometime around 1960. The improvement consists of a buried cement collection box, about 30 feet of barbed-wire fencing, some buried 1/2-inch piping, and an 8 foot square by 2 foot deep metal reservoir.

## DARK CANYON ISA COMPLEX

This spring development is situated in a small draw and is thus not noticeable beyond about a 100 foot radius. The spring is 0.50 mile west of the eastern boundary road and vehicle tracks have created a way between the spring and the road.

Since establishment of the ISA, less than 1 acre has been disturbed. This disturbance is the result of hand construction of 20 waterbars on the Fable Valley stock trail in 1985. The impact resulting from this activity is substantially unnoticeable.

In summary, less than 1 percent of the ISA Complex is impacted by imprints of man. The entire 68,030 acres meet the naturalness criteria.

- Solitude

The deep, winding, and rugged canyons offer outstanding topographic screening. Vegetation enhances these opportunities by providing shelter from the sun and screening from other users. Off-site influences are essentially limited to the high-altitude airlines and their vapor trails. With such a lack of other influences, these jets sometimes stand out as a reminder of the outside world, intensifying one's feeling of remoteness.

On the higher, relatively flat terrain of the Middle Point area, moderately dense stands of pinyon-juniper forest provide screening for users. The Middle Point area is reached by over 30 miles of infrequently traveled dirt road and is inaccessible during the winter snowpack.

Overall, the entire ISA Complex (68,030 acres) has opportunities for solitude that meet the outstanding criterion for areas under wilderness review.

- Primitive and Unconfined Recreation

The opportunities for primitive and unconfined recreation are outstanding throughout the ISA Complex (68,030 acres). The remote and rugged canyons cut through rock layers and mesas for a total of 75 miles. With this large canyon complex, the challenging terrain, and the unique and varied rock formations, recreationists find many possibilities for primitive and unconfined recreation. The remoteness of the area adds to the enjoyment of the primitive experience.

Among the outstanding opportunities present are hiking and camping associated activities such as back-

packing, dayhiking, exploring, rock scrambling, horse-back riding (in Fable Valley), swimming/wading in the running water and pools of the various canyons, and hunting. Other primitive and unconfined types of recreation available in the ISA are photography, drawing, bird watching, and sightseeing for biological, zoological, and geological features.

- Special Features

The ISA Complex contains supplementary values of special interest. These include ancient Indian occupation, fossils, wildlife habitat, historic cowboy use, and scenic values of deep canyons, sheer cliffs, and a few natural arches.

Anasazi Indian occupation in the ISA seems to have been somewhat sparse compared to canyons further south such as Grand Gulch. However, evidence such as cliff dwellings, granaries, petroglyphs, and lithic scatter does exist within the ISA. These features enhance the primitive recreation values present and add to the feeling of timelessness in these rugged and remote canyons. Sixty-eight sites have been recorded and a potential for up to 3,400 sites may exist in the ISA Complex.

Of geological interest are the limestone exposures with red chert nodule inclusions. The limestone also includes cockleshell and crinoid stem fossils. These limestone ledges make the deep and narrow lower Dark Canyon an especially scenic canyon due to their waterfall-producing effect.

Groups of desert bighorn sheep are occasionally observed by hikers in the canyons of the ISA Complex and by boaters on the Colorado River just west of the unit. All of the major canyons in this ISA have been identified as crucial desert bighorn sheep habitat. Mule deer winter on Middle Point from November to April.

The bald eagle, an endangered species, is a winter transient in the vicinity of the ISA and peregrine falcon, also endangered, could occur in the ISA Complex. In addition, there are six animal species and two plant species that are considered sensitive that may occur in the ISA. Refer to the Vegetation and Wildlife Including Special Status Species sections, for additional information. Cougar inhabit remote canyons in the unit. Being a large inhabitant of wild and remote areas, the cougar has an aesthetic value. Most people highly value the sighting of one of these animals in the wild.

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As has been previously noted, the deep canyons, sheer and overhanging cliffs, and rock outcrops offer scenic values of outstanding quality. Approximately 91 percent of the ISA is rated as Class A for scenic quality. Unimpaired vistas from the unit enhance the wilderness values present. To the west are the Henry Mountains and the Orange Cliffs, to the north the lands of Canyonlands National Park, and to the east are the LaSal Mountains. Natural arches are not prevalent in the unit, but at least two are known.

Historic activity in the ISA Complex primarily relates to use of the range for cattle and sheep grazing. Physical evidence remaining from this land use includes a stock trail (Fable Valley), a corral (Fable Valley), and cowboy camps (scatters of cans, bottles, and other debris).

Finally, the Colorado River, less than 1 mile west of the boundary of the ISA Complex, has recreational and historical values. Cataract Canyon is a popular white water rafting run through "big drops" and spectacular canyon country. Lake Powell, reaching to the vicinity of Gypsum Canyon, allows boating access to the major canyons of Dark Canyon ISA Complex. The ISA has approximately 10 miles of perennial streams.

## • Diversity

The ISA Complex is in the Colorado Plateau Province Ecoregion and has the PNV types of juniper-pinyon woodland and blackbrush. Refer to the Vegetation Including Special Status Species section for more discussion ecoregions and PNV types. The ecoregion and PNV types represented by this ISA Complex are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

This WSA is not within a 5-hour drive from any standard metropolitan statistical areas.

## Air Quality

The closest air monitoring station to the ISA Complex is 37 miles southwest at Bullfrog Marina on Lake Powell. Particulate and sulfur dioxide concentrations are measured.

Only the short-term (24-hour) particulate standard has been exceeded at the Bullfrog station. The 24-hour violations were probably associated with conditions of high winds and blowing dust (resulting from the scarce vegetation and large areas of exposed

sand). Sulfur dioxide concentrations measured at Bullfrog Marina are low and well under the applicable ambient standards.

Generally, the air quality is very good over the ISA Complex allowing for long vistas where topography and vegetation do not obstruct sight. Visual range in the general vicinity of the Dark Canyon ISA averages between 100 and 132 miles during the summer (Aerocomp, Inc., 1984).

The ISA Complex has a PSD Class II air quality classification under the provisions of the Clean Air Act as amended. This classification allows for moderate increases in air pollution levels. The Department of the Interior did recommend to Congress on September 7, 1979, pursuant to Section 164(d) of the Clean Air Act Amendment of 1977, that the Dark Canyon Primitive Area had air quality related values as important attributes of the area worthy of redesignation to Class I air quality. No action has been taken on this recommendation by the State of Utah. The nearest PSD Class I area is Canyonlands National Park which is contiguous with the isolated northern portion of the ISA Complex.

## Geology and Topography

The ISA Complex is within the Canyonlands section of the Colorado Plateau Physiographic Province. The many canyons are precipitous, escarpments separate dry plateaus, and erosion has produced picturesque buttes, arches, and natural bridges. Several isolated peaks rise thousands of feet above the surrounding plateau.

The surface geology of the Dark Canyon ISA Complex consists almost entirely of flat-lying sedimentary rocks of the Cedar Mesa Sandstone Member of the Permian Cutler Formation (several arches and pinnacles occur in this member). Deep canyons have cut into the mesa exposing the underlying Elephant Canyon-Halgaito Shale and Hermosa formations of Pennsylvanian age.

The Cedar Mesa Sandstone Member is generally white, fine-grained, calcareous and cross-bedded. The Cedar Mesa Sandstone interfingers eastward with the Cutler Formation.

The Elephant Canyon-Halgaito Shale Formation underlying most of the area is a transitional unit composed of alternating marine and continental sediments 300 to 400 feet thick. It is a red and gray, thick and thin-

## DARK CANYON ISA COMPLEX

bedded unit composed of calcareous sandstone, sandy shale, persistent gray limestone, and sporadic purple arkose.

The Hermosa Formation in the vicinity of Dark Canyon probably represents the upper member of the Hermosa known as the Honaker Trail Formation. The Honaker Trail Formation includes those sediments between the Paradox Formation and the unconformably overlying Permian sequence; it consists of gray cherty limestone, interbedded with thin beds of slope-forming sandstone and lavender sandy shale. The formation is dolomitic in some areas.

Dark Canyon is located slightly west of the axis of the Monument Upwarp, a broad north-trending structural division of the Colorado Plateau, which extends 75 miles north of the Arizona border and plunges gently northward in and north of Dark Canyon. The upwarp is asymmetrical. It is bounded on the east by the north-trending Comb Monocline, with structural relief of about 2,500 feet. The western margin is structurally indistinct; the regional dip is gently inclined to the west and northwest.

Several gentle and minor anticlines, synclines, and monoclines have been mapped in the eastern portion of the ISA and to the southeast. Most trend northeast, north, and northwest and are superimposed on the upwarp described above.

An arcuate cluster of near-vertical faults trending east, then swinging northeast, is the main structural feature of the northern part of the ISA and adjacent areas to the north. These faults, with minor displacements indicated by the surface topography, form a series of horsts and grabens cut by cross faults of similar displacement. Large blocks slumping along arcuate fractures are well displayed in upper Gypsum Canyon.

The topography of the Dark Canyon ISA Complex is one of sharp contrast between deep canyons and the gently westward sloping mesas that separate them. Elevation ranges from 7,700 feet above sea level on the mesa tops to 4,400 feet in the canyon bottoms.

There are three major canyon systems in the ISA Complex. Dark Canyon itself averages 2,000 feet deep, and with its tributaries, Black Steer, Young's, Lost and Lean-To Canyons, totals over 35 miles in length within the ISA. Gypsum Canyon ranges between 1,200 and 1,400 feet deep for most of its length and with its Fable Valley tributary totals a length of 15.6

miles within the ISA. Bowdie Canyon is 800 feet at its deepest point and 16.3 miles of it lie within Dark Canyon ISA Complex. The overall terrain of the area is extremely rugged. The walls of the canyons are combinations of steep, rocky talus slopes and vertical cliffs which in places are less than 20 feet apart in the canyon bottoms. The canyons themselves are sinuous along their entire lengths with entrenched meanders evident from the canyon rims to the present streambed.

The Middle Point area is a topographic high point dividing three canyon heads. Bowdie Canyon lies to the north, Rockfall Canyon lies to the west, and Lean-to Canyon forms the south boundary of the ISA. The ISA covers most of Middle Point and the eastern half of Lean-to Point. Elevation ranges from 6,600 feet at the southeast corner to 5,800 feet at the northwest corner.

### Soils

The majority of the ISA consists of rock outcrop and shallow soils on the rims of canyons and mesas. Soils of the Middle Point area are shallow to very deep. On the steeper fans along canyon walls the soils are shallow to very deep loamy and stony soils. The soils have generally developed from eroded sandstone. Soil characteristics and land types are shown in Table 2.

Table 2  
Soil Characteristics and Land Types

Soil Characteristics and Land Type	Percent of the Area	Acres	Estimated Rate of Erosion (cubic yards/acre/year)	
			Present Condition	Bare Soil Surface
Shallow loamy soils on sloping structural benches and ledges	45	30,613	1	10
Rock outcrop and rubbleland	50	34,016	0	0
Deep and very deep loamy soils on gently sloping alluvial fans and valley floors	5	34,016	0	0
Totals	100	68,030		

Source: Hansen, 1985.

Erosion is mostly naturally caused with losses from water erosion. Table 3 lists the erosion conditions in the ISA Complex.

The soils in the ISA complex are non-saline with an estimated salt production of 33 lb per year. Approximately 95 percent of the area is unsuited for seeding



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Table 3  
Erosion Condition

Erosion Class	Erosion Rate cubic yards/ acre/year	Annual Soil Loss Under Present Conditions			Annual Soil Loss if Disturbed		
		Percent of Area	Acres	Cubic Yards	Percent of Area	Acres	Cubic Yards
Very High	20	-	-	-	-	-	-
High	10	-	-	-	10	6,803	68,030
Medium	5	-	-	-	35	23,810	119,050
Low	1	45	30,613	30,613	5	3,401	3,401
Very Low	0.1	5	3,401	340	-	-	-
None	0	50	34,016	-	50	34,016	-
Totals		100	68,030	30,953 <sup>a</sup>	100	15,410	190,481 <sup>a</sup>

Source: Hansen, 1985.

Average annual soil loss in cubic yards per acre: 0.46 under present conditions; 2.8 if disturbed.

because of shallow soils, rockland and rubble outcrops, and steep slopes. Seeding suitability is fair on the remaining 5 percent.

## Vegetation Including Special Status Species

The vegetation in the Dark Canyon ISA Complex is comprised of three main types: pinyon-juniper woodland, blackbrush, and sagebrush (refer to Table 4).

Table 4  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Pinyon-juniper woodland	34,370	50
Blackbrush	33,020	49
Sagebrush	640	1
Total	68,030	100

Source: USDI, BLM, 1985.

The pinyon-juniper woodland consists of mature trees with very little understory. In areas away from the canyon rims where the soil is deeper a sparse understory is present with a mixture of sagebrush, blue grass, and Mormon tea.

The blackbrush vegetation type occurs on the steep canyon slopes. Blackbrush is the dominant species with scattered Mormon tea, yucca, and curly grass on narrow benches. The canyon bottoms which are mostly narrow slickrock areas with vegetation such as cottonwood, willow, tamarisk, sagebrush, rabbitbrush, oakbrush, skunkbrush, and goldenrod and also included in the blackbrush type.

The sagebrush vegetation type in Fable Valley is predominately big sagebrush with fourwing saltbush and rubber rabbitbrush. Indian ricegrass and sand dropseed are found in the more open areas. Phragmites, a reed grass, is found in the wash bottom that runs the length of the valley. A sagebrush-grass community on Middle Point includes big sagebrush and crested wheatgrass. The crested wheatgrass was seeded in this area in the late 1950s. Other species include bottlebrush, squirrel tail, winterfat, and young pinyon pine and juniper trees.

Douglas fir, Gambel's oak, and mountain mahogany are found scattered on north-facing slopes at the higher elevations. These species are included in the pinyon-juniper woodland and blackbrush vegetation types.

There are no areas mapped as riparian vegetation in the ISA Complex; however, riparian species do exist. Vegetation can be extremely dense in spots along the canyon bottom. Some seeps are so choked with trees, organic matter, and grasses that no water can be seen. These patches extend for up to 75 yards at a time, forming shady groves and dense "jungles" of reed grass, trailing virgins bower, and cottonwood.

No threatened or endangered plant species are known to occur in the WSA. However, one FWS Category 2 candidate species, *Erigeron kachinensis*, and one sensitive species, *Astragalus monumentalis*, may occur in the WSA (see Appendix 4 in Volume I).

The Dark Canyon ISA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNV types of the ISA Complex are shown in Table 5.

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Table 5  
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Juniper-pinyon woodland	24,820	36
Blackbrush	<u>43,210</u>	<u>64</u>
Total	68,030	100

Source: USDI, USGS, 1978.

## Water Resources

All the canyons within the Dark Canyon ISA Complex are tributary to Lake Powell of the Upper Colorado River hydrologic subregion. The main canyons are Dark Canyon itself with tributaries of Black Steer, Youngs, Lost and Lean-to Canyons. Separated from Dark Canyon are the Bowdie Canyon and Gypsum Canyon/Fable Valley drainages.

Dark Canyon contains year-round flowing water from about Black Steer Canyon down 10 miles into the ISA. Upper Dark Canyon and the other canyon systems contain seasonal water flows as well as springs and seeps. Water is a limited resource in the Middle Point Area. There are no water wells or reservoirs within the boundaries of the ISA Complex. One developed spring with a livestock watering trough is located in the ISA Complex. Intermittently, this spring is also utilized by wildlife and recreationists. There are seasonal pools of water along the slickrock rims.

The ISA Complex is within Water Right Adjudication area 99. The water is not fully appropriated (UDNRE, DWR, 1988). There is very little water development in this area because of its remoteness. Isolated springs may be open to appropriations not to exceed 0.015 cfs. Temporary and fixed time applications may exceed this limit.

The water quality standards for tributaries to Lake Powell are: Class 2B (protected for boating, water skiing, and similar uses); Class 3B (protected for warm water species of game fish and other warm water aquatic life); and Class 4 (protected for agricultural uses including irrigation of crops and stockwatering). Water quality of the stream and springs is suitable for livestock and wildlife use.

## Mineral and Energy Resources

The energy and mineral resource rating summary for the Dark Canyon Complex is given in Table 6.

Table 6

Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f2	c2	Less than 10 million barrels of oil; less than 60 billion cubic feet of natural gas
Uranium/Vandium	f1	c3	None

Source: SAI, 1982; USDI, BLM, 1987a.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

Appendix 5 in Volume I describes the mineral and energy resource rating system.

The ISA Complex could contain deposits of vanadium which is currently listed as a strategic and critical mineral (USDoD, 1988).

### • Leasable Minerals

There are no known deposits of any leasable minerals in the ISA Complex. Currently, there are no active drilling, mining, or exploration activities for leasable minerals.

### • Oil and Gas

There has been no oil and gas production within the ISA to date, although six test wells have been drilled in the ISA Complex and nine nearby (USDI, USGS, 1981). One well was drilled in 1977, two in 1968, and 12 from 1956 to 1960. Oil-stained cores were recovered from the Paradox Formation from three wells, and from the underlying Mississippian limestones from one well. The target in most cases was the Paradox, which is the major producer in the Aneth field about 50 miles to the southeast.

Although favorable beds of the Paradox Formation crop out or underlie the ISA Complex, their potential for containing oil is low. Broad uplifts beginning in late Cretaceous time have caused the overlying Mesozoic sedimentary rocks to be eroded away. As a result of erosion, approximately 300 feet of the Paradox Formation and about 800 feet of the upper part of the Hermosa Group, are now exposed within the tract along Gypsum Canyon. It is, therefore, very unlikely that reservoir pressure exists in Pennsylvanian rocks

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in this area. If oil and gas existed in the Paradox Formation or overlying units in Dark Canyon, there is a good chance that it has drained away. Nevertheless, small fields may exist in stratigraphic or structural traps in Pennsylvanian or Mississippian rocks.

Based on this discussion, the ISA Complex is assigned an oil and gas favorability of (f2). The size of the hydrocarbon accumulation in such an environment is anticipated to be less than 10 million barrels of oil or less than 60 billion cubic feet of gas. Based on the available information, the certainty of occurrence for oil and gas is rated low (c2) (SAI, 1982).

Under the current land use plan, 4,740 acres of the ISA Complex are in Category 2 (special stipulations); and 63,290 acres (of which 62,040 are in the Dark Canyon Primitive Area) are in Category 4 (closed to leasing). There are presently no oil and gas leases in the ISA Complex.

## • Locatable Minerals

There are no known deposits of locatable minerals in the ISA Complex, and at present, there are no mining claims in the ISA Complex. Approximately 62,040 acres in the Dark Canyon Primitive Area are closed to entry under the General Mining Laws; the remainder of the ISA Complex is open to entry.

## • Uranium

The locatable mineral potential of the ISA Complex is considered to be low. Due to geologic unfavorability, no deposits are known to be present. The southern most part of the ISA was to be predicted to have a moderate potential for uranium deposits; however, the area reported as being favorable for uranium is actually 4 to 8 miles south and east of the southern most part of the Dark Canyon ISA Complex. On this basis, the ISA is assigned a uranium/ vanadium favorability of f1 (containing less than 500 metric tons of uranium oxide). The certainty that such deposits do not occur is moderate (c3) (SAI, 1982). The primitive area (62,040 acres) has been withdrawn from mineral location since 1920. The Middle Point area (5,990 acres) is open to mineral locations.

## • Salable Minerals

The salable minerals within the ISA Complex have little or no commercial potential, based on the poor quality and the remote nature of the material. These deposits are not unique or economically significant due to the presence of ample similar materials outside the ISA Complex.

## Wildlife Including Special Status Species

The ISA Complex provides a diversity of habitat types for animals commonly found in rocky, pinyon-juniper woodland areas.

Mule deer inhabit some of the canyons year long. The majority of the deer use occurs from October through April. None of the ISA Complex has been identified as crucial deer winter range; however, mule deer winter on Middle Point from November to April.

There are no existing or proposed wildlife management facilities or treatments in the ISA Complex.

Dark Canyon, Lost Canyon, and Black Steer Canyon are within the BLM's White Canyon-Red Canyon Habitat Management Area. The rest of the Dark Canyon ISA Complex is within the Beef Basin Habitat Management Area. All of the primitive area (62,040 acres) has been identified by BLM and the UDWR as crucial yearlong desert bighorn sheep habitat.

Cougar and bobcat inhabit the remote canyons where they are seldom seen. Spotted skunk and ringtail cat are found in the wetter canyons. Cottontail rabbit, whitetail antelope squirrel, chipmunk, deer mice, pinyon mice, whitethroat woodrat, porcupine, and assorted bats are found within the ISA Complex.

There is no waterfowl habitat within the ISA Complex, but mourning dove and chukar nest there. The greatest diversity of non-game birds is found in the canyons during the spring migration. White-throated swift, broadtailed hummingbird, hairy woodpecker, ash-throated flycatcher, violet-green swallow, common raven, pinyon jay, plain titmouse, bushtit, canyon wren, mountain bluebird, blue-gray gnatcatcher, black-throated gray warbler, rufus-sided towhee, black-throated sparrow, and chipping sparrow are found in the ISA. Cooper's hawk, red-tailed hawk, American kestrel, and great horned owl are also in the area.

# DARK CANYON ISA COMPLEX

The most common reptile and amphibian species within the ISA Complex are the Great Basin spadefoot toad, red-spotted toad, side-blotched lizard, northern plateau lizard, leopard lizard, collared lizard, tree lizard, and Hopi rattlesnake. There are no fish species in the ISA Complex.

Threatened and endangered wildlife species include bald eagle which are winter transients in the vicinity of the ISA Complex; however, no roosting sites have been identified. Peregrine falcons may utilize these canyons, but no aeries have been observed. In addition, six Category 2 candidate species may occur in the ISA. These include the Great Basin Silverspot butterfly, ferruginous hawk, long-billed curlew, southern spotted owl, western yellow-billed cuckoo, and the white-faced ibis (refer to Appendix 4 in Volume I).

## Forest Resources

Approximately 34,370 acres of pinyon-juniper woodland are within the ISA Complex. These are low-quality sites (20 cubic feet usable wood per acre) and are considered non-productive forest land. There is less than an estimated 5,298 cords of firewood in the ISA Complex. No areas in or near this ISA Complex have been designated as Christmas tree cutting areas.

No free-use firewood permits or permits for juniper posts have been issued in Dark Canyon due to the existing primitive area designation. Also, due to the limited access and distance to Middle Point from population centers, firewood and pinyon post gathering use here is very limited. Pine nuts are collected by some recreationists, but there has been no commercial gathering near this area. Demand for forest products in the ISA is not expected to significantly increase in the foreseeable future.

## Livestock and Wild Horses/Burros

The ISA Complex contains a total of 775 AUMs in portions of two grazing allotments: Indian Creek and White Canyon (refer to Table 7).

Grazing in the Dark Canyon ISA Complex portion of the Indian Creek allotment is primarily during winter and spring. It is estimated that there are approximately 698 AUMs of forage produced in the primitive area portion of the Indian Creek allotment. Estimated forage production in the Middle Point area, within the Indian Creek allotment, is approximately 69 AUMs. There are approximately 8 AUMs of forage produced in the portion of the White Canyon Allotment in the ISA Complex.

There are no range developments within the Dark Canyon Primitive Area. Rough terrain and shallow soils make most improvements infeasible.

Range improvements within the Middle Point area include a crested wheatgrass seeding of about 80 acres done in 1956 and a developed spring (Pete's Spring). The cherry-stemmed roads on Middle Point and Lean-to Point are used in grazing management, access to the vicinity of Pete's Spring, and access to a range trend study in Section 2. There are no new range developments proposed for the ISA Complex.

Predator control was not conducted during the 1986 to 1987 period in the grazing allotments that comprise the Dark Canyon ISA Complex (USDA, APHIS, 1988). There are no wild horses or burros within the ISA.

No other agricultural activity takes place within the ISA Complex. Rough terrain, shallow soil, and limited rainfall would make agricultural activity impractical.

Table 7  
Livestock Grazing Use Data

Allotments	Total Acres	Acres in ISA*	Total AUMs	Number of AUMs in ISA	Number and Kind of Livestock	Season of Use	Number of Operators
Indian Creek	236,890	59,980	8,518	767	1,065 Cattle	10/16-06/16	1
White Canyon	248,757	8,050	5,544	8	450 Cattle 12 Horses	03/01-02/28	1
Total	485,647	68,030	14,062	775			2

Sources: BLM File Data.

# DARK CANYON ISA COMPLEX

## Visual Resources

The 62,040 acres of the Dark Canyon Primitive Area have been given a VRM Class I rating, which provides primarily for natural ecological change; however, it does not preclude very limited management activity. The activity must not attract attention in the characteristic environment.

The 5,990 acres of the Middle Point area are in VRM Class IV, where the contrasts may attract attention and be a dominant feature of the landscape.

The entire Dark Canyon Primitive Area contains Class A scenery. Class A scenery combines the most outstanding characteristics of the physiographic region. The Middle Point area contains 5,990 acres of Class B scenery. Class B scenery combines some outstanding features and some that are fairly common to the physiographic region. Refer to Appendix 7 in Volume I for a description of BLM's VRM rating system.

The landscape character of the ISA Complex is composed of three principal canyon systems: Dark Canyon (with its tributary canyons), Bowdie Canyon, and Gypsum Canyon-Fable Valley. All three canyon systems have similar topography and landscape features.

The primary landscape features are abrupt deep canyons with interesting rock formations and high rock ledges, crags, and palisades. Much of the scenery is not easily accessible to view. The rock formations are pinnacled, smooth, and, in places, very rugged in form. A great deal of color contrast exists in the rock and landforms, with the rock colors ranging from light tans and reds to dark reds. The soils are tan to light red. Textures of the rock are coarse, while the soils are smooth.

The character of the Middle Point area consists of the end of a plateau top jutting into Dark Canyon Primitive Area from the east. The end of the plateau top is divided into Middle Point in the north and Lean-To Point in the south.

Visual contrast is provided by diverse vegetation, including sparse stands of pinyon-juniper on the talus slopes and rock ledges, with an understory of sagebrush, blackbrush, and rabbitbrush. In the Middle Point area, pinyon-juniper stands are moderately dense having clearings with sagebrush, blackbrush, winterfat, crested wheatgrass, and Indian ricegrass.

Dark-green stands of Douglas fir are present in the upper ends of the canyons. Riparian areas vary from dark to light green to gray-green and textures are coarse to fine. The clumps of pinyon-juniper provide color contrasts with the light-colored soil.

Three types of modifications have been identified within the ISA Complex boundaries: ways, hiking trails, and a chaining. These modifications create a low degree of visual contrast; they can be seen but do not attract attention.

## Cultural Resources

A total of 68 archeological sites have been recorded in the ISA Complex (USDI, BLM, 1988). The majority of the sites in the WSA are prehistoric surface lithic scatters located in eolian deposits on mesa top or in canyon bottoms. Approximately half of the lithic scatters also contain ceramics and ground stone artifacts are present at several of the sites. Many of the sites in the ISA are located in rockshelters or overhangs in the canyons. These sites contain remains of masonry dwellings and granaries and sometimes multiple rooms are present. Middens and rock art panels are also associated with these shelter sites. Three rubble mound sites are located on the mesa tops of the unit and represent ruins of multi-room masonry structures. One burial has been recorded in the unit.

The unit consists primarily of canyons, thus most of the recorded sites are located in canyon settings. They consist of cliff dwellings, granaries, rock art sites, middens, and surface scatters located on the canyon sides and bottoms. If more mesa tops were included in the ISA, there would probably be more artifact scatters located in eolian deposits. Most of the recorded sites are attributed to Anasazi occupation during the Pueblo II and Pueblo III periods. Because of the inaccessibility of Dark Canyon, this ISA Complex primarily relates to use of the range for cattle and sheep grazing. Physical evidence remaining from this land use includes a stock trail (Fable Valley), a corral (Fable Valley), and cowboy camps (trash scatters, as well as rooms built into caves).

There are no existing National Register sites and/or nominations in this ISA Complex. Most of the recorded sites have not been evaluated for National Register of Historic Places significance. Of those that have been evaluated, approximately half are considered to be eligible for nomination.

## DARK CANYON ISA COMPLEX

Several inventory projects have been conducted in the ISA Complex. A reconnaissance in 1958, a brief survey of the Dark Canyon Plateau in 1967, and a 1 percent sample survey in 1977 have provided cultural resource data for the area. A more recent inventory, the Tar Sands Project, recorded five sites in the ISA in 1983 (Tipps et.al., 1988). Average site densities for the White Canyon sampling unit of the Tar Sands project are approximately 411 sites per 23,000 acres and may be as high as 1,150 sites per 23,000 acres. This inventory was not designed specifically for the ISA, thus statistics based on it may be unreliable. However, the potential for finding additional sites in the unit is considered to be good. These sites would probably consist of numerous cliff dwellings, rubble mounds, middens, rock art sites, and surface artifact scatters.

### Recreation

The Dark Canyon ISA Complex provides recreationists with outstanding opportunities for backpacking and camping. Dark Canyon has been described as a miniature Grand Canyon. The remoteness and solitude of the area provides and draws individuals to significant primitive recreation experiences.

Most of the visitor-use information was collected from the register boxes located at different trailheads into Dark Canyon. Register boxes are located at the Sundance Trail, Trail Canyon, and Beef Basin. Statistics from 1980 to 1984 indicate recent visitor use in Dark Canyon. Recorded annual visitation for that period is as follows: 1980 (2,279), 1981 (4,308), 1982 (2,402), 1983 (2,531), and 1984 (2,730). In 1987, the recorded use was about 6,000 visitor days. These data are incomplete but give some indications of use.

The visitation to the ISA Complex occurs during the spring and fall seasons due to the availability of water and the moderate temperatures.

Access into Dark Canyon is difficult. The Sundance Trail, the most popular access point on BLM-administered land, descends a steep talus slope. The elevation at the trailhead is 5,400 feet, the bottom of the trail is near 4,200 feet. The 1,200 foot descent occurs in less than 1 mile. The trail is marked by cairns at strategic points to aid in locating the trail.

Trail Canyon, Youngs Canyon, and Black Steer Canyon also provide access into Dark Canyon. These difficult trails have little identifications as they traverse

down steep talus slope ledges and boulder fields. Once the bottom of the canyon is reached, boulder fields and large and small pouroffs must be circumnavigated while hiking the canyon.

The least difficult access originates to the east in the Manti-LaSal National Forest or to the west in Glen Canyon NRA. The figures mentioned previously do not reflect the visitor use originating at these access points. Lake Powell offers the visitor boating access to the lower portion of Dark Canyon within Glen Canyon NRA. The upper portion of Dark Canyon and Woodshoe Canyon in the national forest provide fairly easy access routes into the upper reaches of Dark Canyon in the ISA Complex.

The Bowdie and Gypsum Canyons currently receive little recreation use due to their remoteness and lack of defined access.

No surveys have been completed on hunting statistics; however, it is estimated that, in an average hunting season, 20 hunters spend about 225 days in pursuit of desert bighorn sheep and deer in the Dark Canyon ISA. Some of the bighorn sheep hunting may involve the use of commercial guide service. The ISA Complex is part of UDWR North San Juan Bighorn Sheep Hunting Unit No. 700.

There is potential for ORV use in the ISA Complex off the roads on Middle Point. However, steep canyons and pinyon-juniper woodland restrict this potential to open areas on the plateau. A little vehicle use (estimated at less than 100 visitor days/year) currently occurs in the ISA Complex mostly on 0.5 mile of vehicular way in the Middle Point area.

The overall recreational use of the ISA Complex is currently estimated to average about 17,200 visitor days annually, including a small amount (1,000 visitor days) of use related to nonlocal commercial outfitters. Approximately 95 percent of the use is attributed to primitive activities and approximately 5 percent is attributed to recreational activities (i.e., hunting and sightseeing that utilize vehicular access on existing ways.

### Land Use Plans

All lands within the ISA Complex are public lands administered by BLM's San Juan Resource Area. There are no State of Utah owned lands in the ISA. However, the Utah State Legislature passed S.C.R. No. 1 in 1986 opposing any additional wilderness

# DARK CANYON ISA COMPLEX

designation in Utah. There are no private lands in the ISA. The ISA Complex is bounded on the north by Canyonlands National Park and Glen Canyon NRA; on the west by Glen Canyon NRA; and on the southeast corner by the Manti-LaSal National Forest. NPS has proposed a wilderness area in Canyonlands National Park on those lands adjacent to the portion of the ISA Complex on the north. The portion of the Manti-LaSal National Forest has been designated as wilderness on those lands adjacent to the ISA on the east. Glen Canyon NRA has a proposed wilderness area adjacent to the ISA on the west. All other boundaries of the ISA Complex are adjacent to public lands.

There are no rights-of-way within the ISA Complex.

Legal access is available by U.S. Highway 191, State Highway 211, and county roads only to the peripheries of the ISA. There are a minimum number of small trails leading into the area.

On December 2, 1970, under Withdrawal Order U-12307, the lands of Dark Canyon ISA were withdrawn from all forms of appropriation, selection, location, and entry under the public land laws and designated as the Dark Canyon Primitive Area.

The Dark Canyon Primitive Area was designated a primitive area as a result of the multiple-use classification inventory process completed in 1968. The BLM Beef Basin MFP (1973) recognized the primitive area and made no further recommendations. Therefore, the same action has carried through and the area has been managed as a primitive area under BLM land use plans.

The San Juan RMP will replace the MFP. Neither the MFP or RMP address wilderness designation. However, wilderness designation is part of the multiple-use concept and the BLM land use plan is linked to the Statewide Wilderness EIS through analysis of the present plan as the No Action/No Wilderness Alternative.

The San Juan County Master Plan emphasizes multiple-use of public lands and zones the ISA as open range and forest land (Planning and Research Associates, 1967). However, the policy of the San Juan County Commission is to oppose any legislative or administrative designations of wilderness in the county (San Juan County Commission, 1980). The commission has also endorsed the Consolidated Local Government Response to Wilderness that opposes wilderness designation of BLM lands in Utah (Utah Counties, 1986).

## Socioeconomics

### • Demographics

The ISA Complex is in west-central San Juan County. The nearest communities are Blanding and Monticello. Socioeconomic effects of designation would be confined mostly to San Juan County, which can be summarized as rural and sparsely populated.

Between 1970 to 1980, the population of San Juan County was fairly static and grew by less than a 2 percent annual growth rate. The 1985 population was 12,500. Since 1983 the county's population has declined by approximately 500 (USDI, BLM, 1987b). The two largest communities in the county are Blanding (1980 population 3,118) and Monticello (1980 population 1,929). Approximately 40 percent of the county's population reside in these communities. Table 8 presents the baseline and projections for San Juan County. Population projections for the county indicate that the number of people living in San Juan County in the year 2010 will be about 15,000 for about a 21 percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 8  
Baseline and Projected Population and Employment Growth  
San Juan County

	1980	1990	2000	2010
Population	12,400	12,900	12,900	15,000
Employment	3,980	3,800	4,300	5,100

Source: Utah Office of Planning and Budget, 1987.

The major racial groups are caucasians (52.4 percent) and American Indians (45.7 percent). About 4 percent of the Navajo reservation's population live in San Juan County (USDI, BLM, 1987b).

San Juan County is the largest county in Utah, comprising 5,045,760 acres or about 9.6 percent of the BLM, 24 percent by the BIA in conjunction with the Navajo tribe, and 20.9 percent by other Federal agencies. About 6 percent is in State ownership and about 8.1 percent is privately owned (University of Utah, BEBR, 1982; USDI, BLM, 1987b).

### • Employment

Table 8 shows the baseline and projected total employment for the county to the year 2010. The government sector (Federal, State, and local) is the most important in terms of employment in the San Juan

# DARK CANYON ISA COMPLEX

County economy. In 1987 mining made up about 16.5 percent of the total employment in the county. Tourism also generates a significant number of jobs (USDI, BLM, 1987b).

San Juan County is part of the Southeast MCD. Table 9 shows the baseline (1980) and projected employment by source for MCD to the year 2010. In 1980 the leading employment sectors for the MCD were mining (28 percent), government (18 percent), and trade (15 percent). It is projected that by the year 2010, employment will increase by about 27 percent and that services will increase to 18 percent, trade to 17 percent, and government to 15 percent of the total. While the mining, agriculture, and construction sectors will decline (Utah Office of Planning and Budget, 1987).

Table 9  
Southeast Multi-County District  
Employment<sup>a</sup>

	1980	1990	2000	2010
Agriculture	1,203	1,100	1,100	1,100
Mining	6,368	3,500	4,500	5,700
Construction	1,360	700	900	1,100
Manufacturing	551	600	700	800
Transportation, Utilities	1,563	1,800	2,000	2,200
Trade	3,289	3,600	4,000	4,800
Finance, Insurance, Real Estate	424	400	400	500
Services	2,067	3,200	4,000	5,300
Government	3,994	4,100	3,800	4,400
Nonfarm Proprietors	<u>1,715</u>	<u>2,000</u>	<u>2,200</u>	<u>2,800</u>
Totals	22,534	21,000	23,600	28,700

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Carbon, Emery, Grand, and San Juan Counties.

## • Sales and Revenues

Activities in the ISA Complex that could be of any local economic consequence include livestock production, hunting, and dispersed nonmotorized recreation. Table 10 summarizes the local sales and Federal revenues from the ISA Complex. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

The ISA Complex has no mining claims or oil and gas leases; therefore, no income or revenues are generated from these potential resources.

It is estimated that the AUMs produced within the Dark Canyon ISA Complex account for \$15,500 in livestock sales, including \$3,875 in ranchers' return on labor and investment.

Table 10  
Local Sales and Federal Revenues

Source	Annual Local Sales <sup>a</sup>	Annual Federal Revenues
Livestock Grazing	\$ 15,500	\$1,194
Recreational Use	<u>\$ 70,520</u>	<u>\$1,450</u>
Total	\$86,020	\$2,644

Sources: USDI, BLM File Data; Volume I, Appendix 9.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

Fifteen test oil and gas wells have been drilled in the ISA Complex over the past 21 years. No production is currently taking place in the ISA Complex.

The actual amount of income generated locally from recreational use in the ISA Complex is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that State-wide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Dark Canyon ISA is estimated as about 17,200 visitor days per year, for total estimated local sales of about \$70,520.

Included in the recreation use are an estimated 410 visitor days attributable to commercial outfitters (including bighorn sheep hunting guide service). This use has an estimated \$20,500 income to non-local business.

The WSA generates Federal revenues from livestock grazing and commercial recreation. The two livestock grazing permittees in the ISA Complex can use up to 775 AUMs per year. Based on a \$1.54 per AUM grazing fee, the ISA Complex can potentially generate \$1,194 of Federal revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements. Commercial recreation use contributes about \$1,450 annually in fees.

## ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis assumptions and guidelines for all alternatives are described in the Introduction to Volume V. The following analysis is also based on implementation of the Action Scenarios presented in the Description of the Alternatives.



# DARK CANYON ISA COMPLEX

## No Action/No Wilderness Alternative

### • Impacts on Wilderness Values

Because the ISA complex would not be designated wilderness with this alternative, the identified wilderness values would not receive the degree of protection afforded by application of the BLM Wilderness Management Policy (BLM Manual 8560). Wilderness values in the ISA complex would be protected by limitations placed on potential surface-disturbing activities (i.e., VRM Class I management and closure to mineral location and sale and ORV use on 62,040 acres, and management under oil and gas leasing Category 4 (closed to leasing) on 63,290 acres. The ISA complex would be left without a formal designation because the primitive area designation would not be continued.

No development would be expected in the foreseeable future that would affect wilderness values. No loss of wilderness values is anticipated.

Because future vehicular use would generally be limited by management constraints or by terrain to existing vehicular ways, no additional disturbance from ORV activity is anticipated in the future. The continued and increased use of the existing 0.5 miles of way in the Middle Point area would occasionally detract from opportunities for solitude and primitive recreation.

The 2 to 7 percent annual increase in visitor use would not be expected to significantly reduce wilderness values because the additional use would be largely primitive in nature and the ISA complex is large enough to incorporate the additional use adequately, especially when considered in conjunction with contiguous NPS and FS areas.

This alternative would not complement or enhance wilderness uses, values, and management of contiguous FS and NPS lands, which are either designated wilderness or proposed for wilderness designation.

The degree to which wilderness values would be lost over the long-term future is not accurately known. Significant loss is unlikely in the primitive area due to management restrictions. Loss would occur in the Middle Point area as intrusions increase.

Conclusion: Wilderness values would not be protected by wilderness designation. No disturbance that would affect wilderness values is anticipated in the foreseeable future.

## All Wilderness Alternative (Proposed Action) (68,030 acres)

### • Impacts on Wilderness Values

Designation and management of all 68,030 acres as wilderness would preserve the wilderness values in the Dark Canyon ISA Complex. The potential for surface-disturbing activities would be eliminated through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness and outstanding opportunities for solitude and primitive recreation would be preserved on all 68,030 acres. Special features in the WSA, including Class A scenery, geological features, archaeological and historical features, wildlife associated with wilderness, endangered and sensitive species, and perennial streams, would also be preserved.

Vehicular use of all existing ways would generally cease with ORV closure, improving opportunities for solitude and primitive recreation and naturalness.

Increased visitor use that would occur with time would be primitive in nature and would be managed so as to not result in loss of wilderness values.

This alternative would complement and enhance wilderness uses, values, and management of contiguous FS and NPS lands, which are either designated wilderness or proposed for wilderness designation.

Conclusion: Wilderness designation would preserve the wilderness values in the ISA Complex.

## Partial Wilderness Alternative (62,040 acres)

### • Impacts on Wilderness Values

Wilderness designation of 60,040 acres would contribute to preservation of the area's wilderness values. Wilderness values would be preserved in the designated area. Protection in the designated area would include continued management under VRM Class I which generally allows for only natural ecological change, continued ORV closure including continued closure of 7 miles of ways, and continued closure to future mineral leasing and location. Naturalness and outstanding opportunities for solitude and primitive recreation and most special features including Class A scenery, geological features, archaeological and historical

# DARK CANYON ISA COMPLEX

features, wildlife associated with wilderness, endangered and sensitive species, and perennial streams, would also be preserved in the designated area. Endangered and sensitive species and wildlife associated with wilderness would also benefit from the solitude associated with wilderness.

No development that would affect wilderness values is anticipated in either the designated or nondesignated area in the foreseeable future.

Vehicular use of a 0.5 mile of way in the nondesignated area would continue to occasionally detract from opportunities for solitude and primitive recreation during the period of activity.

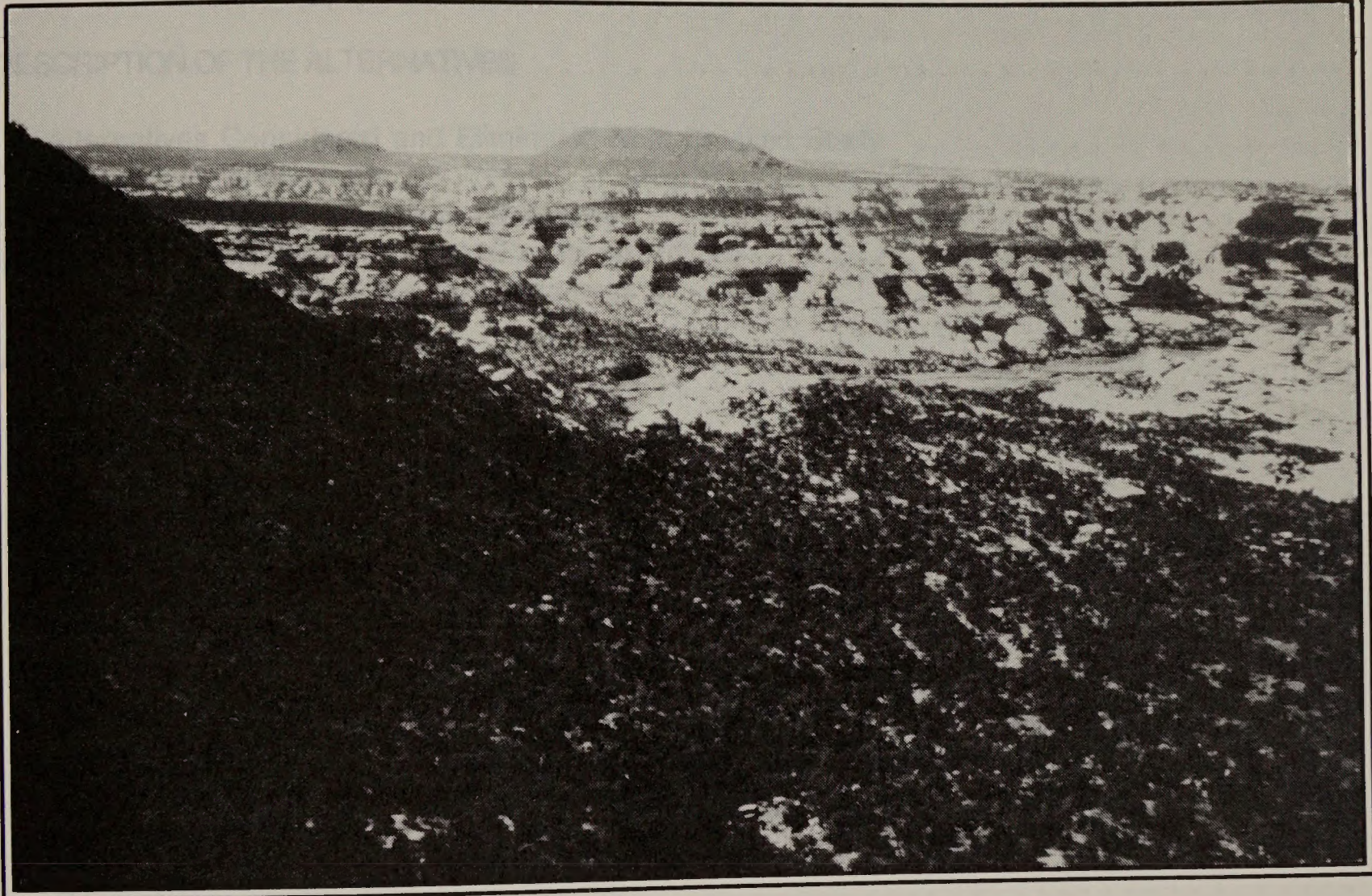
This alternative would complement or enhance wilderness uses, values, and management of contiguous FS and NPS lands, which are either designated wilderness or proposed for wilderness designation.

The loss of wilderness values that would occur in the nondesignated area from disturbance over the long-term future is not accurately known. Loss would occur as intrusions increase.

**Conclusion:** Wilderness values would be preserved in the designated area which is approximately 91 percent of the WSA. No disturbance that would affect wilderness value is anticipated in either the designated or nondesignated area in the foreseeable future.

# Butler Wash WSA

General Description of the Area  
Changes for the Final EIS  
Specific Issues Identified Through Scoping and Public Comments  
Issues Considered But Not Analyzed in Detail



Land Use Plans  
Biodiversity

## ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

No Action/No Wilderness Acquisition  
All Wilderness Acquisition (Proposed Action)



# BUTLER WASH WSA

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# BUTLER WASH WSA

(UT-060-169)

## INTRODUCTION

### General Description of the Area

The Butler Wash WSA contains approximately 24,190 acres of BLM-administered land. Within the boundary but not included in the WSA are three State sections totaling 1,920 acres. Acreage differences between the BLM Intensive Wilderness Inventory and those reported in the Final EIS are due to a slight boundary modification (USDI, BLM, 1980).

The WSA is located in northwestern San Juan County, about 55 road miles northwest of Monticello. It is bounded by The Needles proposed wilderness of Canyonlands National Park on the east and north; a jeep trail into the Grabens and the road across Bobby's Hole on the northwest; section lines and State lands on the west; the Ruin Park road, the east edge of Beef Basin, and the House Park road on the southwest; a road circling a butte south of the West Fork of Salt Creek, State lands, and section lines on the south.

The configuration of the unit forms a rough triangle in shape. It is 8 miles long (north to south) and 7 miles wide (east to west) at its longest and widest points.

Butler Wash and its tributaries drain this unit to the north into the Needles District of Canyonlands National Park and eventually the Colorado River. The WSA also contains parts of the upper ends of West Fork and main fork of Salt Creek drainages. The canyons are relatively shallow with meandering sand and gravel wash bottoms. The upper ends of Salt Creek show the deepest cutting with abrupt 600-foot canyons. Colorful red sandstone alternates with bands of white sandstone on the walls of these canyons.

This WSA is a mosaic of pinyon-juniper woodland covered mesas and slopes, sagebrush parks, and buff-colored sandstone and buttes, knobs, and pinnacles. These eroded sandstone outcrops are particularly striking in the northern and eastern portions of the unit. The Needles District of Canyonlands National Park, bordering this unit on the north and east, was named for the many sandstone spires in this area.

Information on the climate of Butler Wash is limited because the nearest weather station is at Canyonlands National Park, 6 air miles away from Butler Wash. In addition, Canyonland's elevation of 5,000

feet is not representative of Butler Wash's elevation, which ranges from 5,600 to 7,400 feet.

The average annual temperature at Canyonlands is 53 degrees Fahrenheit (F), with an average low of 38 degrees F, and an average high of 69 degrees F. The record low is -11 degrees F, and the record high is 105 degrees F.

Annual precipitation ranges from 8 to 12 inches over Butler Wash. January, March, and August are the driest months. June, September, and October are the wettest months. Annual total snowfall ranges from 20 to 30 inches.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume V, the following changes specific to the WSA have been made since publication of the Draft EIS.

1. The anticipated surface disturbance presented in the Draft EIS (600 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities projected to be feasible within the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of surface disturbance estimates from the 600 acres reported in the Draft EIS to no surface disturbance for the Final EIS.

### Specific Issues Identified Through Scoping and Public Comment

- Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume V (i.e., impacts on air quality, geology and topography, water rights, and land use plans and policies),

STATEWIDE  
POCKET MAP  
WSA  
NO. **52**  
SEE VOL. I

## BUTLER WASH WSA

the following issues or impacts specific to the Butler Wash WSA were discussed in the Draft EIS but are not analyzed in detail in the Final EIS for the reasons described below.

1. Soils: Estimates of surface disturbance without wilderness designation have been revised downward from the 600 acres reported in the Draft EIS to no surface disturbance in the Final EIS. Given this new scenario, the impacts of direct disturbance of soils would be reduced and would not be significant with any of the alternatives.

Currently, there is very little ORV use (a couple vehicles per year) taking place in the WSA, and potential use is severely limited by the topographic features. Therefore, impacts on soils are not analyzed in detail for the Butler Wash WSA.

2. Vegetation Including Special Status Species: Estimates of surface disturbance without wilderness designation have been revised downward from the 600 acres reported in the Draft EIS to none in the Final EIS. Given this new scenario, the impacts of direct disturbance of vegetation would be reduced and would not be significant with any of the alternatives. There are no threatened, endangered, or proposed threatened or endangered plant species known to occur within the WSA. However, Erigeron kachinensis, a Category 2 candidate species, may occur in the WSA and should any surfacing-disturbing activities be proposed in the future, BLM would conduct site-specific clearances of potentially disturbed areas and consult with the FWS concerning impacts on threatened or endangered plant species. Therefore, impacts on vegetation are not analyzed in detail for the Butler Wash WSA.

3. Water Resources: The public is concerned that wilderness designation would interfere with development of water. Future developments, although none are proposed, could increase sediment yield and affect water quality. There are no perennial streams or wells in the Butler Wash WSA. Potential uses include livestock, recreation, and wildlife use that would not be affected by wilderness designation. Therefore, impacts on water rights, uses, and quality are not significant for the Butler Wash WSA and are not discussed in detail in the Final EIS.

4. Mineral Resources: The public has expressed concern that wilderness designation would interfere with or prevent mineral exploration, development, or production.

Even though there are three oil and gas leases (440 acres) in the WSA, potential oil and gas deposits are small with a very low certainty that they exist. Analysis of the data also indicates that any potential potash deposits would generally be thin and discontinuous.

There are no mining claims in the WSA and projected uranium and other locatable mineral deposits are small and/or could not be economically developed in the foreseeable future (see Appendix 6 in Volume I). More accessible deposits of salable minerals exist outside the WSA. For these reasons, mineral exploration or development would not occur in the foreseeable future with or without wilderness designation. Therefore, impacts on mineral and energy exploration and production are not analyzed in detail in the Final EIS.

5. Wildlife Including Special Status Species: The public is concerned that without wilderness designation mineral or other developments would destroy wildlife habitat and lead to reductions in wildlife populations. They are also concerned that ORV use would disturb wildlife and destroy habitat. The Butler Wash WSA provides habitat for a variety of animal species, but populations are low and no one species can be described as abundant. One endangered and six Category 2 candidate species may be found in the WSA.

Because no mineral developments are expected in the WSA in the foreseeable future, wildlife habitat would not be lost. Terrain and surface features generally restrict the use of ORVs to about 2 miles up Butler Wash to Starvation Pocket (estimated 444 visitor days use per year), and use is mainly primitive. Given these conditions, impacts on wildlife habitat and populations are not significant issues for the Final EIS.

6. Forest Resources: The only forest resources in the WSA are 17,030 acres of pinyon pine and juniper trees. This pinyon-juniper woodland is considered low quality for firewood, Christmas trees, and fence posts. Demand is low and there is limited access. For these reasons, impacts on forest resources are not significant issues for analysis in the Final EIS.

7. Livestock Management: The public is concerned that wilderness designation would interfere with livestock management by placing restrictions on access for maintenance of existing range improvements, and moving of livestock, and by preventing future range improvements and restricting predator



# BUTLER WASH WSA

control. However, under the Wilderness Management Policy (BLM Manual 8560), there will be no curtailments in grazing simply because an area is wilderness. The Butler Wash WSA comprises a small portion (9 percent) of the Indian Creek Allotment. There are no developments or rangeland improvements planned for the WSA. Vehicles are not used for livestock management in the WSA. Predator control has not practiced in the area for several years. For these reasons, impacts on livestock management are not significant issues for the Butler Wash WSA.

8. Visual Resources: As discussed above for vegetation, no surface disturbance is projected for the WSA in the Final EIS. Therefore, visual resources would not be significantly affected. Visual resources are not addressed in the Final EIS as a separate topic, but are addressed in relation to naturalness and special features in the Wilderness Values sections.

9. Cultural Resources: Cultural resources could be destroyed by surface-disturbing projects, use of vehicles, or vandalism. However, only 13 cultural resource sites have been recorded in the Butler Wash WSA. No mineral-related surface disturbance is projected. Visitation is moderate (600 visitor days per year) and mainly primitive. Terrain limits vehicle use to about 2 miles in Butler Wash. Additionally, inventories for the purpose of site recordation and mitigation of impacts would take place prior to any surface disturbance in the future. Given these conditions, impacts on cultural resources are not significant issues for the Butler Wash WSA.

10. Recreation: The public has expressed concern that wilderness designation would change recreational use from motorized to primitive or, conversely, that without wilderness designation, motorized recreation will eliminate or reduce opportunities for primitive recreation. Recreational use of the Butler Wash WSA is moderate (estimated 600 visitor days per year) and would remain mostly primitive with or without wilderness designation due to the rugged terrain of the WSA. Therefore, impacts on recreation use are not significant and are not analyzed in detail in the Final EIS.

11. Economic Conditions: The public, including State and local government, is concerned that wilderness designation would preclude mineral or other economic developments and adversely affect local economic conditions. Others believe that primitive recreation use would increase following wilderness designation and would contribute to the local economy.

There are no existing or anticipated mineral developments or proposals for lands or realty activities which would be impaired with or without wilderness designation. Because no economic developments are expected and because recreational use is only 600 visitor days per year, impacts on economic conditions for the Butler Wash WSA are not significant issues for the Final EIS.

## • Issues Analyzed in Detail

The only significant issue for the Butler Wash WSA is impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.

Comments made during the public comment period for the Draft EIS centered mainly on the need for, and adequacy of, the rationale for the BLM Proposed Action; the need for further inventories of resource values; and BLM's wilderness inventory and assessment of wilderness values.

See Volume VII-B for responses to general comments applicable to all WSAs and/or Statewide analysis and Volume VII-C, Section 52, for responses to specific comments about the Butler Wash WSA.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated from Detailed Study

No alternatives were identified for this WSA during the initial scoping other than those analyzed.

Public comments suggested that alternatives that would add up to 1,590 acres of Federal and State lands on the west and south edges of the WSA be considered in the Final EIS. These alternatives are not analyzed because the inclusion of State lands is not consistent with BLM's wilderness review guidelines (refer to Volume VII-B, General Comment Response 6.4) and because other public lands were dropped from study during the inventory phase (refer to Volume VII-B, General Comment Response 3.1).

### Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action/No Wilderness Alternative; and (2) All Wilderness Alternative (Proposed Action) (24,190 acres). The All Wilderness Alternative includes a boundary modification that would increase the area to 24,190

## BUTLER WASH WSA

acres from its original 22,030 acres. Because there is essentially no difference in environmental consequences between the alternative and the variation, only the larger (24,190-acre) figure is used for analysis in this document.

A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case. The assumed management actions presented in the Introduction to Volume V are also applicable.

- No Action/No Wilderness Alternative

With this alternative, none of the 24,190-acre Butler Wash WSA would be designated by Congress as part of the NWPS. Although BLM's land use plans are regularly updated and the Beef Basin MFP (USDI, BLM, 1973) will be superseded by the San Juan RMP, it is assumed that the area would continue to be managed in accordance with the MFP. The three sections (1,920 acres) of State land in the WSA have not been identified in the MFP for special Federal acquisition through purchase or exchange. No private lands are located within the WSA (refer to Map 1).

- Management Conditions and Constraints

All 24,190 acres would remain open to mineral location and sale. There are no existing mining claims; however, development work, extraction, and patenting would be allowed on any future valid mining claims. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) without concern for wilderness values. Existing post-FLPMA oil and gas leases (three leases on 440 acres) and future lease applications would be regulated under leasing Category 1 (standard stipulations) on about 3,890 acres, Category 2 (standard and special stipulations) on about 2,620 acres, Category 3 (no surface occupancy) on 8,320 acres, and Category 4 (no leasing) on 9,360 acres. Although minerals would be managed as described, mineral exploration and development are not anticipated because the level of known resources and the probability of their development are too low to support a development assumption. Appendix 6 in Volume I explains the mineral exploration and development assumptions.

The present domestic livestock grazing use of about 206 AUMs in the WSA would continue as authorized in the MFP.

The entire WSA acreage, including about 2 miles of existing vehicular ways, would be open to ORV use. The rough terrain limits ORV activities to the existing ways.

The entire area would be open to woodland product harvest. However, harvest is not expected because of sparse resources and lack of access.

The area would continue to be managed as VRM Class II on 13,790 acres and Class III on 10,400 acres.

- Action Scenario

Given BLM management actions described above and the resources described in the Affected Environment section, BLM anticipates that implementation of the No Action/No Wilderness Alternative would not result in any surface disturbance in the foreseeable future. No leasable, locatable, or salable mineral resource exploration or development is anticipated in the foreseeable future. Also, no rangeland, wildlife habitat, or watershed improvement projects are planned.

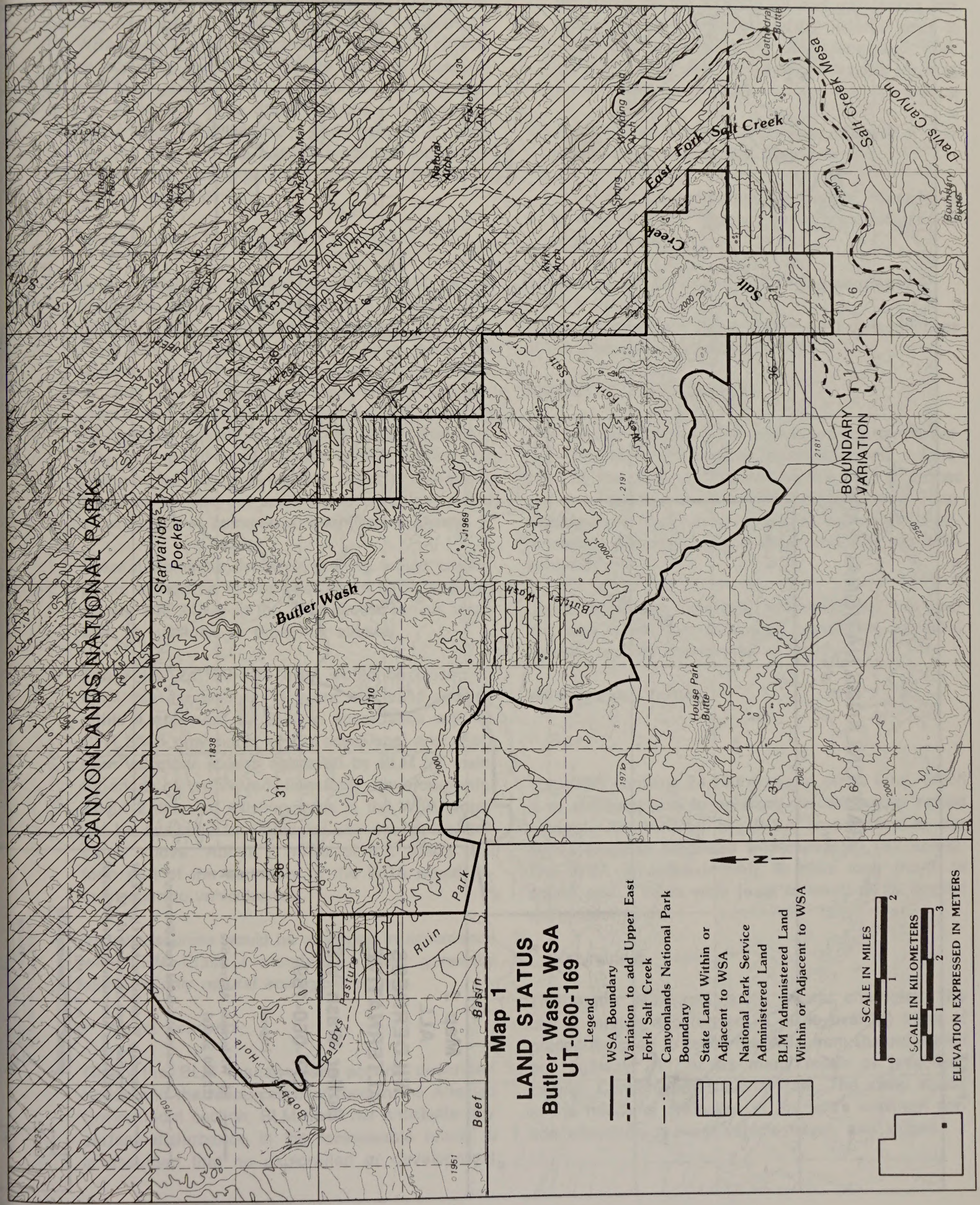
No disturbance is projected from ORV activity. This is because the rugged terrain limits ORV use to 2 miles of existing ways.

Recreation use is anticipated to increase over the current estimated use of 600 annual visitor days at a rate of 2 to 7 percent per year.

Approximately 97 percent of the use will continue to be primitive in nature.

- All Wilderness Alternative (Proposed Action)

With the All Wilderness Alternative, all 24,190 acres of the Butler Wash WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). This would include the 22,030 acres of the original All Wilderness Alternative, plus an additional 2,160 acres in the Upper East Fork Salt Creek drainage. The 24,190 acres would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character (USDI, BLM, 1981).



CANYONLANDS NATIONAL PARK

Starvation Pocket

Butler Wash

Ruin

Beef Basin

Pappys Pasture

Park

East Fork Salt Creek

Salt Creek

Salt Creek Mesa

Davis Canyon

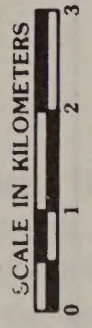
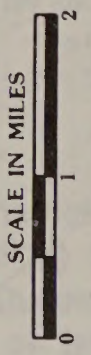
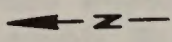
BOUNDARY VARIATION

Map 1

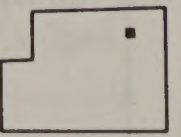
LAND STATUS  
Butler Wash WSA  
UT-060-169

Legend

- WSA Boundary
- - - Variation to add Upper East Fork Salt Creek
- · - Canyonlands National Park Boundary
- [Horizontal lines] State Land Within or Adjacent to WSA
- [Diagonal lines] National Park Service Administered Land
- [White box] BLM Administered Land Within or Adjacent to WSA



ELEVATION EXPRESSED IN METERS



# BUTLER WASH WSA

T. 31 S.

T. 32 S.

R. 20 E.

R. 19 E.

R. 18 E.



## Map 2

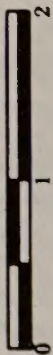
### ALL WILDERNESS ALTERNATIVE

#### Butler Wash WSA UT-060-169

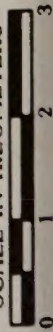
#### Legend

- All Wilderness Alternative (22,030 acres)
- · - Canyonlands National Park Boundary
- - - Boundary Variation to Add Upper East Fork Salt Creek (Increases the All Wilderness Alternative to 24,190 acres)

SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS

## BUTLER WASH WSA

The policy of the State is to reserve its position regarding exchange of in-held lands within any particular WSA (see Chapter 1 in Volume I). Based on this policy regarding exchange of State lands, it is assumed that State lands would remain under existing ownership. There are three State sections (1,920 acres) within the WSA (refer to Map 1 and Appendix 3 in Volume I). No private or split-estate lands are located in the WSA. The acreages given with this alternative are for Federal lands only.

- Management Conditions and Constraints

After wilderness designation, all 24,190 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on any valid mining claims located prior to wilderness designation. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809), with consideration given to wilderness values. Existing oil and gas leases, involving 440 acres of the WSA, would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown.

Present domestic livestock grazing would continue as authorized in the Beef Basin MFP. Approximately 206 AUMs in the WSA would remain available to livestock as presently allotted.

The entire 24,190-acre area would be closed to ORV use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR 8560 provisions; or (2) occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. About 2 miles of existing ways in the WSA would not be available for vehicular use except as indicated above. About 7 miles of dirt roads that form part of the boundary of the WSA would remain open to vehicular use.

Visual resources would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

- Action Scenario

Given the BLM management actions described above and the resources described in the Affected Environment section, BLM does not anticipate any surface disturbance in the foreseeable future. It is assumed that no exploration or development

will occur on the existing oil and gas leases nor will any valid mining claims be located prior to wilderness designation. No other rangeland, wildlife habitat, or watershed improvement projects are planned for the WSA.

No ORV disturbance is anticipated because of management constraints and rugged terrain.

Primitive-type recreation use would increase at a rate of 2 to 7 percent annually. Vehicular use would not occur.

### Summary of Environmental Consequences

Table 1 summarizes the environmental consequences of the alternatives analyzed in detail.

### AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

### Wilderness Values

- Size

The WSA contains 24,190 acres of public land, which is of sufficient size to enhance the wilderness values present. Additionally, the WSA is adjacent to the NPS's Needles proposed wilderness (61,182 acres). The WSA is approximately 8 miles long (north to south) and 7 miles wide (east to west) at its longest and widest points.

- Naturalness

This entire WSA retains its natural character. The unit is remote and rugged. It takes over 30 miles of graded dirt road to reach the WSA from Dugout Ranch on Highway 211 or as many miles of jeep trail through Canyonlands National Park. The steep slopes at the heads of drainages in the unit's southern portion effectively prevent vehicle travel, and ledges

# BUTLER WASH WSA

Table 1  
Summary of Environmental Consequences

Alternatives	
Resources	No Action/No Wilderness
Impacts on Wilderness Values	<p>Wilderness values would not be protected by wilderness designation. No disturbance that would affect wilderness values would be expected in the foreseeable future. Vehicular use of 2 miles of existing way would continue to be an occasionally detract from opportunities for solitude and primitive recreation in the WSA. This alternative would not complement or enhance the NPS proposal for wilderness designation and management of contiguous NPS lands.</p>
	<p>All Wilderness (24,190 Acres) (Proposed Action)</p> <p>Wilderness designation would preserve the wilderness values in the WSA. It would enhance and complement the NPS proposal for wilderness designation and management of contiguous NPS lands.</p>

## BUTLER WASH WSA

and boulders in the mid-portion of the washes also make wheeled travel difficult.

In the lower portions of the washes, four-wheel drive vehicles sometimes travel into the northern part of the unit. Specifically, vehicles have been known to travel on a 2-mile vehicular way up Butler Wash to an open park in a side canyon (Starvation Pocket). Seasonal rains erase evidence of wash bottom travel, and the only evidence of vehicle travel is where wheel tracks have left the wash bottom for less than one-eighth mile.

The roads, abandoned drill holes, and reservoirs just outside the unit's southern boundary are well screened from the interior of the WSA.

Imprints cover less than 1 percent of the WSA and meet the naturalness standard for areas under wilderness review. The entire WSA acreage (24,190 acres) is considered natural in character.

No surface-disturbing activities have occurred since the wilderness inventory. A helicopter seismograph proposal was cancelled on January 26, 1984, before any on-the-ground activities occurred. This proposal was determined to be non-impairing in the final Environmental Assessment.

### • Solitude

The entire WSA (24,190 acres) provides outstanding opportunities for solitude.

The topography of the unit contributes to the outstanding opportunities present. The Salt Creek canyons in the unit's southeast and the Needles of the east and northeast provide excellent screening, allowing the user to feel isolated.

The undeveloped and remote nature of Canyonlands National Park is well known. Butler Wash WSA is contiguous with the park on both the north and the east. The isolated and remote nature of the maze of parks in the Needles District and the canyons of Salt Creek is shared by the Butler Wash WSA.

Off-site intrusions affecting solitude include road cuts on high points east of House Park and an old road cut around a butte on the unit's southern boundary. The other human imprints south of the WSA are well screened from the interior of Butler Wash with steep buttes between them and the lower terrain of the unit.

### • Primitive and Unconfined Recreation

The opportunities for dispersed, undeveloped recreation within this unit are excellent. All 24,190 acres of this WSA meet the outstanding primitive and unconfined recreation criteria.

Natural parks ringed by colorful sandstone spires and knobs, the interesting rock forms and colors, and Indian ruins and rock art all provide focal points of interest to the dayhiker or backpacker. Hiking is easy in the wash bottoms and climbing to high points offers spectacular views over the unique redrock countryside. The sandstone of the unit provides challenging terrain and numerous opportunities to climb and explore. The parallel fracturing in the rocks of the area and erosion have created many narrow passageways that would draw the adventurous. Opportunities include photography, drawing, and sightseeing for botanical, zoological, or geological features.

### • Special Features

Special features identified during BLM's intensive wilderness inventory include cultural (archaeological and early cowboy use) and scenic values.

The WSA contains 13 recorded archaeological sites. There is a potential for 860 sites in the WSA. Refer to the Cultural Resources section for additional information. These cultural resources enhance other wilderness values by lending a sense of timelessness to the area in which human use of the land seems short in comparison to the natural forces that shaped it.

Evidence of early century cowboy use exists within the unit and adds to an understanding of the historical use of the land. One short brush fence exists in Butler Wash itself and evidence of an old horse or stock trail exists at the head of Butler Canyon leading from Beef Basin.

The scenic value of the unit is high, especially in the northeast and southeast. In the northeast, the Needles country becomes prominent. Red-and-buff sandstone spires, knobs, and buttes contrast with the green vegetation and blue sky. In the southeast, the heads of Salt Creek (most of which is in Canyonlands National Park) cut a myriad of shapes in the colorful sandstone. Approximately 47 percent of the WSA is rated Class A for scenic quality.

The WSA has resource values that, although not identified as such during the wilderness inventory, could

# BUTLER WASH WSA

be considered special features. There is one animal species (peregrine falcon) listed as endangered that may make use of the WSA. There are seven animal species and two plant species that are considered sensitive that may occur in the WSA. Cougar, which is a wildlife species associated with wilderness, are found in the WSA. Refer to the Vegetation and Wildlife Including Special Status Species sections for additional information.

- **Diversity**

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV type of juniper-pinyon woodland. Refer to the Vegetation Including Special Status Species section for more discussion of ecoregions and PNV types. The ecoregion and PNV types represented by this WSA are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section in Volume I.

This WSA is not within a 5-hour drive from any standard metropolitan statistical areas.

## **Air Quality**

The Utah Division of Health has a network of air monitoring stations throughout the State. The closest monitoring station to Butler Wash is 70 miles south at Bullfrog Marina. Only particulate and sulfur dioxide concentrations are measured at Bullfrog.

Only the short-term (24-hour) particulate standard has been exceeded at the Bullfrog station. The 24-hour violations were probably associated with conditions of high winds and blowing dust (resulting from the scarce vegetation and large areas of exposed sand). While only 1976 data are available, sulfur dioxide concentrations measured at Bullfrog Marina are low and well under the applicable ambient standards.

Generally the air quality is very good over the WSA, allowing for long vistas where topography and vegetation allow. Visual range in the general vicinity averages between 100 to 132 miles during the summer (Aerocomp, Inc., 1984). Generally, the average visibility is greater in the winter than in the summer. The WSA has a PSD Class II air quality classification as per the 1977 Clean Air Act Amendments. Canyonlands National Park, which forms the north and east boundaries of the WSA, is the nearest PSD Class I area.

## **Geology and Topography**

Butler Wash WSA is within the Canyonlands Section of the Colorado Plateau Physiographic Province. This section is characterized by bare rock surfaces, plateaus, and steep-walled canyons.

The surface geology of the Butler Wash WSA consists almost entirely of flat-lying sedimentary rocks of the Cedar Mesa Sandstone Member of the Permian Cutler Formation. Deep canyons have cut into the area exposing the underlying Pennsylvanian Rico Formation.

The Cedar Mesa Sandstone Member is generally white, fine-grained, calcareous, and cross-bedded. It is a near-shore shallow-water marine deposit that was transported into the area by a long-shore current from the northwest. The Cedar Mesa Sandstone interfingers eastward with the Cutler Formation.

The Rico Formation underlying most of the area is a transitional unit composed of alternating marine and continental sediments 300 to 400 feet thick. It is a red and gray, thick and thin-bedded unit of calcareous sandstone, sandy shale, resistant gray limestone, and sporadic purple arkose. The Rico Formation in this vicinity may represent the upper half of the Elephant Canyon Formation up to the base of the Cedar Mesa Sandstone.

The Butler Wash WSA is slightly west of the axis of the Monument Upwarp, a broad-trending structural division of the Colorado Plateau which extends 75 miles south to the Arizona border and plunges gently northward in Butler Wash. The upwarp is asymmetrical. The western margin is structurally indistinct; the regional dip is gently inclined to the west and northwest.

This WSA consists of 24,190 acres of canyons, open parks, high buttes, and intricate pinnacles. Topographic variation is limited in the western half of the area. The eastern half contains considerably more relief with canyons, buttes, and pinnacles being the dominant landforms. Elevation within the WSA ranges from 5,600 to 7,400 feet above sea level.

## **Soils**

The soils in this WSA have been mapped and described (USDA, SCS, 1978). The majority of this WSA consists of rock outcrop with some shallow loamy soils (refer to Table 2). There are some areas of moderately deep to very deep loamy and sandy soils along



# BUTLER WASH WSA

washes, concave slope positions, and on the leeward side of obstructions where eolian material has accumulated.

Table 2  
Soil Characteristics and Land Types

Soil Characteristics and Land Type	Percent of the Area	Acres	Estimated Rate of Erosion (cubic yards/acre/year)	
			Present Condition	Bare Soil Surface
Rock Outcrop	65	15,723	0	0
Shallow loamy soils on sloping structural benches and ledges	25	6,048	1	5
Deep and very deep loamy and sandy soils on structural benches and along drainages gently sloping	10	2,419	0.1	1
Totals	100	24,190		

Source: Hansen, 1985.

Under present conditions, average soil loss from erosion is estimated to be about 0.26 cubic-yards per acre per year. Total annual soil loss for the entire WSA is approximately 6,290 cubic yards (refer to Table 3). Sediment yields vary from slight to moderate.

Soil salinity class estimates indicate that the area is non-saline with an estimated average salinity production of 33 lb of salt per acre per year.

Seeding potential varies from unsuited to seeding to poor on 90 percent of the WSA due to steep slopes,

rock outcrops, sandy (droughty) and shallow soils. Seeding potential is fair on 10 percent of the WSA.

## Vegetation Including Special Status Species

The vegetation types in the WSA are classified as pinyon-juniper woodland, sagebrush, grassland, and desert shrub. Additional land is classified as barren without substantial vegetation (refer to Table 4).

The pinyon-juniper woodland type is basically mature trees with a moderate understory species density. Understory species include sagebrush, fourwing saltbush, bottlebrush squirrel tail, and Sandberg bluegrass. Trees are up to 20 feet tall and 12 feet apart on the deeper soils near the southern end of the unit and 12 to 15 feet in height and 30 to 50 feet apart on the shallower soils.

Within the pinyon-juniper woodland are approximately 15 miles (less than 100 acres) of riparian vegetation in Butler and the West Fork of Salt Creek Washes. Vegetation in these areas includes cottonwoods, tamarisk, rabbitbrush, sagebrush, and skunkbrush.

The barren areas are primarily exposed rock with limited vegetation where soil is present. Vegetation includes blackbrush, serviceberry, and skunkbrush.

The sagebrush types is found in parks on the deeper soils. Associated species include fourwing saltbush, blue grama, needle and thread grass, Indian ricegrass, and winterfat. Sagebrush plants are approximately 2 feet in height, with a spacing of 3 to 5 feet.

Table 3  
Erosion Condition

Erosion Class	Erosion Rate cubic yards/acre/year	Annual Soil Loss Under Present Conditions			Annual Soil Loss if Disturbed		
		Percent of Area	Acres	Cubic Yards	Percent of Area	Acres	Cubic Yards
Very High	20	-	-	-	-	-	-
High	10	-	-	-	-	-	-
Medium	5	-	-	-	25	6,048	30,240
Low	1	25	6,048	6,048	10	2,419	2,419
Very Low	0.1	10	2,419	242	-	-	-
None	0	65	15,723	-	65	15,723	-
Totals		100	24,190	6,290 <sup>a</sup>	100	15,410	32,659 <sup>a</sup>

Source: Hansen, 1985.

Average annual soil loss in cubic yards per acre: 0.26 under present conditions; 1.4 if disturbed.

# BUTLER WASH WSA

The desert shrub type is primarily blackbrush, with an understory of blue grama, winterfat, fourwing saltbush, and buckwheat. Blackbrush plants are up to 18 inches in height and spaced 5 or more feet apart.

Table 4  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Pinyon-juniper woodland	17,030	70.4
Sagebrush	550	2.3
Grassland	80	0.3
Desert shrub	190	1.0
Barren	<u>6,340</u>	<u>26.0</u>
Total	24,190	100

Source: USDI, BLM, 1985.

The grassland type is found on deep sandy soils between rock outcrops. Species include needle and thread grass, Indian ricegrass, blue grama, winterfat, fourwing saltbush, and globemallow.

No threatened or endangered plant species are known to occur in the WSA. However, one Category 2 candidate species, Erigeron kachinensis, and one sensitive species, Astragalus monumentalis, may occur in the WSA (see Appendix 4 in Volume I).

The Butler Wash WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNV type of the WSA is juniper-pinyon woodland.

## Water Resources

The Butler Wash WSA with its canyons and tributaries drain in to the Upper Colorado River. Therefore, it is in the Upper Colorado River hydrologic subregion.

Water is a limited resource in this WSA because there are no springs, reservoirs, water wells, or perennial streams. Runoff is retained in slickrock pools along the major drainages for short periods after rainfalls.

The WSA is within Water Right Adjudication Area 99. The water is not fully appropriated (UDNRE, DWR, 1988). There is very little water development in this area because of its remoteness. Isolated springs may be open to appropriations not to exceed 0.015 cfs. Temporary and fixed time applications may exceed this limit.

The water quality standards for the Colorado River and tributaries, from Lake Powell to State line are as follows: Class 1C (protected from domestic purposes with prior treatment by treatment processes as required by the Utah Department of Health), Class 2B (protected for boating, water skiing, and similar uses, excluding recreational bathing [swimming]), Class 3B (protected for warm water species of game fish and other warm water aquatic life), and Class 4 (protected for agricultural uses including irrigation or crops and stockwatering).

Hydraulic interconnection is not widespread in the area, and underground water is possibly found in isolated pockets at two levels. Water in the upper level is of low salinity and suitable for use by livestock and wildlife. Discharges are by evaporation, springs, and subriver level seeps into the Colorado River and associated drainages. Water in the lower level is high in salt, with TDS ranging from 80,000 to over 300,000 milligrams per liter (USDI, BLM, 1985).

## Mineral and Energy Resources

Table 5 provides the energy and mineral resources rating summary for the WSA. Refer to Appendix 5 in Volume I for a description of the rating system.

Table 5  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f2	c2	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Potash	f1	c4	None
Uranium/Vandium	f1	c4	None
Copper	f1	c4	None
Manganese	f1	c4	None

Source: SAI, 1982; USDI, BLM, 1987a.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

There are no strategic or critical minerals known to occur within the WSA (USDoD, 1988)

### • Leasable Minerals

There are no known deposits of any leasable minerals in the WSA. Currently, there are no active drilling,

## BUTLER WASH WSA

mining, or exploration activities for leasable minerals.

- Oil and Gas

A few exploratory wells have been drilled along the Beef Basin anticline near the southwest side of the unit, but all wells were dry. All the wells drilled in this general area have been abandoned, but oil staining has been reported in Mississippian, Pennsylvanian, and Permian rocks.

Despite the favorable stratigraphy in the vicinity of the WSA, broad uplifts beginning in late Cretaceous time have significantly lowered the oil and gas potential of the Paradox Formation in this area. As a result of this uplift, erosion has stripped away overlying Mesozoic sedimentary rocks across most of the Monument Upwarp. It is, therefore, very unlikely that reservoir pressure exists in Pennsylvanian rocks throughout much of this area. If oil and gas existed in the Paradox Formation in this area, there is a good chance that it has drained away.

On the basis of the discussion above, Pennsylvanian and Permian rocks in the WSA probably do not contain large reservoirs of oil and gas. However, small accumulations may exist associated with stratigraphic traps and small-scale folding.

On this basis, the WSA is assigned an oil and gas favorability of f2. The size of the hydrocarbon accumulation in such an environment is anticipated to be less than 10 million barrels of oil or less than 60 billion cubic feet of gas. Based on the available information, the certainty of occurrence for oil and gas is rated low (c2) (SAI, 1982).

Under the current land use plan; 3,890 acres are in Category 1 (standard stipulations), 2,620 acres of the WSA are in Category 2 (special stipulations), 8,320 acres are in Category 3 (no surface occupancy), and 9,360 acres are in Category 4 (closed to leasing). There are presently three post-FLPMA oil and gas leases covering 440 acres in the WSA.

- Potash

The only known potash-bearing unit in the area is the Paradox Formation of Pennsylvanian age. This formation originated in a slowly subsiding, northwest-trending basin called the Paradox Basin that

existed in the Moab region about 300 million years ago. The potash deposits in the Paradox Formation are thickest nearest to the surface along a series of northwest-trending anticlines within a structural zone approximately 100 miles long and 30 miles wide in Utah and Colorado (the Paradox fold and fault belt).

The WSA has little or no potential for potash. If deposits occur, they will generally be thin and discontinuous. The tract has been rated (f1), little or no favorability for potash, with a moderate (c3) degree of certainty (SAI, 1982).

- Locatable Minerals

There are no known deposits of locatable minerals in the WSA, and there are presently no mining claims.

Despite being surrounded by favorable strata of the Chinle Formation, the WSA has limited potential for uranium and vanadium deposits (USDI, USBM, 1987a). The Chinle has been eroded away and is generally missing from the WSA. Of the formations that are still in the WSA, only the Cutler Formation has been productive for uranium elsewhere in the region (at Lisbon Valley). The Cutler, however, contains no known uranium anomalies in this area, as well as very little organic carbon and mudstone. On this basis, the WSA is assigned a uranium/vanadium favorability of f1 (an unfavorable environment for uranium deposits). The certainty that uranium deposits do not occur in the WSA is high (c4). This rating would also apply to any deposits of copper which might be associated with uranium (SAI 1982; USDI, BLM, 1987a).

Manganese deposits in southeastern Utah occur in the Morrison and Summerville Formations (Jurassic). As these are eroded from the WSA, the favorability for manganese is rated f1, with a high (c4) degree of certainty (SAI, 1982).

- Salable Minerals

The salable minerals within the WSA have little or no commercial potential, based on the poor quality and the remote nature of the material. These deposits are not unique or economically significant due to the presence of ample similar materials outside the WSA.

### Wildlife Including Special Status Species

Mule deer utilize the WSA during the winter. Most of the deer use is along the west and south boundaries

# BUTLER WASH WSA

adjacent to Beef Basin from October through April. Bobcats and mountain lions inhabit the rocky rims of the WSA. Coyotes, cottontail rabbits, and pinyon mice are also in this area. Red-tailed hawk, American kestrel, Cooper's hawk, common raven, pinyon jay, plain titmice, and rock wren are found in the WSA. Reptiles and amphibians, including the side-blotched lizard, northern plateau lizard, sagebrush lizard, and Great Basin gopher snake, are commonly observed in this area.

No habitat improvements have been identified within the WSA and no management facilities exist. No transplants are currently proposed.

It is possible that the peregrine falcon, an endangered species, may occasionally use the area. The golden eagle, a BLM sensitive species, is found in the WSA. Other special status species that could occur in the WSA are six Category 2 candidate species. These are the Great Basin Silverspot butterfly, ferruginous hawk, southern spotted owl, western yellow-billed cuckoo, long-billed curlew, and white-faced ibis. Refer to Appendix 4 in Volume I for details.

There are no acres classified as crucial or Federally designated critical habitat.

## Forest Resources

There are approximately 17,030 acres of pinyon-juniper woodland in the WSA. These are low quality sites (less than 20 cubic feet usable wood per acre) and are considered nonproductive forest land. No areas near the WSA have been designated as Christmas tree cutting areas. It is estimated that less than 2,656 cords of firewood are located in the WSA. The area receives little if any, use for firewood gathering. No fenceposts are cut in this WSA. Pinyon nuts may be gathered occasionally by recreationists, but there have been no commercial gathering permits issued for areas near this WSA. Demand for forest products in the WSA are not expected to significantly increase in the foreseeable future.

## Livestock and Wild Horses/Burros

The WSA is within the Beef Basin Pasture of the Indian Creek Grazing Allotment. Table 6 summarizes allotment grazing use.

Very little grazing use occurs in the WSA because of the steep, rugged topography that hinders access and the scarcity of usable forage. The grazing that occurs is primarily in the sagebrush parks adjacent to or in Beef Basin. Beef Basin is grazed by about 200 cattle from December 1 through June 15 each year. Vehicular access for livestock management does not occur in the WSA.

Estimated forage production in the WSA is approximately 206 AUMs. Estimated use is about 32 cattle for the December 1 through June 15 season (actual use may be considerably less).

There are three livestock reservoirs just outside the WSA boundary in Middle and Ruin Park. There are no range improvements proposed for the WSA.

Predator control was not conducted during the 1986-1987 period in the grazing allotment that comprises the Indian Creek WSA (USDA, APHIS, 1988). There are no wild horses or burros within the WSA.

## Visual Resources

The WSA has both VRM Class II (13,790 acres, 57 percent) and III (10,400 acres, 43 percent). (Refer to Appendix 7 in Volume I for a description of BLM's VRM rating system)

Class A scenery, which occupies 11,369 acres (47 percent) of the WSA, is located along the boundary of Canyonlands National Park where rock outcrops are very similar to those in the park. Class A scenery combines the most outstanding characteristics of the physiographic region. This unit scored the highest of five units evaluated in the Beef Basin Planning Unit.

Table 6  
Livestock Grazing Use Data

Allotments	Total Acres	Acres in ISA <sup>a</sup>	Total AUMs	Number of AUMs in ISA	Number and Kind of Livestock	Season of Use	Number of Permittees
Indian Creek	236,280	24,190	8,518	206	1,065 Cattle	12/01-06/15	1

Sources: BLM File Data.

## BUTLER WASH WSA

Class B scenery, which occupies 10 percent (2,419 acres) of the WSA, is located in the House Rock area.

Class C scenery, which occupies 43 percent (10,402 acres) of the WSA, is located near the southwestern boundary of the WSA. This area is typified by low rolling landforms with little relief.

The entire WSA is located in the foreground/middle-ground distance zones.

The landscape character of the WSA consists of three major types of landforms: relatively flat, open parks; high buttes and sandstone domes; and highly eroded canyon systems.

The parks located near the southwestern boundary have wide, flat drainages and little relief. Interesting landscape features are lacking. The vegetation of the parks is sagebrush and grasses with sparsely scattered pinyon and juniper on the slopes.

The buttes and domes separating the parks rise up to 750 feet above the flats. The erosional patterns have created interesting landscape features. Colors of the landforms are buff and pink, and textures are smooth when viewed up close and coarse when viewed from the distance.

The canyon systems have severe surface variation such as sandstone pinnacles and spires and are similar to rock outcrops in Canyonlands National Park. The canyons have alternating bands of red-and-gray sandstone which create a great deal of contrast with the dark-green pinyon-juniper.

A travelled vehicular way is the only human modification identified within the WSA. This modification creates a low contrast on the landscape.

### Cultural Resources

No significant archaeological work has been conducted in the Butler Wash area. Little is known about the cultural resources of the general area north of the Abajo Mountains, except that site densities are lower here than in most of San Juan County. The Anasazi culture includes both Basketmaker and Pueblo groups.

Because of the relative difficulty in access into the Butler Wash WSA, it potentially contains numerous pristine cultural resources. A literature search revealed 13 recorded archaeological sites within the unit. These include mostly late Pueblo-type sites of

the Anasazi culture. Pictographs and storage structures remain in mostly pristine condition. Because storage structures (granaries) are tucked among rock ledges and well hidden, there are undoubtedly more sites than have been recorded.

The WSA is located in a transition area between Fremont and Anasazi cultural groups. Scientifically, the cultural significance of this WSA lies in the potential for better understanding the interrelationships between these peoples. The unique rock art in this area quite possibly holds the key toward establishing the nature of this contact.

There are no existing National Register sites and/or nominations in this WSA. However, based on estimates from similar settings in the area, it could be expected that 860 sites may be located in the WSA, of which 574 could be National Register eligible.

Historic activity in the WSA primarily relates to use of the range for cattle and sheep grazing. Physical evidence remaining from this land use includes a short brush fence in Butler Wash itself and a stock trail leading from upper Butler Wash into Beef Basin.

### Recreation

The outstanding scenery, including interesting geologic features in the WSA, provides a variety of recreational opportunities, including photography, sightseeing, hiking, and backpacking.

Private recreational activity in Butler Wash WSA has not been monitored by BLM and no accurate information is available as to type and numbers of recreational users of the area. However, about 344 user days were recorded in the WSA from September 1981 through August 1982. This figure represents backpackers entering the WSA through Canyonlands National Park with permits by NPS. Commercial primitive use occurs in the WSA (National Outdoor Leadership School, Colorado Outward Bound).

The WSA is currently open to ORV use. Motorized use of the WSA is limited by terrain to Butler Wash up to Starvation Pocket. Travel further up Butler Wash is prohibited by the rough terrain. Private vehicle use on this route has historically occurred, but showed a marked decrease when closed to deer hunting. Also, commercial vehicle use of the area (Tag-a-Long Tours and Canyonlands Tours) has occurred sporadically. The NPS estimates a total of one to two

# BUTLER WASH WSA

vehicles per year enter Butler Wash WSA through the park.

The WSA is within Deer Herd Unit 31B, which was closed to hunting in the early 1980s due to extremely low populations and productivity. Prior to the closed seasons, a few hunters regularly hunted in Butler Wash. The WSA area is now part of a limited entry, buck only hunting area for which only 440 permits were issued in 1988.

The total recreational use of the WSA is currently estimated at 600 visitor days annually. Approximately 300 of these visitor days are related to commercial outfitting. Approximately 97 percent of the total use is attributed solely to primitive activities. There is approximately 3 percent attributed to vehicular access.

## Land Use Plans

The WSA is in the BLM San Juan Resource Area and is managed according to the Beef Basin MFP (USDI, BLM, 1973). The San Juan RMP will replace the MFP. Neither the MFP or RMP address wilderness designation. However, wilderness designation is part of the multiple-use concept. The BLM land use plan is linked to the Statewide Wilderness EIS through analysis of the present plan as the No Action/No Wilderness Alternative.

Canyonlands National Park forms the north and east boundaries of the WSA. The NPS has proposed the adjoining portions of the park for wilderness designation. The majority of the south and west boundaries of the WSA adjoins public land.

The Butler Wash WSA is composed primarily of public land with both the surface and subsurface managed by BLM. However, there are three sections (1,920 acres) of State-owned surface and subsurface. The current policy of the State is to maximize economic returns from State lands and to reserve its position regarding exchange of in-held lands (see Chapter 1 in Volume I). In 1986, the Utah State Legislature passed S.C.R. No. 1 opposing any additional wilderness designation in Utah and urging that State lands not be exchanged out of wilderness areas. The 1,920 acres of State land are under lease for grazing and 640 are leased for oil, gas, and hydrocarbons. Grazing is the only activity on these lands at present (UDNRE, DSLF, 1988).

The San Juan County Master Plan emphasizes multiple-use of public lands and zones the WSA as open range and forest land (Planning and Research Associates, 1967). However, the policy of the San Juan County Commission is to oppose any legislative or administrative designations of wilderness in the County (San Juan County Commission, 1980). The commission has also endorsed the Consolidated Local Government Response to Wilderness that opposes wilderness designation of BLM lands in Utah (Utah Counties, 1986).

There are no existing land use rights-of-way issued by BLM in the WSA. Access to the WSA is provided by a road and trail which form the southern and western boundaries.

## Socioeconomics

### • Demographics

The WSA is in northwestern San Juan County. The nearest community is Monticello, being approximately 55 road miles from the WSA.

Between 1970 to 1980, the population of San Juan County was fairly static, and grew by less than a 2-percent annual growth rate. The 1985 population was 12,500. Since 1983 the county's population has declined by approximately 500 (USDI, BLM, 1987b). The two largest communities in the county are Blanding (1980 population 3,118) and Monticello (1980 population 1929). Approximately 40 percent of the county's population resides in these communities. Table 7 presents baseline and projected population data for San Juan County. Population projections for the county indicate that the number of people living in San Juan County in the year 2010 will be about 15,000 for about a 21-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 7  
Baseline and Projected Population and Employment Growth  
San Juan County

	1980	1990	2000	2010
Population	12,400	12,900	12,900	15,000
Employment	3,980	3,800	4,300	5,100

Source: Utah Office of Planning and Budget, 1987.

The major racial groups are caucasians (52.4 percent) and American Indians (45.7 percent). About 4 percent of the Navajo reservation's population live in San Juan County (USDI, BLM, 1987b).

# BUTLER WASH WSA

San Juan County is the largest county in Utah, comprising 5,045,760 acres or about 9.6 percent of the State's acreage. Approximately 86 percent of the county is administered by the Federal Government; 41 percent by the BLM, 24 percent by the tribe, and 20.9 percent by other Federal agencies. About 6 percent is in State ownership and about 8.1 percent is privately owned (University of Utah, BEBR, 1982; USDI, BLM, 1987b).

## • Employment

Table 7 shows the baseline and projected total employment for the county to the year 2010. The government sector (Federal, State, and local) is the most important in terms of employment in the San Juan County economy. In 1987, mining made up about 16.5 percent of the total employment in the county. Tourism also generates a significant number of jobs (USDI, BLM, 1987b). Unemployment is presently high, approximately 10 percent.

San Juan County is part of the Southeast MCD. Table 8 shows the baseline (1980) and projected employment by source for MCD to the year 2010. In 1980 the leading employment sectors for the MCD were mining (28 percent), government (18 percent), and trade (15 percent). It is projected that by the year 2010 employment in the MCD will increase by about 27 percent. Services will increase to 18 percent, trade to 17 percent, and government to 15 percent of the total; while the mining, agriculture, and construction sectors will decline (Utah Office of Planning and Budget, 1987).

Table 8  
Southeast Multi-County District  
Employment<sup>a</sup>

	1980	1990	2000	2010
Agriculture	1,203	1,100	1,100	1,100
Mining	6,368	3,500	4,500	5,700
Construction	1,360	700	900	1,100
Manufacturing	551	600	700	800
Transportation, Utilities	1,563	1,800	2,000	2,200
Trade	3,289	3,600	4,000	4,800
Finance, Insurance, Real Estate	424	400	400	500
Services	2,067	3,200	4,000	5,300
Government	3,994	4,100	3,800	4,400
Nonfarm Proprietors	1,715	2,000	2,200	2,800
Totals	22,534	21,000	23,600	28,700

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Carbon, Emery, Grand, and San Juan Counties.

## • Sales and Revenues

Economic-related activities in the WSA include livestock production and recreation. Table 9 summarizes local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Table 9  
Local Sales and Federal Revenues

Source	Annual Local Sales <sup>a</sup>	Annual Federal Revenues
Oil and Gas Leases	\$ 0	\$ 880
Livestock Grazing	\$ 4,120	\$ 317
Recreational Use	\$ 2,460	\$ 500
Total	\$ 6,580	\$1,697

Sources: USDI, BLM File Data; Volume I, Appendix 9.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

One livestock operator has a total grazing privilege of 206 AUMs within the WSA. If all this forage were utilized, it would account for \$4,120 of livestock sales and \$1,030 of ranchers' returns to labor and investment.

Some woodland products may be harvested from the WSA; however, the harvests have been small and are insignificant to the local economy and only of minor significance to those involved in the harvest.

The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that the State-wide average local expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Butler Wash WSA is estimated as about 600 visitor days per year.

Recreation-related expenditures would be significant only to the commercial outfitters who make use of the WSA, none of which is based locally. Commercial use of the WSA accounts for approximately \$5,000 of sales that do not go to the local economy.

The WSA generates Federal revenues from mineral leases, livestock grazing, and recreation sources (refer to Table 9).

Oil and gas leases in the WSA cover approximately 440 acres. At \$2 per acre, lease rental fees generate up to \$880 of Federal revenues annually. Half of

## BUTLER WASH WSA

these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittee in the WSA can use up to 206 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$317 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland improvements.

Commercial recreation permits generate about \$500 of Federal revenues annually.

### ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. The analysis is based on the BLM management actions and anticipated activities presented in the Introduction to Volume V and the Description of the Alternatives for the Butler Wash WSA.

#### No Action/No Wilderness Alternative

- Impacts on Wilderness Values

Because the WSA would not be designated wilderness, the identified wilderness values would not receive the degree of protection afforded by application of the BLM Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities (i.e., VRM Class II management on 13,689 acres, management under oil and gas leasing Category 4 [closed to leasing] on 9,360 acres, and oil and gas leasing Category 3 [no surface occupancy] on 8,320 acres).

No development would be expected in the foreseeable future that would affect wilderness values.

Because future vehicular use would generally be limited by terrain to 2 miles of existing vehicular way, no additional disturbance from ORV activity is anticipated in the future. The continued vehicular use of the existing way would occasionally detract from opportunities for solitude and primitive recreation.

The increased visitor use that would occur over time would not be expected to significantly reduce wilderness values because the additional use would be largely primitive in nature.

This alternative would not complement or enhance the NPS proposal for wilderness designation of contiguous NPS lands.

The loss of wilderness values that would occur over the long-term future from disturbance is not accurately known. Loss would occur as intrusions increase.

**Conclusion:** Wilderness values would not be protected by wilderness designation. No disturbance that would affect wilderness values is anticipated in the foreseeable future. Continued vehicular use of 2 miles of way would occasionally detract from the opportunities for solitude and primitive recreation.

#### All Wilderness Alternative (Proposed Action) (24,190 Acres)

- Impacts on Wilderness Values

Designation and management of all 24,190 acres as wilderness would preserve the wilderness values in the Butler Wash WSA. The potential for surface-disturbing activities would be eliminated through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness and outstanding opportunities for solitude and primitive, unconfined recreation would be preserved on all 24,190 acres. Resources that could be considered as special features in the WSA, including archaeological sites, historical values, Class A scenery, endangered or sensitive species, and wildlife species associated with wilderness, would also be preserved.

Vehicular use of 2 miles of existing ways would cease with ORV closure, improving opportunities for solitude and primitive recreation.

The 2 to 7 percent increase in visitor use that would occur would be primitive in nature and would be managed so as to not result in loss of wilderness values. Also, adjacent NPS lands would help dispense the use.

Designation of the WSA as wilderness would benefit the wilderness values and uses of the contiguous NPS lands. It would enhance and compliment the NPS



# BUTLER WASH WSA

proposal for wilderness designation and management of the contiguous NPS lands.

Conclusion: Wilderness designation would preserve the wilderness values on the WSA.

Bridger Jack  
Mesa WSA



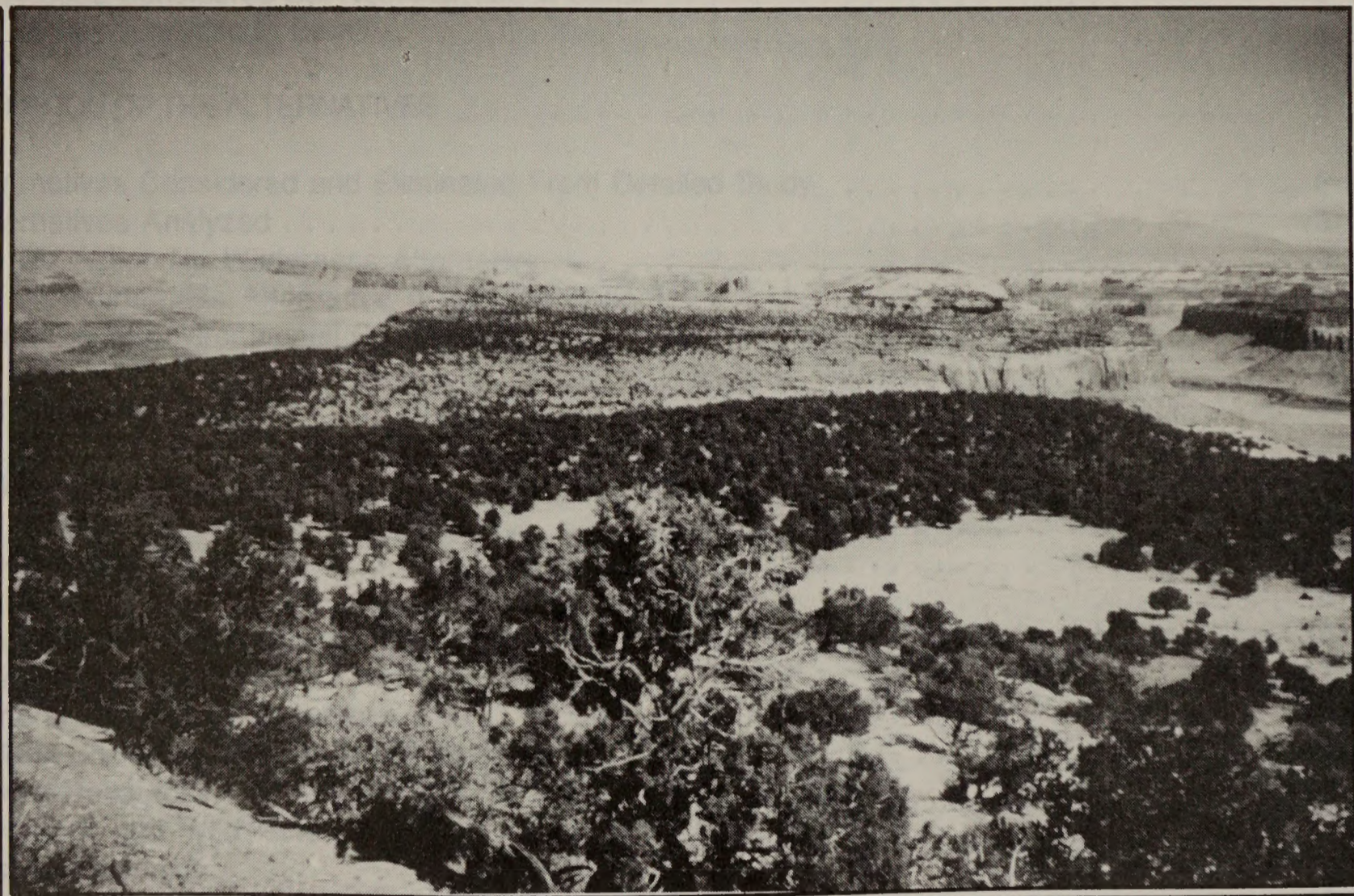


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# BRIDGER JACK MESA WSA

(UT-060-167)

## INTRODUCTION

### General Description of the Area

Bridger Jack Mesa WSA is in the Canyonlands region of San Juan County. The WSA covers 5,290 acres of public land administered by the BLM. The BLM Intensive Wilderness Inventory (USDI, BLM, 1980) stated that the area encompassed 5,300 acres; however, recalculation indicates that 5,290 acres is more accurate. Bridger Jack Mesa is 18 miles northwest of Monticello, Utah. North Cottonwood Canyon is east of the mesa, and Lavender Canyon borders the mesa on the west. The southern end of the mesa is 0.25 mile from the boundary of Canyonlands National Park. Sheer cliffs that drop 800 feet from the mesa rim to the benches below limit access to this WSA.

The major feature of the WSA is Bridger Jack Mesa, a long, narrow mesa top (approximately 10 miles long and 1 mile wide) running southwest-northeast. The mesa top is relatively flat in the south, with slickrock domes and knolls rising abruptly 450 feet above the mesa top in the north. Vegetation in the WSA consists primarily of pinyon-juniper woodland with several small, open sagebrush parks.

The average temperature at Canyonlands National Park is 53 degrees Fahrenheit (F), with an average low of 38 degrees F and an average high of 69 degrees F. The record low is -11 degrees F and the record high is 105 degrees F. Annual precipitation ranges from 12 to 14 inches over Bridger Jack Mesa. January, March, and August are the driest months. June, September, and October are the wettest months. Annual total snowfall averages 30 inches.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume V, the following changes specific to the WSA have been made since publication of the Draft EIS.

The anticipated surface disturbance presented in the Draft EIS (223 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities pro-

jected to be feasible within the foreseeable future. (see Appendix 6 in Volume I). This resulted in a reduction of surface disturbance estimates from the 223 acres reported in the Draft EIS to 17 acres of surface disturbance for the Final EIS.

### Specific Issues Identified Through Scoping and Public Comment

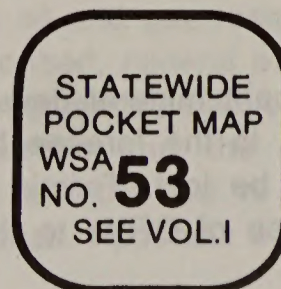
#### • Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume V (i.e., impacts on air quality, geology and topography, water rights and land use plans and policies), the following issues or impacts specific to the WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Soils: Estimates of surface disturbance without wilderness designation have been revised downward from the 223 acres reported in the Draft EIS to only 17 acres of surface disturbance in the Final EIS. Given this new scenario, the impacts of direct disturbance on soils would be reduced and would not be significant with any of the alternatives.

There is currently no ORV use taking place in the WSA, and potential is restricted by the topographic features. Therefore, impacts on soils are not analyzed in detail for the Bridger Jack Mesa WSA.

2. Vegetation Including Special Status Species: Estimates of surface disturbance without wilderness designation have been revised downward from the 223 acres reported in the Draft EIS to 17 acres of surface disturbance in the Final EIS. Given this new scenario, the impacts of direct disturbance of vegetation would be reduced and would not be significant with any of the alternatives (less than 0.3 percent of the WSA). There are no threatened, endangered, or proposed threatened or endangered plant species known to occur within the WSA. However, one endangered species, the spineless hedgehog cactus, may occur in the



## BRIDGER JACK MESA WSA

WSA. Prior to allowing any surface disturbance, BLM would require site-specific clearances of potentially disturbed areas and, if necessary, consult with the FWS concerning impacts on threatened or endangered plant species. Therefore, impacts on vegetation are not analyzed in detail for the Bridger Jack Mesa WSA.

3. Water Resources: The public is concerned that wilderness designation would interfere with development of water. Soil disturbance could increase sediment yield and affect water quality. However, there are no perennial streams, springs, or reservoirs in the Bridger Jack Mesa WSA and only 17 acres of disturbance are projected. Therefore, impacts on water uses and quality are not significant issues for the Bridger Jack Mesa WSA and are not discussed in detail in the Final EIS.

4. Mineral Resources: The public has expressed concern that wilderness designation would interfere with or prevent mineral exploration, development, and production.

There are no oil and gas leases within the WSA. Potential oil and gas deposits are small with a very low certainty that they exist.

Even though there are 68 mining claims in the WSA, uranium and other locatable mineral deposits that potentially exist in the WSA could only be economically developed from access outside the WSA itself. Therefore, BLM believes that mineral exploration or development would not occur within the WSA in the foreseeable future with or without wilderness designation. Therefore, impacts on mineral and energy exploration and production are not analyzed in detail in the Final EIS.

5. Wildlife Including Special Status Species: The public is concerned that without wilderness designation mineral or other developments would destroy wildlife habitat and lead to reductions in wildlife populations. They are also concerned that use of off-road vehicles would disturb wildlife and destroy habitat. The Bridger Jack Mesa WSA provides habitat for a variety of animal species, but populations are low and no one species can be described as abundant. One endangered and six FWS Category 2 candidate species may be found in the WSA.

Because no significant mineral developments are expected in the WSA in the foreseeable future, wildlife habitats would not be lost. Terrain and surface features restrict the use of ORVs to the extent that no

ORV use takes place within the WSA. Recreation use is very low (estimated to be less than 100 visitor days use per year) and is all primitive. Given these conditions, impacts on wildlife habitat and populations are not significant issues for the Final EIS.

6. Forest Resources: The only forest resources in the WSA are 4,760 acres of pinyon pine and juniper trees. Due to the lack of vehicle access to the mesa, forest resources are not accessible. For these reasons, impacts on forest resources are not significant issues for analysis in the Final EIS.

7. Livestock: There has been no livestock grazing on the Bridger Jack Mesa since 1956. In 1970 the Indian Creek Allotment Management Plan excluded grazing from the mesa. Consequently, impacts on livestock management for the Bridger Jack Mesa WSA are not significant issues for analysis in the Final EIS.

8. Visual Resources: As discussed above for vegetation, only 17 acres of surface disturbance are projected for the WSA in the Final EIS. Therefore, visual resources would not be significantly affected. Visual resources are not addressed in the Final EIS as a separate topic, but are addressed in relation to naturalness in the Wilderness Values sections.

9. Cultural Resources: Cultural resources could be destroyed by surface-disturbing projects or vandalism. However, only three cultural resource sites have been recorded in the Bridger Jack Mesa WSA. Only 17 acres of surface disturbance are projected. Visitation is light (less than 100 visitor days per year) and all primitive. Topography restricts vehicle use inside the WSA. Additionally, inventories for the purpose of site recordation and mitigation of impacts would take place prior to any surface disturbance in the future. Given these conditions, impacts on cultural resources are not significant issues for analysis in the Final EIS.

10. Recreation: The public has expressed concern that wilderness designation would change recreational use from motorized to primitive, or conversely, that without wilderness designation motorized recreation will eliminate or reduce opportunities for primitive recreation. Motorized recreational use of the Bridger Jack Mesa WSA is non-existent and future use of the WSA would remain primitive with or without wilderness designation due to the terrain of the WSA and restricted access. Therefore, impacts on recreation use would not be significant and are not analyzed in detail in the Final EIS.



# BRIDGER JACK MESA WSA

11. Economic Conditions: The public, including State and local government, is concerned that wilderness designation would preclude mineral or other economic developments and adversely affect local economic conditions. Others believe that primitive recreation use would increase following wilderness designation and would contribute to the local economy.

There are no existing or anticipated mineral developments or proposals for land or realty activities which would be significantly impaired with or without wilderness designation. Because no economic developments are expected and because recreational use is less than 100 visitor days per year, potential impacts on economic conditions for the Bridger Jack Mesa WSA are not significant issues for the Final EIS.

- **Issues Analyzed in Detail**

The only significant issue for the Bridger Jack Mesa WSA is impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.

Comments made during the public comment period for the Draft EIS centered mainly on the need for, and adequacy of, the rationale for the BLM Proposed Action; the need for further inventories of resource values; and BLM's assessments of wilderness values, visual resources, mineral values, vegetation (research potential), cultural resources, and wilderness manageability. See Volume VII-B for responses to general comments applicable to all WSAs and/or the State-wide analysis and Volume VII-C, Section 53, for responses to specific comments about the Bridger Jack Mesa WSA.

## DESCRIPTION OF THE ALTERNATIVES

### **Alternatives Considered and Eliminated From Detailed Study**

No alternatives were identified for this WSA during the initial scoping other than those analyzed.

Alternatives that would add up to 27,350 acres of State and Federal lands on all sides of the WSA, including North Cottonwood Creek, Lavender Canyon, Davis Canyon, and the Six Shooter Peaks area, were suggested in the public comments. These alternatives are not analyzed because the inclusion of State lands is not consistent with BLM's wilderness review guidelines (refer to Volume VII-B, General Comment Response 6.4) and because other public lands were

dropped from study during the inventory phase (refer to Volume VII-B, General Comment Response 3.1).

### **Alternatives Analyzed**

Two alternatives are analyzed for this WSA: (1) No Action/No Wilderness; (2) All Wilderness (Proposed Action) (5,290 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections with each alternative. These assumptions are indicated in each case. The assumed management actions presented in the Introduction to Volume V are also applicable.

- **No Action/No Wilderness Alternative**

With this alternative, none of the 5,290-acre Bridger Jack Mesa WSA would be designated by Congress as part of the NWPS. Although BLM's land use plans are regularly updated, and the Indian Creek-Dry Valley MFP (USDI, BLM, 1977) will be superseded by the San Juan resource RMP, it is assumed the area would continue to be managed in accordance with the MFP. No State, private, or split-estate lands are located within the WSA (refer to Map 1).

- **Management Conditions and Constraints**

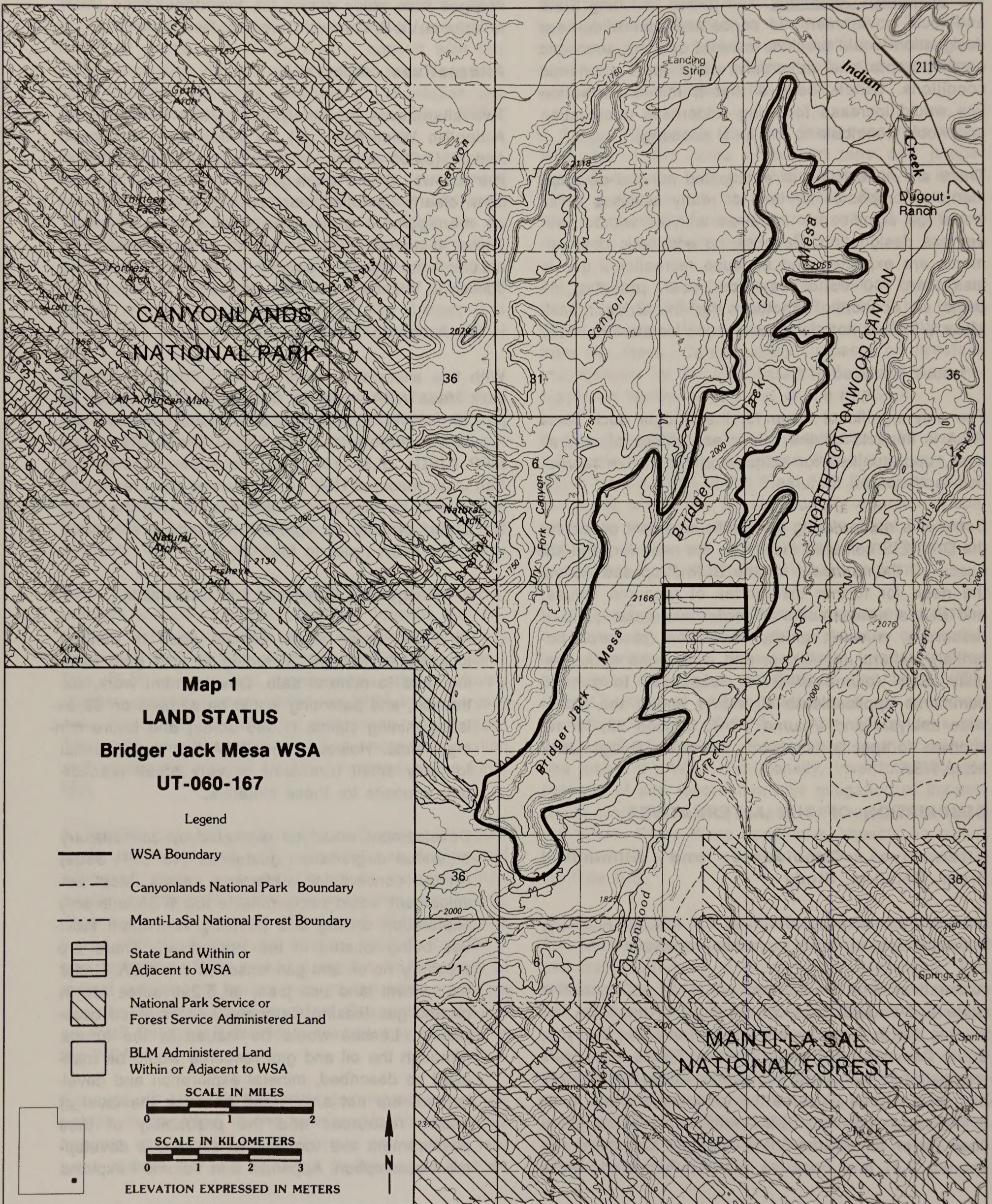
All 5,290 acres would remain open to mineral location, to mineral (including oil and gas) leasing, and to mineral sale. Development work, extraction, and patenting would be allowed on 68 existing mining claims (1,360 acres) and future mining claims. However, the WSA has the potential for only small (uranium) or very small (vanadium) deposits for these minerals.

Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) without concern for wilderness values. Most development would occur outside the WSA with only exploration drilling and possibly ventilation facilities being located in the WSA itself. There are presently no oil and gas leases in the WSA. Under the current land use plan, all 5,290 acres are in oil and gas leasing Category 3 (no surface occupancy). Leases would be issued in the future. Although the oil and gas resource would be managed as described, mineral exploration and development are not anticipated because the level of known resources and the probability of their development are too low to support a development assumption. Appendix 6 in Volume I explains

# BRIDGER JACK MESA WSA

R. 20 E.

R. 21 E.


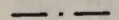






T. 31 S.

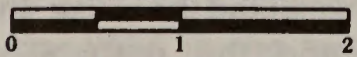
T. 32 S.

**Map 1**  
**LAND STATUS**  
**Bridger Jack Mesa WSA**  
**UT-060-167**

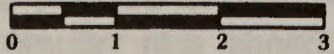
Legend

-  WSA Boundary
-  Canyonlands National Park Boundary
-  Manti-LaSal National Forest Boundary
-  State Land Within or Adjacent to WSA
-  National Park Service or Forest Service Administered Land
-  BLM Administered Land Within or Adjacent to WSA

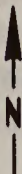
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



## BRIDGER JACK MESA WSA

the mineral exploration and development assumptions.

Due to poor access, there is no domestic livestock grazing use in the WSA. This nonuse would continue. There are no existing or planned livestock developments.

The entire WSA acreage is, and likely would remain, inaccessible to ORV use due to terrain limitations.

The entire area would be open to woodland product harvest. However, there is no harvest of forest products (except perhaps occasional pine nut gathering) at the present time, nor is any projected due to the inaccessibility of the WSA.

The entire 5,290-acre area would continue to be managed as VRM Class IV.

- Action Scenario

Given BLM management actions described above and the resources described in the Affected Environment, BLM anticipates that implementation of the No Action/No Wilderness Alternative would result in 17 acres of surface disturbance in the foreseeable future. This disturbance would be associated with exploration drilling activities for locatable minerals (mainly uranium) including up to 6 miles of access roads below the mesa top. No leasable mineral resource activity nor rangeland, wildlife habitat, or watershed improvement projects are anticipated.

No disturbance from ORV activity is projected. This is because of terrain limitations.

Recreation use is projected to increase over the current estimated use of less than 100 annual visitor days at a rate of 2 to 7 percent per year. All of the use would be primitive in nature.

- All Wilderness Alternative (Proposed Action)

With the All Wilderness Alternative, all 5,290 acres of the Bridger Jack Mesa WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character. No State, private, or split-estate lands are located in the WSA. The fig-

ures and acreages given under this alternative are for Federal lands only.

- Management Conditions and Constraints

After wilderness designation, all 5,290 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 1,360 acres of 68 existing mining claims and any other claims located prior to wilderness designation that may be determined to be valid. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809), with consideration given to wilderness values. Oil and gas leases have been phased out of the WSA and new leasing would not be allowed. Therefore, no development of leasable minerals would occur.

The entire 5,290 acres would continue to be unused for domestic livestock grazing. Future livestock grazing would not be allowed.

The entire 5,290-acre area would be closed to ORV use except for users with valid existing rights, if approved by BLM in accordance with 43 CFR 8560 provisions. There are no existing vehicular ways in the WSA and there are no roads that form part of the boundary of the WSA.

Visual resources would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

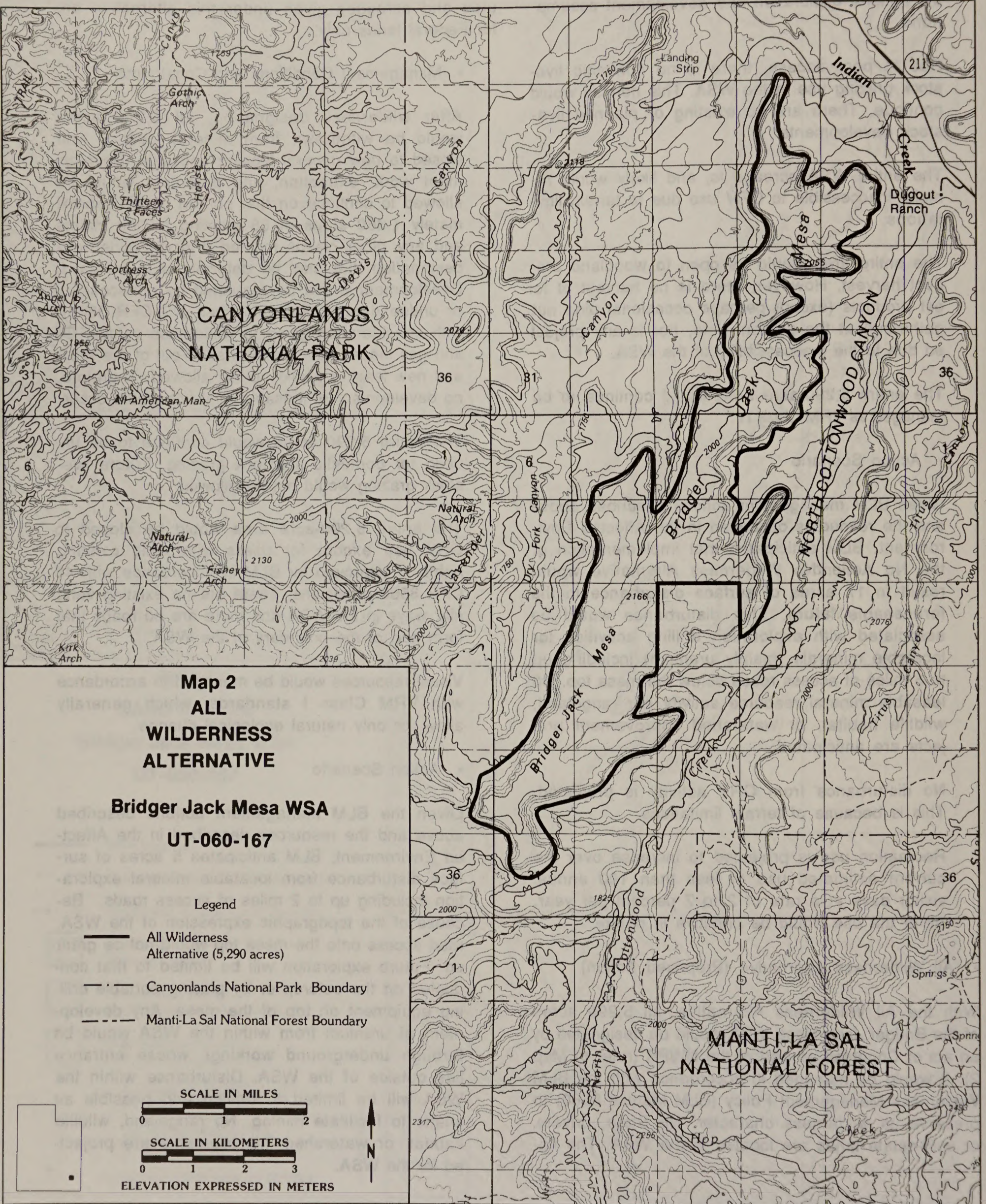
- Action Scenario

Given the BLM management actions described above and the resources described in the Affected Environment, BLM anticipates 5 acres of surface disturbance from locatable mineral exploration including up to 2 miles of access roads. Because of the topographic expression of the WSA, road access onto the mesa top would not be granted. Future exploration will be limited to that conducted on the outcrop or by placing portable drilling equipment on top of the mesa. Any development of uranium from within the WSA would be through underground workings whose entrance lies outside of the WSA. Disturbance within the WSA will be limited to drilling and possible air shafts to facilitate mining. No rangeland, wildlife habitat, or watershed improvements are projected for the WSA.

# BRIDGER JACK MESA WSA

R. 20 E.

R. 21 E.



T. 31 S

T. 32 S

# BRIDGER JACK MESA WSA

No disturbance is anticipated from ORV activity due to wilderness management as well as terrain constraints.

Recreation use is expected to increase over the current estimated use of less than 100 annual visitor days at a rate of 2 to 7 percent per year. All use would be primitive.

## Summary of Environmental Consequences

Table 1 summarizes the environmental consequences of the alternatives analyzed in detail.

## AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

## Wilderness Values

### • Size

The 5,290 acres comprising the WSA are sufficient to allow wilderness values to be present and to meet the minimum size criteria for lands under wilderness review.

### • Naturalness

Bridger Jack Mesa is in a relatively natural condition. There are no functional range developments on the mesa. The two trails constructed for livestock have deteriorated from lack of maintenance. At least three reservoirs were constructed on the mesa with a plow and slip. One of these reservoirs was on the State section adjacent to the WSA. These reservoirs have since filled in, revegetated, and now blend into the environment. They are not noticeable from the air. The slip and plow were left on the mesa. Neither implement is noticeable unless it is searched out.

Mining claims have been staked and annual claim assessment work has been completed in portions of the WSA, but there are no major imprints within the

WSA. No other surface-disturbing activities have occurred since the wilderness inventory.

The WSA meets the naturalness criteria on all 5,290 acres.

### • Solitude

At the present time, with only limited visitor use, the entire Bridger Jack Mesa WSA provides outstanding opportunities for solitude.

The narrow elongated configuration of the mesa would tend to concentrate any increased recreational activities. In at least four areas, the mesa is less than 0.5-mile wide and limits opportunities for solitude. The rolling topography and rock outcrops obscure sights and sounds of others in about 50 percent of the WSA. The pinyon-juniper woodland provides added visual screening and would help dissipate, but not eliminate, sights and sounds from other groups.

Outside sights and sounds are apparent. The paved road to Canyonlands National Park is easily seen from the rim of the mesa, and traffic can be heard from the two northern points of the mesa. The Dugout Ranch hay fields and roads in Lavender and North Cottonwood Canyons are also readily observed from the WSA.

Airplanes are usually observed in this area. From Bridger Jack Mesa, a visitor has excellent views of the Six-Shooter Peaks, Lavender Mesa, Harts Point, and Canyonlands National Park.

Overall, the mesa top offers opportunities for seclusion, while the narrow necks and off-site intrusions limit opportunities to find seclusion in the northern half of the WSA.

### • Primitive and Unconfined Recreation

At the present time, Bridger Jack Mesa WSA provides opportunities for primitive recreational experiences due to its difficult access and limited visitor use. However, the narrow necks of the mesa would tend to concentrate user activities. The elongated mesa top itself confines all recreation to a narrow band (especially in the northern portion).

Presently, the entire 5,290 acres in the WSA meet the criterion for outstanding opportunities for primitive and unconfined recreation.

# BRIDGER JACK MESA WSA

Table 1  
Summary of Environmental Consequences

Alternatives	
<b>Resources</b>	All Wilderness (5,290 Acres) (Proposed Action)
<b>Impacts on Wilderness Values</b>	<p><b>No Action/No Wilderness</b></p> <p>Wilderness value would not be protected by wilderness designation and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 17 acres and opportunities for solitude and primitive recreation would be temporarily reduced in quality on up to an additional 324 acres of the WSA as a result of uranium exploration and development. Special features would not be significantly affected. Scenic view areas from the mesa would be disturbed.</p> <p><b>All Wilderness (5,290 Acres) (Proposed Action)</b></p> <p>Wilderness designation would preserve overall wilderness values in the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 5 acres and indirectly reduced in quality on up to an additional 106 acres due to exploration and development of valid mining claims. Special features would be preserved overall.</p>

# BRIDGER JACK MESA WSA

## • Special Features

The Wilderness Inventory identified scenic views and archeological values as special features. The view from Bridger Jack Mesa is its major asset, enhancing the recreational experience. This WSA potentially contains up to 125 archaeological sites.

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. There is one animal species (peregrine falcon) and one plant species (Echinocereus triglochidiatus var. inermis, spineless hedgehog cactus) listed as endangered that may occur in the WSA. There are seven animal species that are considered sensitive that may occur in the WSA. Refer to the Vegetation and Wildlife Including Special Status Species sections for additional information.

## • Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV type of juniper-pinyon woodland. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. The ecoregion and PNV types represented by this WSA are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

This WSA is not within a 5-hour drive from any standard metropolitan statistical areas.

## Air Quality

Bridger Jack Mesa is located in a PSD Class II area as defined in the 1977 Clean Air Act, as amended. However, a Class I area (Canyonlands National Park) is less than 1 mile from Bridger Jack Mesa.

The background visibility range for Bridger Jack Mesa is estimated to average 100 to 132 miles during the summer (Aerocomp, Inc., 1984). Generally the average visibility is greater in the winter than in the summer. Air quality is good throughout the WSA.

## Geology and Topography

Bridger Jack Mesa WSA is within the Canyonlands section of the Colorado Plateau Physiographic Province. This section is characterized by bare rock surfaces, plateaus, and steep-walled canyons.

Geologic formations exposed in the WSA are Triassic in age and consist of, in ascending order, the Moenkopi Formation, the Chinle Formation, and the Glen Canyon Group (which may include some Jurassic rocks). The Glen Canyon Group consists of, in ascending order, Wingate Sandstone, Kayenta Formation, and Navajo Sandstone. Both the base and top are bounded by regional unconformities. The unconformity at the base separates the Triassic Moenkopi Formation from lower Permian rocks (Cutler Formation). The unconformity at the top is an erosion surface marked by chert pebbles and separates the Triassic Navajo from the overlying Jurassic Glen Canyon Group.

Bridger Jack Mesa lies along the east limb of the Monument Upwarp, a major north-trending structural division of the Colorado Plateau. The upwarp is 100 miles long, 50 miles wide, and trends north 10 degrees east. This broad upwarp is asymmetrical; dips on the west average 2 degrees, and dips on the east are approximately 50 degrees. No large structural features have been mapped within the unit.

This long, narrow mesa gradually dips to the north and ranges in elevation from 6,000 to 6,200 feet above sea level and 500 to 1,000 feet above the surrounding canyon bottoms. Topographic relief is limited in the southern half of the WSA, while the northern portion has greater relief with sandstone domes and knolls rising up to 450 feet above the mesa top.

## Soils

Most of this WSA consists of shallow loamy soils and rock outcrop (refer to Table 2). There are small areas of deep and very deep loamy soils on the top of the mesa generally in concave slope positions. These are positions where alluvium and eolian sediments have accumulated. Sediment yields vary from slight to moderate.

Under present conditions, most soil losses from water erosion occur on the shallow soils rimming the mesa and on the top of the mesa near expanses of rock outcrop. The average rate of soil loss at present is estimated to be about 0.6 cubic yards per acre per year (refer to Table 3).

Soil salinity class estimates indicate that the area is nonsaline with an estimated average salinity production of 33 lb of salt per acre per year.

# BRIDGER JACK MESA WSA

Seeding potential varies from unsuited to seeding to poor on 90 to 95 percent of the WSA due to steep slopes, rock outcrops, and shallow soils. Seeding potential is fair to good on 5 to 10 percent of the WSA where the soils are deeper and the slopes are not as steep.

Table 2  
Soil Characteristics and Land Types

Soil Characteristics and Land Type	Percent of the Area	Acres	Estimated Rate of Erosion (cubic yards/acre/year)	
			Present Condition	Bare Soil Surface
Rock Outcrop	40	2,116	0	0
Shallow loamy soils on sloping structural benches	20	1,058	1	5
Moderately deep to very deep loamy and stony soils on moderately steep canyon sides	20	1,058	1	10
Shallow to deep stony soils on steep canyon sides	20	1,058	1	10
Totals	100	5,290		

Source: Hansen, 1985.

## Vegetation Including Special Status Species

Existing vegetation types in the WSA are primarily pinyon-juniper woodland and sagebrush (refer to Table 4).

The pinyon-juniper woodland type mainly consists of mature 8- to 10-foot-high trees with very little un-

derstory. In some areas with deeper soil, an understory is present and is a mixture of sagebrush, blue grama, and muttongrass.

The sagebrush type occurs in small parks and has an understory of Indian ricegrass, blue grama, western wheatgrass, needle-and-thread grass, and winterfat.

Narrow bands of slickrock are found along the rim of the mesa. Vegetation along the slickrock is sparse pinyon-juniper woodland, serviceberry, and mountain mahogany. There is no riparian habitat in the WSA.

During the 1950s and 1960s, when wintering deer populations were high, the sagebrush was severely browsed. During this time, plant succession favored the propagation of cool-season bunchgrasses such as needle-and-thread grass. At the present time, through natural plant succession, there is an excellent diversity and composition of grasses and shrubs in the parklands. Those areas that are no longer grazed by livestock provide good comparisons for grazed ecosystems. One endangered plant species, the spineless hedgehog cactus (*Echinocereus triglochidiatus* var. *inermis*), likely occurs in the WSA. No other threatened, endangered, candidate, or other special status plant species have been found (see Appendix 4 in Volume I).

The WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNV type of the WSA is juniper-pinyon woodland.

Table 3  
Erosion Condition

Erosion Class	Erosion Rate cubic yards/acre/year	Annual Soil Loss Under Present Conditions		Annual Soil Loss if Disturbed		
		Percent of Area	Acres	Percent of Area	Acres	Cubic Yards
Very High	20	-	-	-	-	-
High	10	-	-	40	2,116	21,160
Medium	5	-	-	20	1,058	5,290
Low	1	60	3,174	-	-	-
Very Low	0.1	-	-	-	-	-
None	0	40	2,116	40	2,116	-
Totals		100	5,290	100	15,410	26,450 <sup>a</sup>

Source: Hansen, 1985.

Average annual soil loss in cubic yards per acre: 0.6 under present conditions; 5.0 if disturbed.



# BRIDGER JACK MESA WSA

Table 4  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Pinyon-juniper woodland	4,760	90
Barren (slickrock)	530	10
Total	5,290	100

Source: USDI, BLM, 1985.

## Water Resources

The Bridger Jack Mesa WSA is within the Cottonwood Creek subbasin of Indian Creek which flows into the Upper Colorado River. All surface water drainages within the WSA are ephemeral.

Water is a limited resource within the Bridger Jack Mesa WSA. There are no water wells, springs, or reservoirs on the mesa top. After rainfall or snowmelt, water is retained for short periods in natural rock tanks.

At one time, there were two reservoirs within this WSA. These reservoir sites have filled in and are no longer visible.

The WSA is within Water Right Adjudication area 05. The water is not fully appropriated (UDNRE, DWR, 1988). There is very little water development in this area because of its remoteness. Isolated springs may be open to appropriations not to exceed 0.015 cfs. Temporary and fixed time applications may exceed this limit.

The water quality standards for the Colorado River and tributaries, from Lake Powell to the State line, are as follows: Class 1C (protected for domestic purposes with prior treatment by treatment processes as required by the Utah Department of Health); Class 2B (protected for boating, water skiing, and similar uses, excluding recreational bathing [swimming]); Class 3B (protected for warm water species of game fish and other warm water aquatic life); and Class 4 (protected for agricultural uses including irrigation of crops and stockwatering).

## Mineral and Energy Resources

Table 5 provides the energy and mineral resources rating summary for the WSA. Refer to Appendix 5 in Volume 1 for a description of the rating system.

Table 5  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Potash	f2	c2	Less than 1 million metric tons
Uranium/Vandium	f1	c3	Less than 500 metric tons of uranium oxide
Manganese	f1	c4	Little to none

Source: SAI, 1982; USDI, BLM, 1987.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

The WSA could contain deposits of vanadium which is currently listed as a strategic and critical mineral (USDoD, 1988).

### • Leasable Minerals

There are no known deposits of any leasable minerals in the WSA. Currently, there are no active drilling, mining, or exploration activities for leasable minerals.

### • Oil and Gas

A few exploratory wells have been drilled in the vicinity of the WSA, but none directly on the mesa.

Despite the favorable stratigraphy in the vicinity of the WSA, deep erosion has resulted in a loss of hydrocarbons and reservoir pressure. Small fields may nevertheless exist in stratigraphic and structural traps in Pennsylvanian and Mississippian rocks.

On this basis, the WSA is assigned an oil and gas favorability of f2. The size of the hydrocarbon accumulation in such an environment is anticipated to be less than 10 million barrels of oil or less than 60 billion cubic feet of gas. Based on the available information, the certainty of occurrence for oil and gas is rated very low (c1).

Under the current land use plan, all 5,290 acres are in Category 3 (no surface occupancy). There are presently no oil and gas leases in the WSA.

# BRIDGER JACK MESA WSA

- Potash

The only known potash-bearing unit in the area is the Paradox Formation of Pennsylvanian age. This formation originated in a slowly subsiding, north-west-trending basin called the Paradox Basin that existed in the Moab region about 300 million years ago. The potash deposits in the Paradox Formation are thickest and nearest to the surface along a series of northwest-trending anticlines within a structural zone approximately 100 miles long and 30 miles wide in Utah and Colorado (the Paradox fold and fault belt).

The WSA has been assigned a favorability rating of f2, which means that if deposits occur, they would generally contain less than 1 million metric tons of potash. The potash would lie at considerable depth beneath the entire WSA, and the certainty that they occur is low (c2) (SAI, 1982).

- Locatable Minerals

There are no known deposits of locatable minerals in the WSA, and there are presently 68 mining claims, covering 1,360 acres.

- Uranium and Vanadium

There is no evidence of active or past mining within the WSA. There are, however, several small inactive uranium mines located immediately northwest and northeast of the unit. The small uranium mines located just outside the boundaries of the WSA are within the Indian Creek Mining District (USDI, BLM, 1987a).

The uranium deposits may underlie all 5,290 acres of the WSA, but in most cases they crop out outside of the WSA on the flanks of Bridger Jack Mesa, resulting in mine adits and dumps being outside the WSA.

On this basis, the WSA is assigned a uranium/vanadium favorability of f2 (favorability for small deposits, less than 500 metric tons). The certainty that uranium deposits occur in the WSA is moderate (c3) (SAI, 1982).

Manganese deposits in southeastern Utah occur in the Morrison and Summerville formations (Jurassic). As these are eroded from the WSA, the favorability for manganese is rated f1, with a high (c4) degree of certainty (SAI, 1982).

- Salable Minerals

The salable minerals within the WSA have little or no commercial potential, based on the poor quality and the remote nature of the material. These deposits are not unique or economically significant due to the presence of ample similar materials outside the WSA.

## Wildlife Including Special Status Species

The pinyon-juniper woodland communities on Bridger Jack Mesa support a variety of animal species. The Indian Creek-Dry Valley Unit Resource Analysis provides a complete species list. The Beef Basin Habitat Management Plan covers the WSA, but no wildlife habitat improvements have been identified. It is possible that the peregrine falcon, an endangered species, may use the area. The golden eagle, a BLM sensitive species, nests on Bridger Jack Mesa. Other sensitive species that could occur in the WSA are six Category 2 candidate species. These are the Great Basin Silver-spot butterfly, ferruginous hawk, southern spotted owl, western yellow-billed cuckoo, long-billed curlew, and white-faced ibis. Refer to Appendix 4 in Volume I for details.

No critical acres of habitat for threatened and endangered species have been identified.

Bridger Jack Mesa is utilized by wintering mule deer and 2,700 acres are classified as crucial deer winter range. Due to the lack of water sources, the majority of the use is from November through March.

Bobcats and coyotes are found on the mesa. Cottontail rabbits, pinyon mice, and assorted bats (mainly western pipistrel) are the most common mammals.

Red-tailed hawk, American kestrel, Cooper's hawk, common raven, pinyon jay, plain titmice, and rock wren are found within the WSA. Juncos are the most common wintering bird species. Mourning dove probably nest on the mesa. Chukar, an exotic gamebird introduced from Asia, also utilize the Bridger Jack Mesa WSA. The side-blotched lizard and the northern plateau lizard are the most common reptiles on Bridger Jack Mesa.

## Forest Resources

There are 4,760 acres of pinyon and juniper trees woodland on Bridger Jack Mesa. These are low quality sites (20 cubic feet usable wood per acre) and are considered nonproductive forest land. There would be

# BRIDGER JACK MESA WSA

less than 740 cords of firewood in the WSA. Due to the lack of vehicle access to the mesa, firewood and posts are not gathered from the mesa. Pine nuts may be gathered by occasional recreationists. Demand for forest products in the WSA is not expected to significantly change in the foreseeable future.

## Livestock and Wild Horses/Burros

There is no livestock grazing on Bridger Jack Mesa at the present time. Horses grazed the mesa during the winters through 1956. Cattle were also grazed on the mesa from the 1920s to the mid-1940s. The Indian Creek Allotment Management Plan excluded livestock grazing from the mesa in 1970. Since then, there has been no authorized livestock grazing on Bridger Jack Mesa due to poor access.

There are no usable range developments within the WSA and none are planned. No agricultural activity takes place within the WSA. There is no access route for vehicles or farm equipment to the mesa top. Limited water availability and lack of access restrict feasibility for potential agricultural development.

There are no wild horses or burros in the WSA.

## Visual Resources

The major feature of the WSA is Bridger Jack Mesa, a long, narrow mesa top (approximately 10 miles long and 1 mile wide) running southwest-northeast. The mesa top is relatively flat in the south, with slick-rock domes and knolls rising abruptly 450 feet above the mesa top in the north. Colors are light pinks and grays to dark browns and reds. Textures are fine to coarse.

Vegetation in the WSA consists primarily of pinyon-juniper woodland with several small, open sagebrush parks. Colors are dark greens and gray-greens. Textures are coarse to medium.

The entire WSA is within an area evaluated as Class B scenery (5,290 acres). Class B scenery combines some outstanding features and some features that are fairly common to the physiographic region.

Bridger Jack Mesa is located in a low sensitivity area. The WSA is in the seldom-seen distance zone, which is the area that is seen from low-use transportation routes. The entire WSA is located in a VRM Class IV area. Refer to Appendix 7 for a description of BLM's VRM rating system.

## Cultural Resources

No significant archaeological work has been conducted on Bridger Jack Mesa. Little is known about the cultural resources of the general area north of the Abajo Mountains, except that site densities are lower here than in most of San Juan County and that this locale is transitionally situated between Fremont and Anasazi cultural groups. Inventory to date in southeast Utah has led to the recognition of the broad cultural periods recognized for the region today.

Although site and survey information points to exclusive occupation of the Bridger Jack Mesa area by the Anasazi, it is possible and likely that Archaic (Basketmaker I) and Ute/Navajo peoples also made use of this locale. Human occupation on Bridger Jack Mesa has been episodic and discontinuous.

Because of the inaccessibility of Bridger Jack Mesa, this WSA potentially contains some pristine cultural resources. A literature search revealed three recorded sites, two of unknown character and one consisting of a cist. It is probable that both farming and hunting occurred in this area, with small pueblos and lithic scatters representing such activities. The cultural significance of the Bridger Jack Mesa WSA lies in the potential for answering settlement and subsistence questions in this little understood area.

There are no existing National Register sites and/or nominations in the WSA. However, based on estimates from similar settings in the area, it could be expected that 125 sites would be located in the WSA, of which 80 could be National Register eligible.

In the 1920s Mildruff Young (foreman for the S S Cattle Company) constructed two trails onto the mesa and developed three reservoirs to facilitate cattle grazing. The plow and slip used to construct the projects were left on the mesa and could be considered of historical significance.

## Recreation

Information on recreational activities and visitation is not available for the WSA. Local residents of San Juan County have indicated recreational uses of the unit include hunting, photography, backpacking, and sightseeing. There are probably only 2 or 3 days of hunter use on Bridger Jack Mesa. Total recreation use would amount to less than 100 visitor days annually. All of the use is attributed to primitive activities (nonmotorized) and none is related to

# BRIDGER JACK MESA WSA

commercial outfitting. Three deterrents to heavy use of the unit are difficult access, low diversity of terrain, and a lack of permanent water sources. Extensive deterioration of livestock trails allows visitors access to the top by foot travel only. Once on top, the area is a rolling, pinyon-juniper mesa top. No significant topographical, vegetation, or cultural features are present that would draw a great number of visitors.

The topography of the mesa prevents both current and potential ORV use.

Perhaps the main attraction of the area is the extreme remoteness of the mesa top and its associated vistas.

## Land Use Plans

There are no private or State in-holdings within the Bridger Jack Mesa WSA. The area is composed entirely of public land. There are no existing rights-of-way issued by BLM in the WSA.

All lands contiguous to the WSA (except Section 16, which is State land) are public lands administered by BLM. The private lands of the Dugout Ranch are generally within 0.25-mile of the eastern boundary of the mesa.

Access is gained into the area by U.S. Highway 191 and State Highway 211. A county road leaves State Highway 211 and crosses private land for approximately 0.50 mile. The county road traverses North Cottonwood Creek Basin and Salt Creek Mesa.

There is no vehicle access to Bridger Jack Mesa. During the 1920s through the 1940s, two livestock trails were maintained to Bridger Jack Mesa. The main trail goes up the southeast corner of the mesa. Another steeper trail goes up in Section 27.

The southwest end of the WSA (Section 25), is located within 0.25 mile of the southeast boundary of Canyonlands National Park and the Needles Proposed Wilderness (USDI, NPS, 1974). No contiguous lands are currently under consideration for wilderness by any agency.

The WSA is covered by the Beef Basin Habitat Management Plan and the Indian Creek Allotment Management Plan which recommended an ONA designation.

The WSA is in the BLM San Juan Resource Area and is managed according to the Indian Creek-Dry Valley MFP (USDI, BLM, 1977). The San Juan RMP will replace the MFP. Neither the MFP or RMP address wilderness designation. However, wilderness designation is part of the multiple-use concept and the BLM land use plan is linked to the Statewide Wilderness EIS through analysis of the present plan as the No Action/No Wilderness Alternative.

The San Juan County Master Plan (Planning and Research Associates, 1967) emphasizes multiple use of public lands and zones the WSA as open range and forest land. However, the policy of the San Juan County Commission is to oppose any legislative or administrative designation of wilderness in the County (San Juan County Commission, 1980). The commission has also endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah.

## Socioeconomics

### • Demographics

The WSA is located in north-central San Juan County. The nearest community is Monticello.

Between 1970 to 1980, the population of San Juan County was fairly static, and grew by less than a 2-percent annual growth rate. The 1985 population was 12,500. Since 1983, the county's population has declined by approximately 500 (USDI, BLM, 1987b). The two largest communities in the county are Blanding (1980 population 3,118) and Monticello (1980 population 1,929). Approximately 40 percent of the county's population resides in these communities. Table 6 presents baseline and projected population data for San Juan County. Population projections for the county indicate that the number of people living in San Juan County in the year 2010 will be about 15,000 for about a 21-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 6  
Baseline and Projected Population and Employment Growth  
San Juan County

	1980	1990	2000	2010
Population	12,400	12,900	12,900	15,000
Employment	3,980	3,800	4,300	5,100

Source: Utah Office of Planning and Budget, 1987.

# BRIDGER JACK MESA WSA

The major racial groups are caucasians (52.4 percent) and American Indians (45.7 percent). About 4 percent of the Navajo reservation's population live in San Juan County (USDI, BLM, 1987b).

San Juan County is the largest county in Utah, comprising 5,045,760 acres or about 9.6 percent of the State's acreage. Approximately 86 percent of the county is administered by the Federal Government; 41 percent by the BLM, 24 percent by the Bureau of Indian Affairs (BIA) in conjunction with the Navajo tribe, and 20.9 percent by other Federal agencies. About 6 percent is in State ownership and about 8.1 percent is privately owned (University of Utah, BEBR, 1982; USDI, BLM, 1987b).

## • Employment

Mining directly accounts for half of the income and over 32 percent of the employment in San Juan County (USDC, Bureau of Economic Analysis, 1983). Because the mines and mine employees both purchase products locally, mining's total local importance is even greater. Government and tourism are San Juan County's next most important sources of employment and income.

Table 6 shows the baseline and projected total employment for the county to the year 2010. The government sector (Federal, State, and local) is the most important in terms of employment in the San Juan County economy. In 1987, mining made up about 16.5 percent of the total employment in the county. Tourism also generates a significant number of jobs (USDI, BLM, 1987b). Unemployment is presently high, approximately 10 percent. In addition, about 20 percent of county residents are on welfare and are, therefore, not included in unemployment statistics. The percentage of unemployed people is greater on the Indian Reservation.

San Juan County is part of the Southeast MCD. Table 7 shows the baseline (1980) and projected employment by source for the MCD to the year 2010.

In 1980 the leading employment sectors for the MCD were mining (28 percent), government (18 percent), and trade (15 percent). It is projected that by the year 2010 employment in the MCD will increase by about 27 percent and that services will increase to 18 percent, trade to 17 percent, and government to 15 percent of the total. While the mining, agriculture, and construction sectors will decline (Utah Office of Planning and Budget, 1987).

Table 7

Southeast Multi-County District  
Employment\*

	1980	1990	2000	2010
Agriculture	1,203	1,100	1,100	1,100
Mining	6,388	3,500	4,500	5,700
Construction	1,380	700	900	1,100
Manufacturing	551	600	700	800
Transportation, Utilities	1,583	1,800	2,000	2,200
Trade	3,289	3,800	4,000	4,800
Finance, Insurance, Real Estate	424	400	400	500
Services	2,067	3,200	4,000	5,300
Government	3,994	4,100	3,800	4,400
Nonfarm Proprietors	1,715	2,000	2,200	2,800
Totals	22,534	21,000	23,600	28,700

Source: Utah Office of Planning and Budget, 1987.

\*Includes Carbon, Emery, Grand, and San Juan Counties.

## • Sales and Revenues

Activities in the WSA that could be of some local economic consequence include mineral exploration and dispersed nonmotorized recreation, as summarized in Table 8.

Table 8  
Local Sales and Federal Revenues

Source	Annual Local Sales*	Annual Federal Revenues
Mining Claim Assessment	\$6,800	0
Recreational Use	\$ 410	0
Total	\$7,210	0

Sources: USDI, BLM, 1974; Volume I, Appendix 9.

\*Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

The WSA has 68 mining claims that are current in assessment. Regulations require a \$100 annual expenditure for labor and improvements per claim to keep the claim current.

Except for some trespass use in the early 1970s, the WSA has not been a source of livestock forage for over 20 years. Woodland harvest is essentially nonexistent and has not produced income from the WSA.

Historical hunting pressure in the WSA has been low, and currently no hunting use exists. Other recreational use of the WSA is low and related local expenditures are well distributed. These expenditures are insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown.

## BRIDGER JACK MESA WSA

However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that Statewide average local expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for the Bridger Jack Mesa WSA is estimated at about 100 visitor days per year.

### ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. The analysis is based on the BLM management actions and anticipated activities presented in the Introduction to Volume V and the Description of the Alternatives for the Bridger Jack Mesa WSA.

#### No Action/No Wilderness Alternative

- Impacts on Wilderness Values

Because the WSA would not be designated wilderness with this alternative, the identified wilderness values would not receive the degree of protection afforded by application of the BLM Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities (i.e., management under oil and gas leasing Category 3, no surface occupancy on all 5,290 acres).

In the foreseeable future, disturbance of approximately 17 acres from exploration and development of uranium in the periphery of the WSA would result in a direct loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas. Most special features, including archaeological sites and endangered or sensitive species, would not be significantly affected because the disturbance would be minor (involving 0.32 percent of the WSA). In addition, appropriate measures would be taken to protect endangered and sensitive species and cultural values prior to any surface-disturbing activity. Some scenic view areas could be obstructed during the period of mineral exploration.

During the period of activity, the visual and audible disturbance from mineral exploration and development would reduce the quality of opportunities for solitude and primitive recreation not only on directly

disturbed areas but also indirectly on adjacent portions of the WSA. As much as 10 percent (529 acres) of the WSA could be so affected in the foreseeable future.

Because future vehicular use would be limited by terrain, no disturbance from ORV activity is anticipated in the future.

The increased visitor use that would occur over time would not be expected to reduce wilderness values because the additional use is expected to be small and primitive in nature.

The extent that disturbance would occur over the long term, and, therefore, the long-term loss of wilderness values that would occur is not accurately known. Loss would occur, however, as intrusions increase.

Conclusion: Wilderness values would not be protected by wilderness designation, and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 17 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 529 acres. Special features would not be significantly affected except scenic view areas from the mesa top would be disturbed.

#### All Wilderness Alternative (Proposed Action) (5,290 Acres)

- Impacts on Wilderness Values

Designation and management of all 5,290 acres as wilderness would contribute to the preservation of the wilderness values in the Bridger Jack Mesa WSA. The potential for surface-disturbing activities would be reduced through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness and outstanding opportunities for solitude and primitive recreation would be protected on all 5,290 acres. Resources that could be considered as special features in the WSA including scenic vistas, endangered and sensitive species, and archeological values would also be protected.

Although protected, complete preservation of wilderness values would not be assured because of the existence of valid existing rights. In the foreseeable future, disturbance of up to 5 acres is anticipated

## BRIDGER JACK MESA WSA

from exploration and development of valid uranium mining claims in places around the periphery of the WSA. Wilderness values of naturalness and opportunities for solitude and primitive recreation would be directly lost on the disturbed areas. Opportunities for solitude and primitive recreation would also be indirectly reduced in quality on adjacent portions of the WSA during the period of activity. As much as 2 percent (106 acres) of the WSA could be so affected. Special features, including archaeological values and endangered and sensitive species, would not be significantly affected because the disturbance would be minor (involving about 0.1 percent of the WSA). In addition, appropriate measures would be taken to protect endangered and sensitive species and cultural values prior to any surface-disturbing activity. Mitigation to protect wilderness values would be applied, but loss of wilderness values would be allowed if development involving valid existing rights could not be otherwise achieved. All in all, the disturbance would not be substantially noticeable in the area as a whole.

Over the long term, there would be no potential for loss of wilderness values due to development of new leases and mining claims. The potential for long-term development of existing mining claims is not accurately known but would be less with this alternative than with No Action/No Wilderness Alternative due to the application of mitigation that would protect wilderness values subject to valid existing rights.

Increased visitor use that would occur with time would be primitive in nature and would be managed so as to not result in loss of wilderness values.

Conclusion: Wilderness designation would preserve overall the wilderness values in the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 5 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 106 acres. Special features would be preserved.

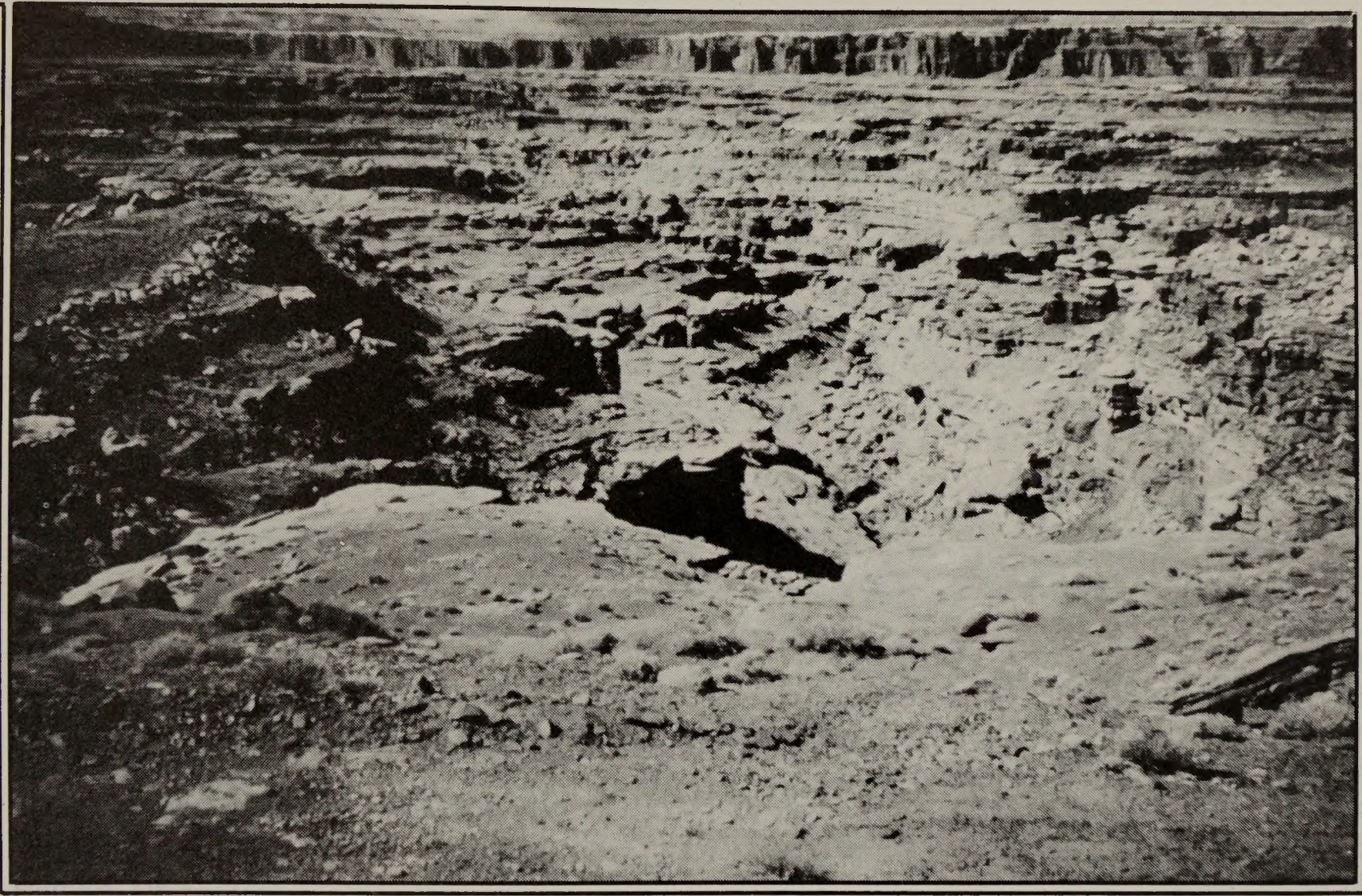




# Indian Creek WSA

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# INDIAN CREEK WSA

(UT-060-164)

## INTRODUCTION

### General Description of the Area

The Indian Creek WSA is in the Canyonlands region of San Juan County. The WSA covers 6,870 acres of public land administered by the BLM. Acreage differences between those reported in this EIS and the 7,300 acres shown on the BLM Intensive Wilderness Inventory (USDI, BLM, 1980) are due to recalculations using more accurate measurement methods. The WSA is about 5.50 miles long (north to south) and varies from 1.50 to 3.50 miles wide (east to west). It is approximately 40 road miles northwest of Monticello, Utah. Portions of lower Indian Creek and Rustler Canyon are within this WSA. Canyonlands National Park borders the WSA on the west and the north.

Rugged slickrock landscape characterizes the Indian Creek WSA. Many steep drainages dissect the northern portion of the unit. Indian Creek is a deep canyon with steep rock walls. The rock outcrops and ledges are the major source of scenery. Some of the canyons are almost 300 feet deep.

Over 75 percent of the area is slickrock. The WSA is characterized by bare rock surfaces, plateaus, and steep-walled canyons. The topography consists of numerous narrow, twisting gullies and canyons cut into sparsely vegetated red rock.

Vegetation is comprised of desert shrub communities of blackbrush, shadscale, Mormon tea, galleta, and Indian ricegrass.

Canyonlands National Park's weather station is approximately 6 air miles away from Indian Creek WSA. The average annual temperature at Canyonlands is 53 degrees Fahrenheit (F) with an average low of 38 degrees F and an average high of 69 degrees F. The record low is -11 degrees F and the record high is 105 degrees F.

Annual precipitation averages about 8 inches per year in the WSA. February and June are the driest months. July and August are the wettest months.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume V, the following change specific to the WSA have been made since publication of the Draft EIS.

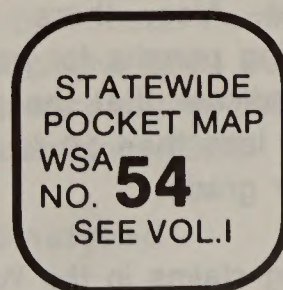
1. The anticipated surface disturbance presented in the Draft EIS (620 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities projected to be feasible within the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of surface disturbance estimates from the 620 acres reported in the Draft EIS to no surface disturbance for the Final EIS.

### Specific Issues Identified Through Scoping and Public Comment

- Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume V (i.e., impacts on air quality, geology and topography, water rights, and land use plans and policies), the following issues or impacts specific to the Indian Creek WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Soils: Estimates of surface disturbance without wilderness designation have been revised downward from the 620 acres reported in the Draft EIS to no surface disturbance in the Final EIS. Given this new scenario, the impacts of direct disturbance of soils would be reduced and would not be significant with any of the alternatives.



# INDIAN CREEK WSA

There is currently no ORV use in the WSA, and potential use is severely limited by the topographic features. Therefore, impacts on soils are not analyzed in detail for the Indian Creek WSA.

2. Vegetation Including Special Status Species: Estimates of surface disturbance without wilderness designation have been revised downward from the 620 acres reported in the Draft EIS to no mineral-related surface disturbance in the Final EIS. Given this new scenario, the impacts of direct disturbance of vegetation would be reduced and would not be significant with any of the alternatives. There are no threatened, endangered, or proposed threatened or endangered plant species known to occur within the WSA. However, Astragalus monumentalis, a special status plant species, may occur in the WSA. Should any surface-disturbing activities be proposed in the future, BLM would require site-specific clearances of potentially disturbed areas and consult with FWS as necessary. Because no impacts are projected to vegetation types or special status plant species, vegetation is not analyzed in detail for the Indian Creek WSA.

3. Water Resources: The public is concerned that wilderness designation would interfere with development of water. Future developments, although none are proposed, could increase sediment yield and affect water quality. There are 4 miles of perennial stream and one undeveloped seep in the Indian Creek WSA. Potential uses of Indian Creek include livestock, recreation, and wildlife use that would not be affected by wilderness designation. No disturbances that would affect water quality are projected. Therefore, impacts of wilderness designation on water uses and quality are not significant for the Indian Creek WSA and they are not discussed in detail in the Final EIS.

4. Mineral Resources: The public has expressed concern that wilderness designation would interfere with or prevent mineral exploration, development, and production.

There are no oil and gas leases within the WSA. Potential oil and gas deposits are small with a low certainty that they exist. Also, there are currently no leases or prospecting permits for potash in the WSA. Analysis of data indicate that the potash underlying the WSA would be less than 10 feet thick and would be of relatively low grade.

There are no mining claims in the WSA and projected uranium and other locatable mineral deposits are small and/or could not be economically developed in

the foreseeable future (see Appendix 6 in Volume I). More accessible deposits of salable minerals exist outside the WSA. For these reasons it is determined that mineral exploration or development would not occur in the foreseeable future with or without wilderness designation. Therefore, impacts on mineral and energy exploration and production are not analyzed in detail in the Final EIS.

5. Wildlife Including Special Status Species: The public is concerned that without wilderness designation mineral or other developments would destroy wildlife habitat and lead to reductions in wildlife populations. They are also concerned that use of ORVs would disturb wildlife and destroy habitat. The Indian Creek WSA provides habitat for a variety of animal species, but populations are low and no one species can be described as abundant. One endangered and five Category 2 candidate species may be found in the WSA.

Because developments are not expected in the WSA in the foreseeable future, wildlife habitats would not be lost. Terrain and surface features restrict the use of ORVs to the extent that no ORV use is currently taking place in the WSA. Recreation use is very low (estimated to be less than 100 visitor days use per year) and is mainly primitive. Given these conditions, impacts on wildlife habitat and populations are not significant issues for the Final EIS.

6. Forest Resources: The only forest resources in the WSA are a few scattered juniper trees. There is no vehicle access to the area. For these reasons, impacts on forest resources are not significant issues for analysis in the Final EIS.

7. Livestock Management: The public is concerned that wilderness designation would interfere with livestock management by placing restrictions on predator control and access for maintenance of existing range improvements, moving of livestock, and by preventing future range improvements. However, under the BLM Wilderness Management Policy (BLM Manual 8560) there will be no curtailments in grazing simply because an area is wilderness. Although spring-loaded cyanide guns (M-44s) would be prohibited, several methods of predator control would be allowed in designated wilderness. Predator control has not been practiced in the area for several years. The Indian Creek WSA comprises a very small portion (2 percent) of two grazing allotments. There are no developments or rangeland improvements planned for the WSA.

# INDIAN CREEK WSA

For these reasons, impacts on livestock management are not significant issues for the Indian Creek WSA and are not analyzed in detail in the Final EIS.

8. Visual Resources: As discussed above for vegetation, there are no acres of surface disturbance projected for the WSA in the Final EIS. Therefore, visual resources would not be significantly affected. Visual resources are not addressed in the Final EIS as a separate topic, but are addressed in relation to naturalness and special features in the Wilderness Values sections.

9. Cultural Resources: Cultural resources could be destroyed by surface-disturbing projects, use of vehicles, or vandalism. However, mineral-related surface disturbance is not projected for the WSA. Visitation is light (less than 100 visitor days per year) and mainly primitive. Terrain and surface features limit vehicle use to less than 1 mile of way inside the WSA. Additionally, inventories for the purpose of site recordation and mitigation of impacts would take place prior to any surface disturbance in the future. Given these conditions, impacts on cultural resources are not significant issues for the Indian Creek WSA and are not analyzed in detail in the Final EIS.

10. Recreation: The public has expressed concern that wilderness designation would change recreational use from motorized to primitive or, conversely, that without wilderness designation motorized recreation will eliminate or reduce opportunities for primitive recreation. Recreational use of the Indian Creek WSA is light (estimated to be less than 100 visitor days per year) and would remain primitive with or without wilderness designation due to the terrain of the WSA and limited access. Therefore, impacts on recreation use are not significant issues for the Indian Creek WSA and are not analyzed in detail in the Final EIS.

11. Economic Conditions: The public, including State and local government, is concerned that wilderness designation would preclude mineral or other economic developments and adversely affect local economic conditions. Others believe that primitive recreation use would increase following wilderness designation and would contribute to the local economy.

There are no existing or anticipated mineral developments or proposals for land or realty activities which would be significantly impaired with or without wilderness designation. Because no economic developments are expected and because recreational use is less than 100 visitor days per year, impacts on eco-

conomic conditions are not significant issues for the Indian Creek WSA.

## • Issues Analyzed in Detail

The only significant issue for the Indian Creek WSA is impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.

Comments made during the public comment period for the Draft EIS centered mainly on the adequacy of the BLM inventory and placement of WSA boundaries, the rationale for the BLM Proposed Action; the need for further inventories of resource values; and BLM's assessments of climatic data, land use planning data, wilderness values, cultural resources, wildlife values, mineral values, livestock management, and recreation values.

See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 54, for responses to specific comments about the Indian Creek WSA.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated from Detailed Study

During the initial scoping, it was suggested that an alternative be identified with a boundary that follows identifiable ground features. The size and characteristics of the area do not lend themselves to a readily apparent ground features. The section lines used to define the WSA appear to best encompass the area that meets the naturalness criterion; therefore, this alternative was not included for detailed study.

Alternatives that would add up to 20,050 acres of State and Federal lands on the eastern edge, and continuing north and south, of the WSA was suggested in the public comments. These alternatives are not analyzed because the inclusion of State lands is not consistent with BLM's Wilderness Review Guidelines (refer to Volume VII-B, General Comment Response 6.4) and because other public lands were dropped from study during the inventory phase (refer to Volume VII-B, General Comment Response 3.1).

### Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action/No Wilderness; and (2) All Wilderness

## INDIAN CREEK WSA

(Proposed Action) (6,870 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case. The assumed management actions presented in the Introduction to Volume V are also applicable.

- No Action/No Wilderness Alternative

With this alternative, none of the 6,870-acre Indian Creek WSA would be designated by Congress as part of the NWPS (refer to Map 1). Although BLM's land use plans are regularly updated, and the Indian Creek-Dry Valley MFP (USDI, BLM, 1977). This plan will be superseded by the San Juan RMP, it is assumed that the area would continue to be managed in accordance with the MFP.

- Management Conditions and Constraints

All 6,870 acres would remain open to mineral location, leasing, and sale. There are currently no mining claims within the WSA. Development work, extraction, and patenting would be allowed on future mining claims. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) without concern for wilderness values. There are no known deposits of any leasable or locatable minerals in the WSA. Under the current land use plan, all 6,870 acres are in oil and gas leasing Category 1 (standard stipulations). There are presently no oil and gas leases nor leases or prospecting permits for potash in the WSA. However, leases would be issued in the future. Although minerals would be managed as described, mineral exploration and development are not anticipated because the level of known resources and the probability of their development are too low to support a development assumption. Appendix 6 in Volume I explains the mineral exploration and development assumptions.

The present domestic livestock grazing use of an estimated 39 AUMs in the WSA would continue as authorized in the MFP or other applicable BLM planning document. Use of one 30-yard-long gap fence would continue.

The entire WSA acreage would be open to ORV use, however, no ORV use currently exists in the WSA and potential use is severely limited by rough terrain.

The entire area would be open to woodland product harvest. However, harvest is not expected because there are no forest resources in the WSA.

The entire 6,870-acre area would continue to be managed as VRM Class II.

- Action Scenario

Given BLM management actions described above and the resources described in the Affected Environment section, BLM anticipates that implementation of the No Action/No Wilderness Alternative would not result in any surface disturbance in the foreseeable future. No locatable or leasable mineral resource exploration or development is anticipated in the foreseeable future. No rangeland, wildlife habitat, or watershed improvement projects are planned.

No disturbance is projected to occur from ORV use due to rough terrain.

Recreation use is projected to increase above the current estimated use of less than 100 annual visitor days at a rate of 2 to 7 percent per year. All recreation use would be primitive in nature.

- All Wilderness Alternative (Proposed Action)

With the All Wilderness Alternative, all 6,870 acres of the Indian Creek WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character. No State, private, or split-estate lands are located in the WSA. The figures and acreages given under this alternative are for Federal lands only.

- Management Conditions and Constraints

Although no mining claims now exist, development work, extraction, and patenting would be allowed to continue on any mining claims that may be located prior to wilderness designation. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809), with consideration given to wilderness values. Location or development of mining claims are not expected with this alternative. Oil and gas leases have been phased out of the WSA and new leasing would not be

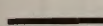
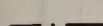





# INDIAN CREEK WSA

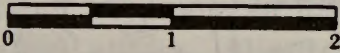
## Map 1

### LAND STATUS Indian Creek WSA UT-060-164

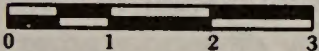
#### Legend

-  WSA Boundary
-  Canyonlands National Parks Boundary
-  State Land Within or Adjacent to WSA
-  National Park Service Administered Land
-  BLM Administered Land Within or Adjacent to WSA

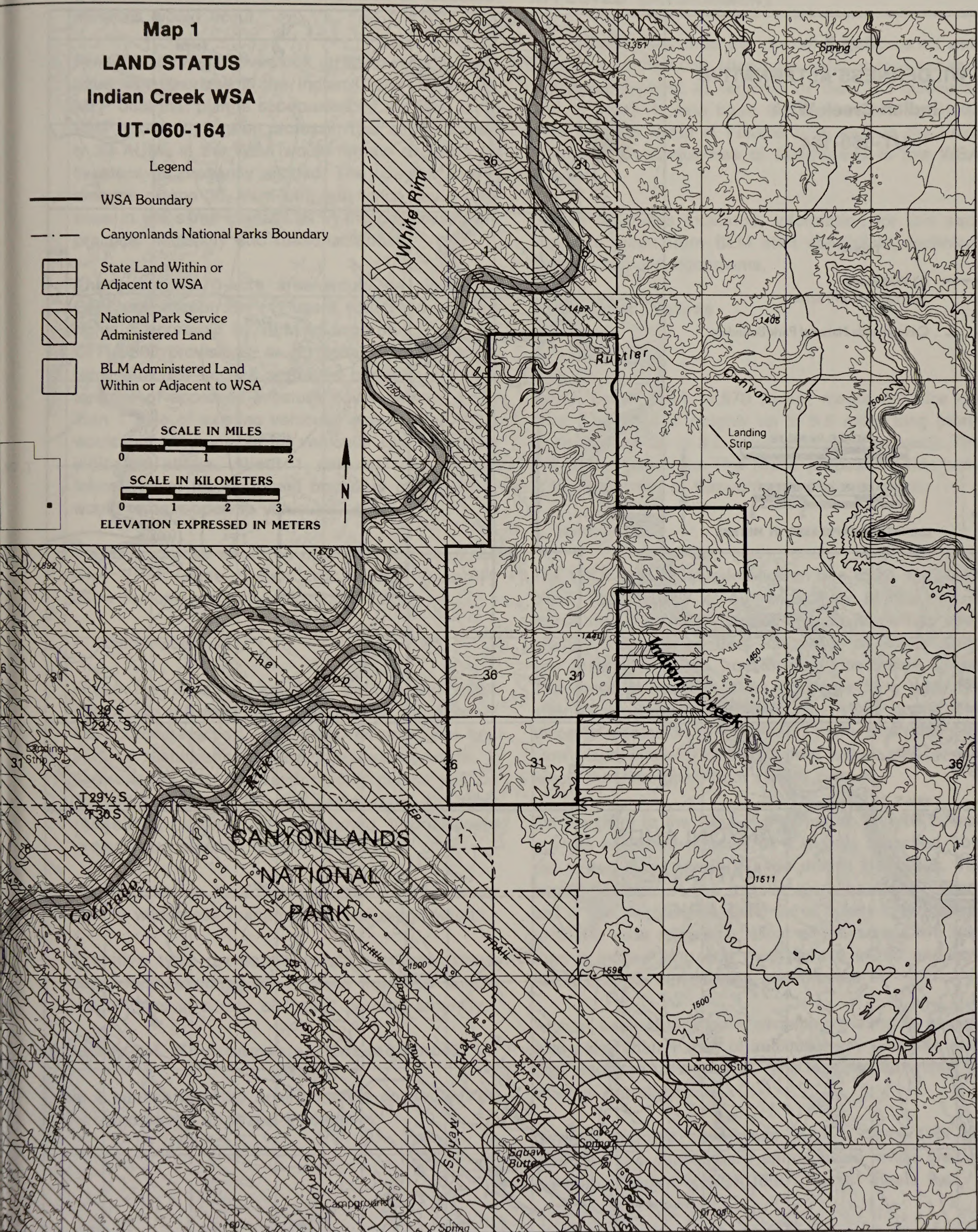
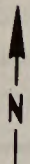
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



T. 29 S.

T. 30 S.

R. 19 E.

R. 20 E.

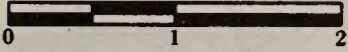
# INDIAN CREEK WSA

## Map 2 ALL WILDERNESS ALTERNATIVE Indian Creek WSA UT-060-164

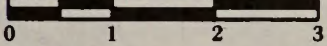
### Legend

- All Wilderness Alternative (6,870 acres)
- - - Canyonlands National Park Boundary

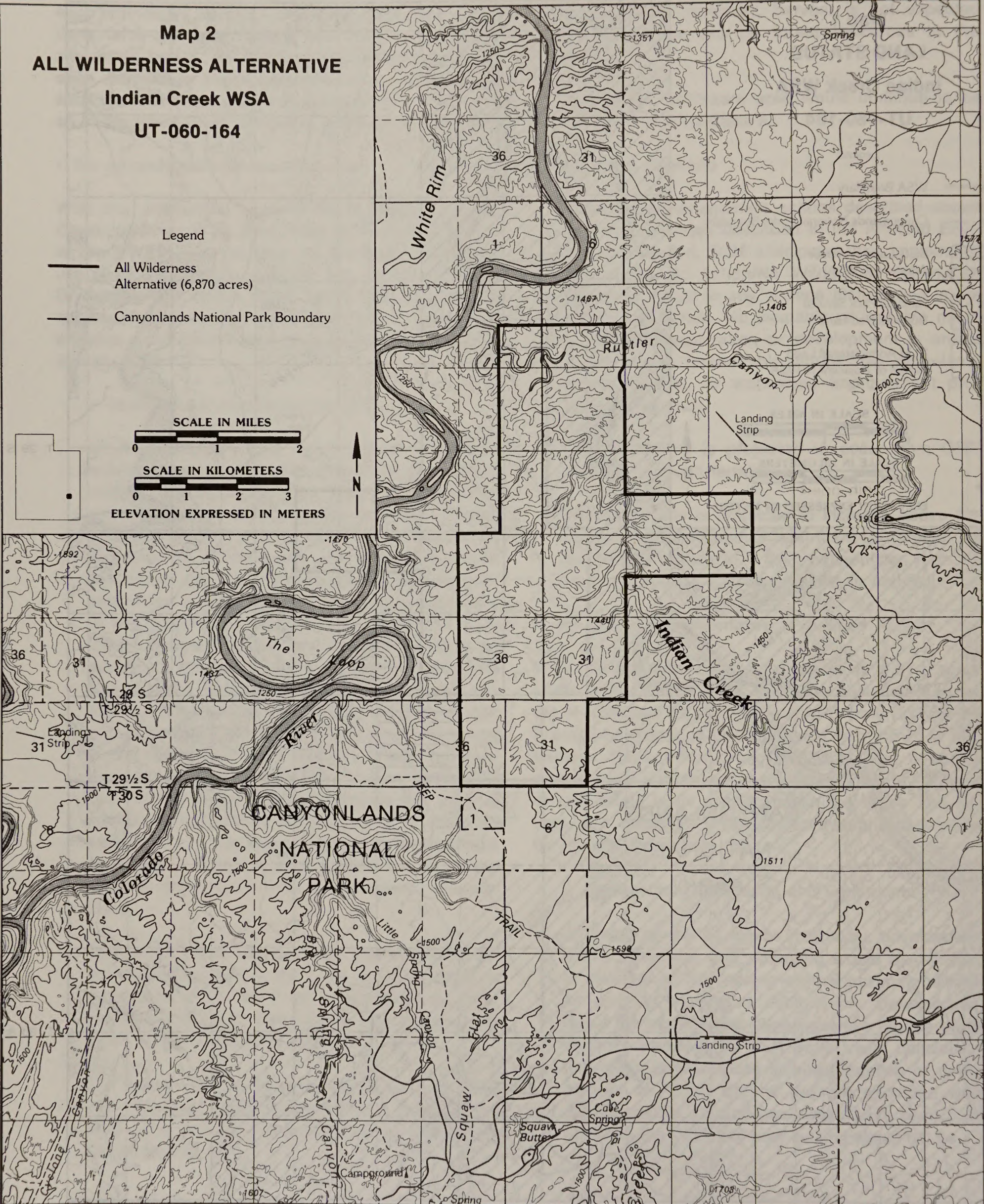
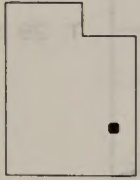
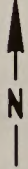
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



T. 29 S.

T. 30 S.

R. 19 E.

R. 20 E.

# INDIAN CREEK WSA

allowed. Therefore, no development of leasable minerals would occur.

Present domestic livestock grazing would continue as authorized in the Indian Creek-Dry Valley MFP until that plan is superseded by the San Juan RMP (currently under protest). The approximately 39 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of one 30-yard-long gap fence could continue in the same manner as in the past based on practical necessity and reasonableness.

The entire 6,870-acre area would be closed to ORV use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR 8560 provisions; or (2) occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. Less than 1 mile of existing vehicular ways in the WSA would not be available for vehicular use except as indicated above. About 1 mile of road, which forms part of the northeast boundary of the WSA, would remain open to vehicular use.

Visual resources would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

## • Action Scenario

Given the BLM management actions described above and the resources described in the Affected Environment section, BLM does not anticipate any surface disturbance in the foreseeable future. It is projected that no valid mining claims will be located prior to wilderness designation. No other rangeland, wildlife, or watershed improvement projects are planned for the WSA.

No disturbance is anticipated from ORV activity due to wilderness management and rough terrain.

Primitive type recreation would increase above to current estimated use of less than 100 annual visitor days at a rate of 2 to 7 percent annually.

## Summary of Environmental Consequences

Table 1 summarizes the environmental consequences of the alternatives analyzed in detail.

## AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

### Wilderness Values

#### • Size

Indian Creek WSA (6,870 acres) meets the size criteria. The WSA is roughly up to 5.5 miles long (north to south) and up to 3.5 miles wide (east to west). The WSA is adjacent to The Maze proposed wilderness (105,980 acres) of Canyonlands National Park.

#### • Naturalness

The WSA is in a natural condition due to its inaccessibility. The majority of human activity in this unit is associated with cattle grazing. A gap fence has been erected 0.25 mile up from the mouth of Rustler Canyon to prevent cattle from drifting into Indian Creek. The fence is approximately 30 yards long with four strands of barbed wire and four steel posts. The fence is located in tamarisk and there is an insignificant visual impact within 60 feet either side of the fence that stretches from rim to rim.

On the point to the west of the Rustler Canyon pour-off are the scattered remains of a missile launched from the Green River Missile Range during the 1960s. The larger portions of the missile were salvaged. There are a few sections of metal 2- to 3-foot long from 1- to 2-foot wide remaining. Most of the scraps are less than 6 inches long and they have oxidized and now blend into the surrounding environment.

Annual assessment work of mining claims is evident along less than 1 mile of vehicular way near the northeast boundary of the WSA. The disturbance within the WSA is not significant.

Overall, imprints cover less than 1 percent of the WSA and are substantially unnoticeable in the area as a whole. The entire WSA (6,870 acres) meets the

# INDIAN CREEK WSA

**Table 1  
Summary of Environmental Consequences**

Alternatives	
Resources	All Wilderness (6,870 Acres) (Proposed Action)
Impacts on Wilderness Values	<p>Wilderness values would not be protected by wilderness designation. No disturbance is anticipated in the foreseeable future that would affect. Vehicular use of less than 1 mile of way would occasionally detract from opportunities for solitude and primitive recreation. This alternative would not complement or enhance wilderness values, uses, and management of contiguous lands proposed for wilderness designation by the NPS.</p> <p>Wilderness designation would preserve the wilderness values in the WSA. This alternative would complement and enhance wilderness uses, values, and management of the contiguous NPS lands proposed for wilderness designation by the NPS.</p>

# INDIAN CREEK WSA

naturalness standard for areas under wilderness review.

No surface-disturbing activities have occurred since the wilderness inventory.

- Solitude

There are over 10 miles of entrenched meandering canyons within the WSA, including Indian Creek, Rustler Canyon, and their side tributaries. These are divided by topographic features creating several visual zones enhancing the opportunities for solitude. The vegetation of the WSA does not enhance the opportunities for solitude due to its limited extent.

The majority of the unit is isolated from off-site intrusions and influences. Occasional ORV use outside the northeast boundary of the WSA is a nuisance, but does not affect opportunities to find solitude to any degree.

The entire WSA (6,870 acres) meets the criteria for outstanding opportunities for solitude.

- Primitive and Unconfined Recreation

The steep, narrow canyon of Indian Creek provides outstanding opportunities for backpacking and associated activities. The WSA meets the criteria for primitive and unconfined recreation on all 6,870 acres.

- Special Features

Two pouroffs in Indian Creek near the western border of the WSA are picturesque when water is flowing in this intermittent drainage. The two pouroffs drop almost 150 feet.

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. There is one animal species (peregrine falcon) listed as endangered that may occur in the WSA. There are six animal species and one plant species that are considered sensitive that may occur in the WSA. Evidence of desert bighorn sheep, which is a wildlife species associated with wilderness, has been found within this WSA. Refer to the Vegetation and Wildlife Including Special Status Species sections for additional information. The entire WSA is rated Class A for scenic quality. It has approximately 4 miles of perennial streams. Twelve archaeological sites have been recorded in the WSA and poten-

tially contains many more pristine cultural resources that have not been recorded.

- Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV type of blackbrush. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. The ecoregion and PNV types represented by this WSA are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

This WSA is not within a 5-hour drive from any standard metropolitan statistical areas.

## Air Quality

Currently Indian Creek WSA is located in a PSD Class II area as defined in the 1977 Clean Air Act as amended. However, a Class I area (Canyonlands National Park) is contiguous to Indian Creek WSA. The air quality is good over the WSA.

Background visibility range is estimated to average 100 to 132 miles during the summer (Aerocomp, Inc., 1984). Generally, the average visibility is greater in the winter than in the summer.

## Geology and Topography

Indian Creek WSA is within the Canyonlands section of the Colorado Plateau Physiographic Province. This section is characterized by bare rock surfaces, plateaus, and steep-walled canyons.

Surface outcrops in the northern part of the WSA consist of the Cutler Formation. The rest of the surface outcrops within the unit are mapped as the Cedar Mesa Sandstone Member of the Cutler formation. The geology in this area is somewhat complicated because the fluvial archeozoic sandstone and shales of the Cutler and Rico Formations interfinger with the sandstones, shales, and limestone of the Cedar Mesa Sandstone and Elephant Canyon formations. The Rico Formation underlies the Cedar Mesa Sandstone and crops out along Indian Creek. In this vicinity the Rico is recognized as the upper half of the Elephant Canyon Formation up to the base of the Cedar Mesa Sandstone.

Indian Creek WSA lies along the north-plunging nose of the Monument Upwarp, a major north-trending structural division of the Colorado Plateau. The broad

# INDIAN CREEK WSA

upwarp is asymmetrical; dips on the west average 2 degrees, and dips on the east average approximately 50 degrees.

Other structural features in the area include Gibson Dome to the southeast, Rustler Dome to the north, and Meander Anticline to the west. The Needles fault zone, a complex of horsts and grabens, lies about 4 miles to the southwest.

The topography of this WSA consists of numerous narrow twisting gullies and canyons cut into sparsely vegetated red rock. Elevation ranges from 4,000 to 4,800 feet above sea level.

## Soils

The soils in this WSA have been mapped and described (USDA, SCS, 1978). The majority of this WSA is composed of rock outcrop and shallow soils. There are small areas of deep sandy soils in basins or on leeward sides of obstructions such as ridges where sand has accumulated (refer to Table 2).

Under present conditions, average soil loss from erosion is estimated to be about 0.35 cubic yards per acre per year. Total annual soil loss for the entire WSA is approximately 2,438 cubic yards (refer to Table 3). Sediment yields vary from slight to moderate.

Soil salinity class estimates indicate that the area is nonsaline with an estimated average salinity production of 33 lbs of salt per acre per year.

Table 2  
Soil Characteristics and Land Types

Soil Characteristics and Land Type	Percent of the Area	Acres	Estimated Rate of Erosion (cubic yards/acre/year)	
			Present Condition	Bare Soil Surface
Rock Outcrop	60	4,123	0	0
Shallow loamy soils on sloping structural benches	35	2,404	1	5
Very deep sandy soils on gently sloping structural benches and along drainings	5	343	0.1	1
<b>Totals</b>	<b>100</b>	<b>6,870</b>		

Source: Hansen, 1985.

The WSA is unsuitable for seeding due to steep slopes, rock outcrops, sandy (droughty) and shallow soils.

## Vegetation Including Special Status Species

Desert shrub is the major vegetation type in the WSA and contains blackbrush, shadscale, Mormon tea, galleta, and Indian ricegrass. Desert shrub communities cover approximately 25 percent of the WSA. The other 75 percent of the area is mostly barren (refer to Table 4).

The barren areas are basically bare rock or soil and drainage bottoms with a low density of plants. Part of the barren areas have steep slopes and deep canyons.

Table 3  
Erosion Condition

Erosion Class	Erosion Rate cubic yards/acre/year	Annual Soil Loss Under Present Conditions			Annual Soil Loss if Disturbed		
		Percent of Area	Acres	Cubic Yards	Percent of Area	Acres	Cubic Yards
Very High	20	-	-	-	-	-	-
High	10	-	-	-	-	2,404	12,020
Medium	5	-	-	-	35	343	343
Low	1	35	2,404	2,404	5	-	-
Very Low	0.1	5	343	34	-	-	-
None	0	60	4,123	-	60	4,123	-
<b>Totals</b>		<b>100</b>	<b>6,870</b>	<b>2,438*</b>	<b>100</b>	<b>6,870</b>	<b>12,363*</b>

Source: Hansen, 1985.

Average annual soil loss in cubic yards per acre: 0.35 under present conditions; 1.8 if disturbed.

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Table 4  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Desert shrub	1,707	25
Barren	5,151	75
Riparian	12	less than 1
<b>Total</b>	<b>6,780</b>	<b>100</b>

Source: USDI, BLM, 1985.

Scattered vegetation growing in shallow drainages and soil pockets of the barren areas consist of blackbrush, Mormon tea, coldenia, single leaf ash, skunkbrush, scattered juniper trees, and galleta grass.

The WSA contains about 12 acres of riparian vegetation located mostly along Indian Creek. Vegetation along the bottoms of Indian Creek and Rustler Canyon consists of tamarisk, willow, cottonwood, big rabbitbrush, copperweed, common reedgrass, saltgrass, greasewood, fourwing saltbush, and Indian ricegrass.

There are no known threatened or endangered plant species in the WSA. *Astragalus monumentalis*, a sensitive plant species, may occur within the WSA.

The Indian Creek WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The map identifies the entire WSA as having a PNV type of blackbrush.

## Water Resources

The Indian Creek WSA is drained by Indian Creek which flows into the Upper Colorado River. It is within the Upper Colorado River hydrologic subregion.

There are no water wells or reservoirs in the Indian Creek WSA. There is an undeveloped seep below the Rustler Canyon pouroff that is utilized by cattle and wildlife. Water is available in low quantities yearlong in Indian Creek which flows through the WSA for about 4 miles and then into the Colorado River about 0.50 mile to the northwest. Water quality is good and cattle utilize the water during the winter months. The WSA is within Water Right Adjudication Area 05. The water is not fully appropriated for the total area, however, Indian Creek is fully appropriated (UDNRE, DWR, 1988). Isolated springs may be open to appropriations not to exceed 0.015 cfs. Temporary and fixed time applications may exceed this limit.

The water quality standards for the Colorado River and tributaries, from Lake Powell to state line, are as follows: Class 1C (protected for domestic purposes with prior treatment by treatment processes as required by the Utah Department of Health); Class 2B (protected for boating, water skiing, and similar uses, excluding recreational bathing [swimming]); Class 3B (protected for warm water species of game fish and other warm water aquatic life); and Class 4 (protected for agricultural uses, including irrigation of crops and stockwatering).

Hydraulic interconnection of aquifers is not widespread in the area, and underground water is possibly found in isolated pockets at two levels. Water in the upper level is of low salinity and suitable for use by livestock and wildlife. Discharges are by evaporation, springs, and subriver level seeps to the Colorado River and associated drainages. Water in the lower level is high in salt with TDS ranging from 80,000 to over 300,000 milligrams per liter (USDI, BLM, 1985).

## Mineral and Energy Resources

Table 5 provides the energy and mineral resources rating summary for the WSA. Refer to Appendix 5 in Volume I for a description of the mineral and energy rating system.

Table 5  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f2	c2	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Potash	f3	c3	1 to 10 million metric tons
Copper	f2	c1	Less than 50,000 metric tons
Uranium/Vanadium	f2	c2	Less than 500 metric tons of uranium oxide.
Manganese	f1	c4	None

Source: SAI, 1982; USDI, BLM, 1987a.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

The WSA could contain deposits of vanadium and copper which are currently listed as strategic and critical minerals (USDoD, 1988). Although listed as strategic, copper is relatively common and supplies currently exceed domestic demand.

## INDIAN CREEK WSA

### • Leasable Minerals

There are no known deposits of any leasable minerals in the WSA. Currently, there are no active drilling, mining, or exploration activities for leasable minerals.

### • Oil and Gas

Oil and gas production in the vicinity of the WSA has come from both Pennsylvanian and Mississippian age pools. Although these rock units underlie the WSA, structural components which have enhanced reservoir characteristics and trapping in surrounding fields are not readily apparent at this location within the Paradox Basin.

Pennsylvanian production has come from structural traps in the Ten Mile field located 35 miles to the northwest, from the Long Canyon, Shafer Canyon and Bartlett Flat fields located 20-25 miles to the north, the Lion Mesa field located 15 miles to the northeast, and the Wilson Canyon and Pine Ridge fields located 24-30 miles to the east of the WSA. The Shafer Canyon and Bartlett Flat fields have been abandoned, the Ten Mile and Lion Mesa fields are shut-in, and Long Canyon, Wilson Canyon, and Pine Ridge fields are currently producing. Combined cumulative production from these fields, as of December 1986, has been approximately 1.1 million barrels of oil and 1.4 billion cubic feet of gas. Individual fields have produced from a few thousand barrels of oil and no gas (Ten Mile, Lion Mesa, and Pine Ridge) to 890 thousand barrels of oil and 955 million cubic feet of gas at the Long Canyon fields. Production from Shafer Canyon, Bartlett Flat, and Wilson Camp has ranged from 38 to 74 thousand barrels of oil and from 21 to 117 million cubic feet of gas.

Mississippian production from nearby fields has come from the Salt Wash field located 40 miles to the northwest, Big Flat field located 22 miles to the north, and the Lisbon, Big Indian, and Little Valley fields located 25-30 miles to the east of the WSA. The Big Flat field has been abandoned, the remaining fields are currently producing. Combined cumulative production from these Mississippian fields (as of December 1986) has been approximately 48.7 million barrels of oil and 495 billion cubic feet of gas. Individual fields range from 47 million barrels of oil and 450 billion cubic feet of gas at Lisbon, to 1.3 million barrels of oil and 11.6 billion cubic feet of gas at Salt

Wash and from 92 to 208 thousand barrels of oil and from 50 million to 19 billion cubic feet of gas at the Big Flat, Little Valley, and Pine Ridge fields.

The USGS estimates that the entire Paradox Basin of southeastern Utah and western Colorado contains 1.2 billion barrels of undiscovered recoverable oil and 3.8 trillion cubic feet of undiscovered recoverable natural gas (SAI, 1982). The majority of this will be found in Mississippian and Pennsylvanian age rocks, which to date have accounted for nearly 90% of the oil and 85 percent of the natural gas produced in southeastern Utah.

The potential for oil and gas discoveries within the WSA rest primarily in the Mississippian age strata, where structural movements during that time combined with possible porosity development, could have resulted in reservoir development. However, due to the scarcity of drilling near the WSA, this potential is unknown. The WSA rests near the southwestern terminus of Paradox Formation salt flowage that occurred in Permian and Early Triassic time. Where this salt encountered subsurface pre-Pennsylvanian fault blocks, the salt was forced upward creating surface anticlines. These anticlines are much more pronounced to the northeast and appear to die out in the area around the WSA. However, the Rustler Dome and Gibson Dome anticlines to the northeast end and southeast of the WSA give evidence that the salt was flowing in this area and was forced upward, presumably as a result of encountering sub-surface Mississippian structures. There is not enough well data to determine if there was any porosity development in the Mississippian within the WSA. Source rocks would be provided by the black organic-rich shales of the Paradox Formation, if the salt movement and subsequent folding juxtaposed these shales adjacent to the potential Mississippian reservoir strata. Recent work on Paradox Formation cores in the Gibson Dome area indicates that the shales in this area are capable of providing 4,970 barrels of oil per acre of source rock (Hite, et al., 1984).

The potential for Pennsylvanian discoveries in the WSA is considerably lower due to two factors. The first factor is the lack of significant folding in this area due to sub-surface salt flowage discussed earlier. Pennsylvanian fields north and east of the WSA have exhibited a great deal



## INDIAN CREEK WSA

more folding and vertical structural movements which have formed the traps in those fields. The second factor is the shallowness of Pennsylvanian age rocks in the WSA, estimated at only 1,500-2,000 feet below surface. The Colorado River has cut in the canyon adjacent to the WSA on the west, and any oil and gas accumulations in the Pennsylvanian could have escaped along deep seated fractures and lineaments found along the river in this area.

As a result of the foregoing geologic considerations, the WSA has a favorability rating for oil and gas resources of f2, indicating potential for only small widely scattered fields containing less than 10 million barrels of oil and/or less than 60 billion cubic feet of gas. The certainty of occurrence is low (c2) based on oil and gas shows in several wells drilled within 5 to 10 miles of the WSA and the uncertainty of geologic conditions at depth associated with Mississippian potential (SAI, 1982).

Under the current land use plan, all 6,870 acres are in Category 1 (standard stipulations). There are presently no oil and gas leases in the WSA.

- Potash

Within the Moab District, bedded potash is found within the Paradox Formation underlying the Paradox Basin over an extent of 2,800 square miles. The size and quality of these deposits put them in a category of "world class" potash deposits. The WSA is located on the southwestern margin of favorable potash deposits. Sylvite, the mineral contained in the potash, is currently being mined by a solution process from a depth of approximately 2,800 feet in an area 15-20 miles northwest of the WSA. This mine has produced roughly 3.5 million tons since 1965. Analysis of data indicate that the potash underlying the WSA would be less than 10 feet thick and would be of relatively low grade (Dames and Moore, 1978).

The WSA has been assigned a favorability rating of f3 for potash, indicating a potential for 1 to 10 million metric tons of potash underlying the WSA, with 750,000 to 7.5 million tons considered recoverable. As a result of data from surrounding oil and gas wells which gives indirect evidence of potash underlying the WSA, the degree of certainty that the resource exists is moderate (c3).

There are currently no leases or prospecting permits for potash in the WSA (SAI, 1982).

- Locatable Minerals

There are no known deposits of locatable minerals in the WSA, and there are presently no mining claims.

- Uranium and Vanadium

The Colorado Plateau section of southeastern Utah contains some of the largest and most important uranium and vanadium deposits in the United States. It is estimated that 50 percent of the nation's total uranium reserves and 36 percent of the potential uranium resources are contained in the Colorado Plateau (SAI, 1982). Principal uranium/vanadium bearing strata in the region are the Jurassic Morrison Formation, the Triassic Chinle Formation, and the Permian Cutler Formation. The Morrison and Chinle have been removed by erosion from the WSA, leaving only the Cutler, which is exposed at the surface.

Several small deposits of uranium have been mined near the northern and eastern boundary of the WSA from the Cutler Formation. The mineralization occurs along fault and fracture zones and is located within the Indian Creek mining district. These deposits were discovered in 1951 by local prospectors, and the first shipments were made in 1953. The small deposits were quickly mined out and there has been no active mining for many years. Doelling (1969) indicates that the Indian Creek area produced 36,000 tons of ore from 1956 to 1965, at an average grade of 0.29 percent uranium oxide and 0.15 percent  $U_2O_5$ . Of the 36,000 tons, only 7 percent came from Permian formations, including the Cutler. Based on these numbers, the Cutler produced only 14,616 lbs (17.3 tons) of uranium oxide and 7,560 lb of  $U_2O_5$  (3.8 tons) from approximately six mines up through 1969.

The WSA has been assigned the favorability rating of f3 for uranium, indicating the area has a potential of 500 to 1,000 metric tons of uranium oxide (SAI, 1982). Based on available information, BLM has reduced the favorability rating to an (f2), indicating the area has a potential for less than 500 metric-tons of uranium oxide. The certainty of occurrence is low (c2) based on the lack of drill data and direct evidence of mineralization at the surface.

# INDIAN CREEK WSA

## • Copper and Manganese

The Colorado Plateau in eastern Utah has produced only relatively small amounts of copper, but its occurrence is widespread. The copper has been recovered principally as a by-product of uranium mining operations. Copper production from the region surrounding the WSA has come principally from four areas: (1) near the town of Moab in lower Cane Creek, (2) the Big Indian/Lisbon Valley mining district located 20-25 miles east of the WSA, (3) the White Canyon area located 40 to 50 miles southwest of the WSA, and (4) the Monument Valley area located 70 to 80 miles southwest of the WSA. The deposits are confined principally to the Shinarump Member of the Chinle Formation. Mines from the Indian Creek mining district average 0.8 percent copper (Doelling, 1969). This would indicate that roughly 290 metric tons of copper have been recovered from this area, and it is presumed that this is mostly from the Chinle Formation.

The WSA has a favorability rating of (f2) for copper, indicating a potential for less than 50,000 metric-tons. The certainty of occurrence is very low (c1) based on the lack of data from wells or outcrops within the WSA (SAI, 1982).

Manganese deposits in southeastern Utah occur in the Morrison and Summerville formations (Jurassic). As these are eroded from the WSA, the favorability for manganese is rated f1, with a high (c4) degree of certainty (SAI, 1982).

## • Salable Minerals

The salable minerals within the WSA have little or no commercial potential based on the poor quality and the remote nature of the material. These deposits are not unique or economically significant due to the presence of ample similar materials outside the WSA.

## Wildlife Including Special Status Species

Desert bighorn sheep tracks are occasionally found along Indian Creek, and bighorn rams have been sighted northeast of the WSA. All of the WSA (6,870 acres) is crucial bighorn sheep habitat.

There is very little mule deer use in these portions of Indian Creek and Rustler Canyon. Coyote, cottontail rabbit, whitetail antelope, squirrel, Ord kangaroo rat, and deer mice inhabit the Indian Creek WSA.

Common ravens, rockwren, ash-throated flycatcher, lark sparrow, black-throated sparrow, mourning dove, and chukar are also found within the WSA. Chukars were introduced during the 1950s from Asia as a gamebird. Juncos are the most common wintering bird species. The side-blotched lizard, sagebrush lizard, and northern whiptail are the most common reptile species in this area. It is possible that the peregrine falcon, an endangered species, may use the area. The golden eagle, a BLM sensitive species, is found in the WSA. Other special status species that could occur in the WSA are five Category 2 candidate species. These are the Great Basin Silverspot butterfly, ferruginous hawk, western yellow-billed cuckoo, long-billed curlew, and southern spotted owl. Refer to Appendix 4 in Volume I for details. There are no existing or proposed wildlife management facilities or vegetation treatments for wildlife enhancement in the WSA. No wildlife transplants are currently proposed.

## Forest Resources

No forest resources are located in the Indian Creek WSA. There are a few scattered juniper trees, but harvestable fuelwood or posts are not available.

## Livestock and Wild Horses/Burros

Livestock grazing began during the 1880s. Livestock access is through Indian Creek, Rustler Canyon, and a few other unnamed drainages. Indian Creek is a natural barrier that acts as a boundary between two grazing allotments. Indian Creek allotment is south of Indian Creek, and Harts Draw allotment is north of Indian Creek. Allotment information is summarized in Table 6.

The September 16 to May 15 season of use for Hart Draw Allotment occurs every third year in accordance with a Forest Service grazing plan. This grazing plan is being run on an experimental basis and the September 16 to May 15 dates may revert back to the October 16 to June 15 dates if the FS plan is discontinued.

Grazing in the WSA portion of the Hart Draw allotment occurs primarily during the winter (December 1 to March 31). It is estimated that there are approximately 12 AUMs of forage produced in the Hart Draw portion of the WSA. Estimated grazing use is by three cattle for the 4-month grazing period.

Grazing in the WSA portion of the Indian Creek allotment occurs primarily during the spring (March 1 to

# INDIAN CREEK WSA

Table 6  
Livestock Grazing Use Data

Allotments	Total Acres	Acres in ISA <sup>a</sup>	Total AUMs	Number of AUMs in ISA	Number and Kind of Livestock	Season of Use	Number of Permittees
Hat Draw	80,450	2,107	2,460	12	308 Cattle	09/16-05/15 10/16-06/16 Alternates every 3rd year	1
Indian Creek	236,890	4,763	8,518	27	1,065 Cattle	10/16-06/16	1
<b>Totals</b>	<b>317,340</b>	<b>6,870</b>	<b>10,978</b>	<b>39</b>			<b>2</b>

Sources: BLM File Data.

April 30). It is estimated that there are approximately 27 AUMs of forage produced in the Indian Creek portion of the WSA. Estimated grazing use is by 14 cattle for the 2-month grazing period.

The only livestock development in the WSA is a fence for livestock control in Rustler Canyon. The fence is about 30 yards long and is of steel posts and four-strand barbed-wire construction. No range improvements are proposed in the WSA.

Predator control was not conducted during the 1986 to 1987 period in the grazing allotments that comprise the Indian Creek WSA (USDA, APHIS, 1988).

There is no wild horse or burro use within the WSA.

## Visual Resources

The WSA is located in an area which was inventoried and evaluated with the BLM's VRM system in 1980. The entire WSA (6,870 acres) is located in an area evaluated as Class A scenery. The Indian Creek WSA is located in a high sensitivity area. The entire WSA is located in the foreground-midground zone, which consists of areas seen from 0 to approximately 5 miles. Portions of the WSA are visible from the Needles Overlook, which is located on Hatch Point. Due to these factors, the entire WSA (6,870 acres) was given a VRM Class II designation. Refer to Appendix 7 in Volume I for an explanation of the BLM VRM rating system.

The WSA is composed of highly eroded canyon systems where unusual rock formations combine with rich color contrasts to create a memorable landscape. Indian Creek Canyon and Rustler Canyon, with their numerous side drainages, are the major landform features of the WSA. The forces of erosion have carved

a severely sculptured landscape with deep and winding canyon bottoms, sheer cliff walls, truncated ledges, massive rock outcrops, and rounded rock spires. Rich color combinations of light tans, whites, and pinks to dark reds, maroons, and purples create pleasing contrasts. Textures of the rock vary from smooth to fine to coarse.

The vegetation of the WSA has a little variety, ranging from desert shrubs and grasses on the ledges and slopes to scattered cottonwoods and willows in wash bottoms. Colors are dark to light greens and textures are fine.

## Cultural Resources

Twelve archaeological sites have been recorded in the WSA in 1982 and 1983 by a knowledgeable amateur archaeologist. Locations of the sites have not yet been verified by BLM personnel. Site forms are not yet available, and information concerning the resources is incomplete. Available information indicates that four sites in the WSA may be eligible for nomination to the National Register of Historic Places. These consist of three sites which are located in alcoves and contain masonry structures, rock art panels, and one unfired clay figurine. The fourth National Register eligible site consists of a series of trapezoidal Fremont-style petroglyphs. Other recorded sites in the WSA are mostly small masonry structures, probably granaries located in alcoves. These sites are attributed to both Anasazi and Fremont occupation of the region.

One historic drilling site dated to the 1920s is located in the unit and consists of a platform and cables. In addition, the WSA is historically significant because it served as a major transportation corridor for the Colorado River to the Abajo Mountains. It is also

# INDIAN CREEK WSA

thought that the 1859 Macomb expedition crossed the lower Indian Creek area.

One 160-acre quadrant has been intensively surveyed within the WSA and no sites were found. Due to the limited information, site density estimates for the unit are not available.

## Recreation

Recreational use in this WSA has not been monitored and no accurate statistics on visitor numbers or types of recreational activity are available. Interviews with local residents, however, indicate that visitation for recreation purposes (hiking, backpacking, etc.) is extremely sparse in this portion of Indian Creek and accounts for fewer than 100 visitor days per year. The unit adjoins Canyonlands National Park on two sides, but no visitation statistics are available from the NPS about this particular area.

Indian Creek joins the Colorado River 0.5 mile outside the WSA, and this is a stopover point for float boaters. These recreationists occasionally hike up Indian Creek and into the WSA.

Recreational access to Indian Creek is challenging in some spots. There are two pouroffs in Indian Creek (0.50 mile below Rustler Canyon) and one pouroff in Rustler Canyon (approximately 0.75 mile up from Indian Creek). The Rustler Canyon pouroff is easily accessible to hikers. Travel past the Indian Creek pouroffs may not be possible. If there is access to the west of the pouroffs, the route would be extremely steep and difficult.

The WSA is currently open to ORV use. However, no ORV use is currently taking place in the WSA and potential use is severely limited by the topographic features. There is less than 1 mile of vehicular way in the WSA.

Indian Creek WSA presently offers the visitor solitude and isolation from outside civilized influences. Unusual geologic features in the southern portion of the unit provide for a variety of recreation pursuits, including photography, backpacking, and sightseeing.

## Land Use Plans

The entire Indian Creek WSA is public land administered by BLM. There are no private or State in-holdings.

Lands on the north and west are National Park lands. The NPS is proposing The Maze (105,980 acres), which is adjacent to the WSA, for wilderness (USDI, NPS, 1974). State land lies adjacent to the WSA on the southeast corner. All other lands adjacent to the WSA are public lands administered by BLM.

Portions of T. 29 S., R. 19 E., secs 12, 13, 24, 25, and 36 are withdrawn for power site reservation. Any actions on this area must be coordinated with the Federal Energy Regulatory Commission. However, management of the area is BLM's responsibility. No proposal for use of this withdrawal is anticipated.

There are no permits, rights-of-way, or licenses for land uses within the WSA.

Access into the area is possible by using U. S. Highway 191 and/or State Highway 211 and county dirt roads. These primitive roads offer access adjacent to the WSA.

The WSA is in the BLM San Juan Resource Area and is managed according to the Indian Creek-Dry Valley MFP (USDI, BLM, 1977). The San Juan RMP will replace the MFP. Neither the MFP or RMP address wilderness designation. However, wilderness designation is part of the multiple-use concept and the BLM land use plan is linked to the Statewide Wilderness EIS through analysis of the present plan as the No Action/No Wilderness Alternative.

The San Juan County Master Plan (Planning and Research Associates, 1967) emphasizes multiple use of public lands and zones the WSA as open range and forest land. However, the policy of the San Juan County Commission is to oppose any legislative or administrative designations of wilderness in the County (San Juan County Commission, 1980) The Commission has also endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah.

## Socioeconomics

### • Demographics

The WSA is in northwestern San Juan County. The nearest community is Monticello, approximately 40 road miles southeast.

Between 1970 to 1980, the population of San Juan County was fairly static, and grew by less than a 2-percent annual growth rate. The 1985 population was

# INDIAN CREEK WSA

12,500. Since 1983 the county's population has declined by approximately 500 (USDI, BLM, 1987b). The two largest communities in the county are Blanding (1980 population 3,118) and Monticello (1980 population 1,929). Approximately 40 percent of the county's population resides in these communities. Table 7 presents baseline and projected population data for San Juan County. Population projections for the county indicate that the number of people living in San Juan County in the year 2010 will be about 15,000 for about a 21-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 7  
Baseline and Projected Population and Employment Growth  
San Juan County

	1980	1990	2000	2010
Population	12,400	12,900	12,900	15,000
Employment	3,980	3,800	4,300	5,100

Source: Utah Office of Planning and Budget, 1987.

The major racial groups are caucasians (52.4 percent) and American Indians (45.7 percent). About 4 percent of the Navajo reservation's population live in San Juan County (USDI, BLM, 1987b).

San Juan County is the largest county in Utah, comprising 5,045,760 acres or about 9.6 percent of the State's acreage. Approximately 86 percent of the county is administered by the Federal Government; 41 percent by the BLM, 24 percent by the Bureau of Indian Affairs (BIA) in conjunction with the Navajo tribe, and 20.9 percent by other Federal agencies. About 6 percent is in State ownership and about 8.1 percent is privately owned (University of Utah, BEBR, 1982; USDI, BLM, 1987b).

### • Employment

Table 7 shows the baseline and projected total employment for the county to the year 2010. The government sector (Federal, State, and local) is the most important in terms of employment in the San Juan County economy. In 1987, mining made up about 16.5 percent of the total employment in the county. Tourism also generates a significant number of jobs (USDI, BLM, 1987b). Unemployment is presently high, approximately 10 percent.

San Juan County is part of the Southeast MCD. Table 8 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980 the leading employment sectors for the MCD

were mining (28 percent), government (18 percent), and trade (15 percent). It is projected that by the year 2010 employment in the MCD will increase by about 27 percent and that services will increase to 18 percent, trade to 17 percent, and government to 15 percent of the total. While the mining, agriculture, and construction sectors will decline (Utah Office of Planning and Budget, 1987).

Table 8  
Southeast Multi-County District  
Employment<sup>a</sup>

	1980	1990	2000	2010
Agriculture	1,203	1,100	1,100	1,100
Mining	6,368	3,500	4,500	5,700
Construction	1,360	700	900	1,100
Manufacturing	551	600	700	800
Transportation, Utilities	1,563	1,800	2,000	2,200
Trade	3,289	3,600	4,000	4,800
Finance, Insurance, Real Estate	424	400	400	500
Services	2,067	3,200	4,000	5,300
Government	3,994	4,100	3,800	4,400
Nonfarm Proprietors	<u>1,715</u>	<u>2,000</u>	<u>2,200</u>	<u>2,800</u>
<b>Totals</b>	<b>22,534</b>	<b>21,000</b>	<b>23,600</b>	<b>28,700</b>

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Carbon, Emery, Grand, and San Juan Counties.

### • Sales and Revenues

Economic-related activities in the WSA include mineral exploration, livestock production, and recreation. Table 9 summarizes local sales and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate sales and revenues.

Table 9  
Local Sales and Federal Revenues

Source	Annual Local Sales <sup>a</sup>	Annual Federal Revenues
Livestock Grazing	\$ 780	\$60
Recreational Use	<u>\$ 410</u>	<u>0</u>
<b>Total</b>	<b>\$1,190</b>	<b>\$60</b>

Sources: USDI, BLM, 1974; Volume I, Appendix 9.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

Two livestock operators have a total grazing privilege of 39 AUMs within the WSA. If all this forage were utilized, it would account for \$780 of livestock sales and \$195 of ranchers' returns to labor and investment annually.

## INDIAN CREEK WSA

The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that the State-wide average local expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for this WSA is estimated as about 100 visitor days per year.

The WSA generates Federal revenues from livestock grazing (refer to Table 9).

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 39 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate about \$60 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland improvements.

### ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. The analysis is based on the BLM management actions and anticipated activities presented in the Introduction to Volume V and the Description of the Alternatives for the Indian Creek WSA.

#### No Action/No Wilderness Alternative

- Impacts on Wilderness Values

Because the WSA would not be designated wilderness, the identified wilderness values would not receive the degree of protection afforded by application of the BLM Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities (i.e., VRM Class II management on all 6,870 acres).

No development is expected in the foreseeable future that would affect wilderness values.

Because future vehicular use would generally be limited by rough terrain to less than 1 mile of existing vehicular way, no disturbance from ORV activity is anticipated in the future.

The increased visitor use that would occur over time would not reduce wilderness values significantly be-

cause the additional use is expected to be small and primitive in nature and the contiguous NPS lands will aid in distributing the use.

This alternative would not complement or enhance wilderness values, uses, and management of the contiguous NPS lands proposed for wilderness designation by the NPS.

The degree to which development would occur over the long term, and therefore the long-term loss of wilderness values that would occur is not accurately known.

Conclusion: Wilderness values would not be protected by wilderness designation. No disturbance that would affect wilderness values is expected in the foreseeable future.

#### All Wilderness Alternative (Proposed Action) (6,870 Acres)

- Impacts on Wilderness Values

Designation and management of all 6,870 acres as wilderness would preserve the wilderness values in the Indian Creek WSA. The potential for surface-disturbing activities would be eliminated through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness and outstanding opportunities for solitude and primitive, unconfined recreation would be preserved on all 6,870 acres. Resources that could be considered as special features in the WSA, including Class A scenery, perennial streams, pouroffs, endangered and sensitive species, wildlife associated with wilderness and archaeological features would be preserved.

Vehicular use of the existing way would cease with ORV closure.

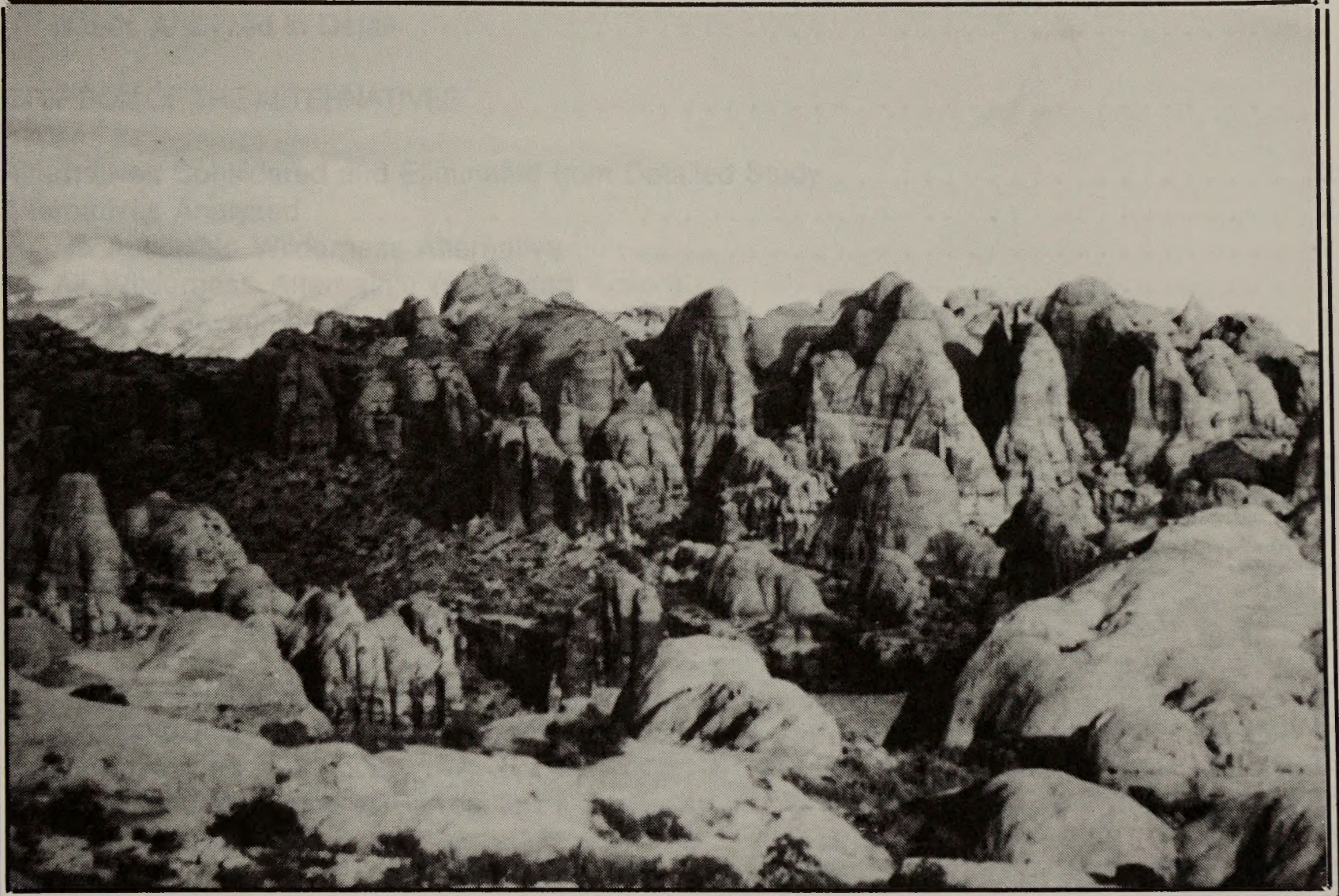
This alternative would complement and enhance wilderness values, uses, and management of contiguous lands proposed for wilderness designation by the NPS.

Conclusion: Wilderness designation would preserve the wilderness values in the WSA.

INTRODUCTION

General Description of the Area  
Changes for the Final EIS  
Specific Issues Identified Through Scoping and Public Comments

# Behind the Rocks WSA



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# BEHIND THE ROCKS WSA

(UT-060-140A)

## INTRODUCTION

### General Description of the Area

Behind the Rocks WSA is located immediately southwest of Moab, Utah. The Colorado River flows just north of the WSA. The WSA generally parallels the Moab Rim cliffline southwest of the town. It is about 11 miles, northwest to southeast, from 0.5 to 3 miles, and contains approximately 12,635 acres of BLM-administered land. Of this total, 6,800 acres are in Grand County and 5,835 acres in San Juan County. In addition, within the boundary of the WSA are 640 acres of State lands and 135 acres of split-estate lands (Federal surface, State minerals). The WSA was originally reported as having 12,930 acres; the difference is attributable to Master Title Plat checks and a minor realignment of the southern boundary based on the naturalness criterion.

The climate is semiarid and characterized by very hot summers and moderately cold winters. Annual temperatures range from 120 degrees Fahrenheit (F) to -10 degrees F. Average annual precipitation ranges from approximately 6 to 11 inches; half of that falls during the growing season. Most precipitation occurs as late summer thunderstorms. Average annual snowfall is between 10 and 20 inches.

The WSA is bordered on the south by Hunters Canyon, on the west by the Pritchett Canyon jeep road, on the north by a powerline right-of-way south of the Colorado River and a part of the Moab Rim jeep trail, and along the northeast by the Moab Rim cliffline. The WSA is characterized by striking red Navajo Sandstone formations which form a series of closely packed slickrock ridges, or fins, up to 500 feet high running across the northern third and eastern edge of the WSA. These have been carved by wind and water to form arches, alcoves, potholes, and spires. Vegetation occurrence is limited due to the high percentage of rock outcrop and is composed of stunted juniper trees, grasses, and desert shrubs.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume V, the following changes specific to the WSA have been made since publication of the Draft EIS:

1. Small portions of the boundary of the WSA (T. 26 S., R. 21 E., secs. 15 and 22; and T. 27 S., R. 22 E., sec. 2) have been redrawn to correct an error in the Draft EIS maps. These changes did not require acreage adjustments because acreage calculations were based on the boundaries as shown in the inventory document and Final EIS.

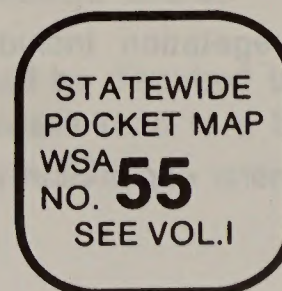
2. The anticipated surface disturbance presented in the Draft EIS (770 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities projected to be feasible within the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of surface disturbance estimates from the 770 acres reported in the Draft EIS to 64 acres of surface disturbance for the Final EIS.

### Specific Issues Identified Through Scoping and Public Comment

#### • Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume V (i.e., impacts on air quality, geology and topography, water rights, and land use plans and policies), the following issues or impacts specific to the Behind the Rocks WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below:

1. Soils: The public is concerned that without wilderness designation future activities in the WSA would result in soil disturbance and increases in soil erosion and loss of soil fertility. Because the disturbance estimate for the WSA has been reduced from 770 to 64 acres in the Final EIS, only 0.5 percent of the WSA would be disturbed and reclamation would be required. Perennial streams or other natural water sources



## BEHIND THE ROCKS WSA

are lacking in the WSA. Therefore, there would not be secondary impacts to water quality and sediment yield would not increase. In addition, the WSA is closed to ORV use. Therefore, impacts on soils are not significant issues for the Behind the Rocks WSA.

2. Water Resources: The public is concerned that wilderness designation would interfere with development of water. Future developments could also increase sediment yield and affect water quality. There are no perennial streams in the WSA and the one existing spring is developed and provides water for irrigation to private lands adjacent to the WSA via a 0.3 mile pipeline. Therefore, impacts on water uses and quality are not significant issues for the Behind the Rocks WSA and are not discussed in detail in the Final EIS.

3. Forest Resources: The only forest resources in the WSA are 1,895 acres of scattered pinyon pine and juniper trees. Demand is low and there is limited access. For these reasons, impacts on forest resources are not significant issues for analysis in the Final EIS.

4. Livestock Management: Concerns were raised that wilderness designation would restrict access and predator control or cause prohibitions on grazing or reduce the levels of grazing. According to the BLM Wilderness Management Policy (BLM Manual 8560) there shall be no curtailments in grazing simply because the area is wilderness. No changes in grazing levels are proposed in the planning documents. There is only limited use made of the 3.5 miles of way in the WSA for livestock management. Predators have not been a problem in the one cattle allotment in the WSA, and no rangeland developments are proposed. Therefore, existing grazing management practices and grazing levels would not be affected by wilderness designation and are not analyzed in the Final EIS.

### • Issues Analyzed in Detail

The significant issues for the Behind the Rocks WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on vegetation including special status species.
3. Impacts on mineral exploration and production.

4. Impacts on wildlife habitat and populations including special status species.
5. Impacts on visual resources.
6. Impacts on the preservation of cultural resources.
7. Impacts on recreational use of the WSA.
8. Impacts on local economic conditions.

Comments made during the public comment period for the Draft EIS centered mainly on BLM's Wilderness Inventory, the need for further inventories of resource values, off-road vehicle use, and mineral values.

See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 55, for responses to specific comments about the Behind the Rocks WSA.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated from Detailed Study

Alternatives that would add up to 3,533 acres of Federal and 590 acres of State lands on the south and southwest portion of the WSA were suggested in the public comments. These alternatives are not analyzed because the inclusion of State lands is not consistent with BLM's wilderness review guidelines (refer to Volume VII-B, General Comment Response 6.4) and because other public lands were dropped from study during the inventory phase (refer to Volume VII-B, General Comment Response 3.1).

### Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action/No Wilderness; and (2) All Wilderness (Proposed Action) (12,635 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case. The analysis assumptions presented in the Introduction to Volume V are also applicable.

#### • No Action/No Wilderness Alternative

With this alternative, none of the 12,635-acre Behind the Rocks WSA would be designated by Congress as part of the NWPS. Although BLM's land use plans are

## BEHIND THE ROCKS WSA

regularly updated, it is assumed that the area would continue to be managed in accordance with the Grand RMP (USDI, BLM, 1983). Neither the one section (640 acres) of State land nor the 135 acres of split-estate lands with State minerals that are within the WSA (refer to Map 1) have been identified in the RMP for special Federal acquisition through exchange or purchase. State in-holdings are analyzed as remaining under State ownership.

- Management Conditions and Constraints

All 12,635 acres would remain open to mineral location and to mineral sale. Development work, extraction, and patenting would be allowed on 165 existing mining claims (3,300 acres) and potential future mining claims should they be determined valid. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809), without consideration for wilderness values. Although locatable minerals would be managed as described above, no locatable mineral development is projected in the WSA because the level of known resources and the probability of their development are too low to support a development assumption (see Appendix 6 in Volume I for development assumptions). Four existing post-FLPMA oil and gas leases (890 acres) could be developed under Category 1 (standard stipulations) on 128 acres or Category 3 (no surface occupancy) on 762 acres without concern for wilderness values. Overall, the WSA would be managed for oil and gas leasing Category 1 (standard stipulations) on 290 acres; Category 3 (no surface occupancy) on 5,805 acres; and Category 4 (no leasing) on 6,540 acres. There are no existing potash leases in the WSA and the entire area is closed to future potash leasing.

Domestic livestock grazing use of the WSA would continue as authorized in the RMP (currently 60 AUMs). Grazing use would continue to be limited to the northeastern edge of the WSA because of rugged terrain.

Use, maintenance, and development of one spring development and about 0.3 mile of water pipeline would be allowed within the WSA.

A power site classification withdrawal would remain in effect on 340 acres in the northwest portion of the WSA. This classification segregates the land from all public land laws.

The entire WSA acreage would be closed to ORV use per decisions documented in the Grand RMP. This designation would not apply to the road in Pritchett Canyon that borders the WSA.

The entire area would be open to woodland product harvest; however, opportunity is limited. There is no harvest of forest products at the present time, nor is any planned.

The entire 12,635-acre area would continue to be managed under VRM Class II.

- Action Scenario

Given the management plans described above and the resources described in the Affected Environment section, BLM projects that implementation of the No Action/No Wilderness Alternative would result in 64 acres of surface disturbance. About 42 acres would be disturbed by uranium exploration in the northwestern and southern portions of the WSA. This exploration would include up to 9 miles of access road construction and drilling along and adjacent to these roads. Development of uranium is not anticipated in the foreseeable future following exploration because the level of known resources and the probability of their development are too low to support a development assumption (see Appendix 6 in Volume I for mineral and energy resource exploration and development projections).

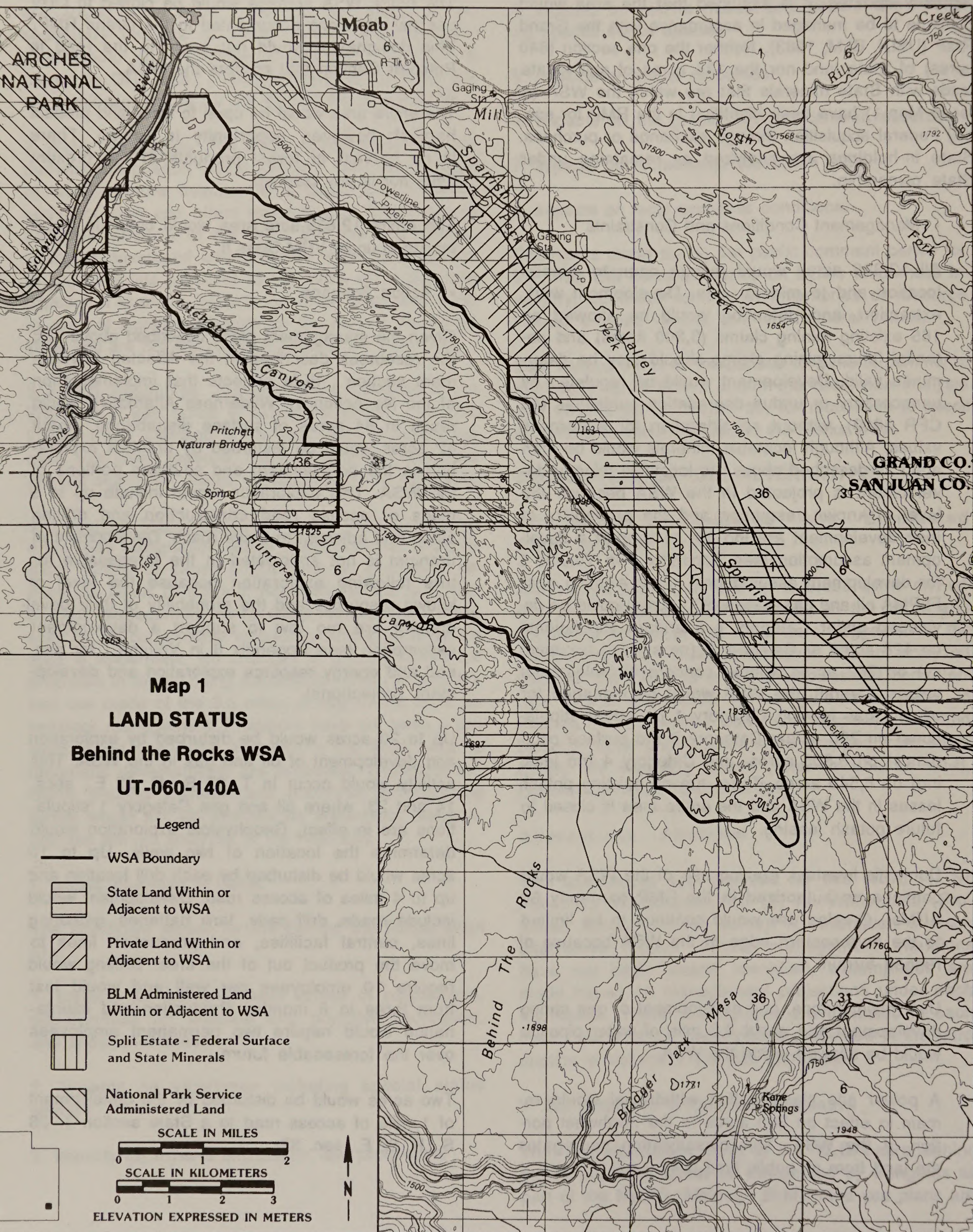
Up to 20 acres would be disturbed by exploration and development of oil and gas in the WSA. This activity would occur in T. 27 S., R. 22 E., secs. 14 and 23, where oil and gas Category 1 stipulations are in effect. Geophysical exploration would determine the location of two wells. Up to 10 acres would be disturbed by each drill location and up to 4 miles of access road. Development would include roads, drill pads, tank batteries, gathering lines, central facilities, and production lines to move the product out of the area. Drilling would require 10 employees per well and would last from three to 6 months. Production and maintenance would require two permanent employees over the foreseeable future.

Two acres would be disturbed by the development of 1 mile of access road to a State section T. 26 S., R. 22 E., sec. 32).

# BEHIND THE ROCKS WSA

R. 21 E.

R. 22 E.



T. 26

T. 27







## Map 1

### LAND STATUS

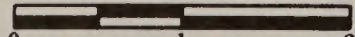
### Behind the Rocks WSA

UT-060-140A

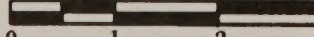
#### Legend

-  WSA Boundary
-  State Land Within or Adjacent to WSA
-  Private Land Within or Adjacent to WSA
-  BLM Administered Land Within or Adjacent to WSA
-  Split Estate - Federal Surface and State Minerals
-  National Park Service Administered Land

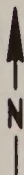
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



## BEHIND THE ROCKS WSA

No disturbance is projected to occur from ORV activity because of both management constraints and rough terrain.

Recreation use is projected to be primitive in nature and to increase over the current estimated primitive use of 1,840 annual visitor use days at a rate of 2 to 7 percent per year. Vehicular activity, currently estimated at 610 annual visitor days of use, would be curtailed.

- All Wilderness Alternative (Proposed Action)

With this alternative, all 12,635 acres of the Behind the Rocks WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). The area would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character.

The policy of the State is to reserve its position regarding exchange of in-held lands within any particular WSA (see Chapter 1 in Volume I). Based on this policy regarding exchange of State lands it is assumed that State lands would remain under existing ownership. There is one State section (640 acres) and 135 acres of split-estate (State-owned minerals, BLM surface) within the WSA (refer to Map 1 and Appendix 3 in Volume I). The figures and acreages given with this alternative are for Federal lands only.

- Management Conditions and Constraints

After wilderness designation, all 12,500 acres (excluding 135 acres of split-estate) would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 3,300 acres of existing mining claims that may be determined to be valid. Development would be regulated by unnecessary or undue degradation guidelines with consideration given to wilderness values. BLM anticipates exploration but no development of claims with this alternative. Existing oil and gas leases involving about 890 acres would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown. New oil and gas leases would not be issued. Therefore, exploration for oil and gas are not expected with this alternative.

Present domestic livestock grazing would continue as authorized in the Grand RMP. The 60 AUMs

in the WSA would remain available to livestock as presently allotted.

A power site classification withdrawal would remain in effect on 340 acres in the northwest portion of the WSA. This classification segregates the lands from public land laws.

The entire 12,635-acre area would be closed to ORV use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR 8560 provisions; or (2) occasional and short-term vehicular access approved by BLM for livestock maintenance. Various vehicle ways, totaling 3.55 miles, extend short distances into the WSA and would be closed. About 15 miles of roads and jeep trails that border the WSA in Pritchett Canyon and along the Moab Rim would remain open to vehicles.

Harvest of forest products would not be allowed except for harvest of pine nuts or noncommercial gathering of dead-and-down wood for use in the wilderness, if accomplished by other than mechanical means. There is no harvest of forest products at the present time, nor is any expected.

Visual resources in the WSA would be managed in accordance with VRM Class I standards which generally allow for only natural ecological change.

- Action Scenario

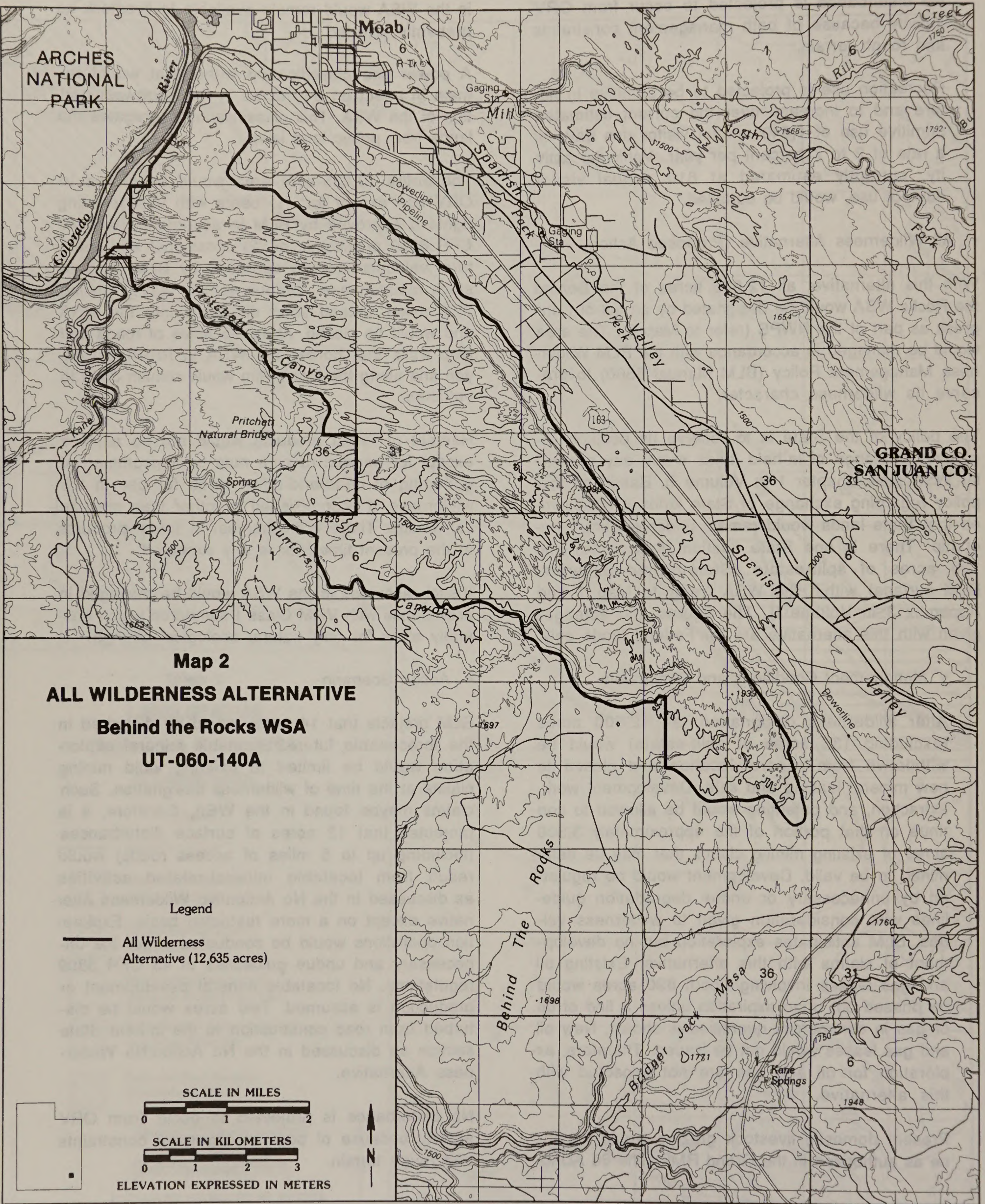
BLM projects that 14 acres would be disturbed in the foreseeable future. Locatable mineral exploration would be limited to existing valid mining claims at the time of wilderness designation. Such claims may be found in the WSA, therefore, it is projected that 12 acres of surface disturbances (including up to 5 miles of access roads) would result from locatable mineral-related activities as discussed in the No Action/No Wilderness Alternative except on a more restricted basis. Exploration operations would be conducted under the unnecessary and undue guidelines of 43 CFR 3809 regulations. No locatable mineral development or production is assumed. Two acres would be disturbed from road construction to the in-held State section as discussed in the No Action/No Wilderness Alternative.

No disturbance is projected to occur from ORV activity because of both management constraints and rough terrain.

# BEHIND THE ROCKS WSA

R. 21 E.

R. 22 E.



T. 26 S.

T. 27 S.

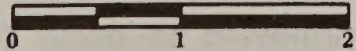
## Map 2

### ALL WILDERNESS ALTERNATIVE Behind the Rocks WSA UT-060-140A

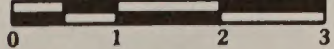
#### Legend

— All Wilderness  
Alternative (12,635 acres)

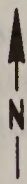
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS





## BEHIND THE ROCKS WSA

Recreation use is projected to be primitive in nature and to increase over the current estimated primitive use of 1,840 annual visitor days at a rate of 2 to 7 percent per year. Vehicular activity, currently estimated at 610 annual visitor days of use, would not be allowed.

### Summary of Environmental Consequences

Table 1 presents the environmental consequences of alternatives analyzed in detail.

### AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

### Wilderness Values

#### • Size

The WSA contains 12,635 acres. It is about 11 miles, northwest to southeast, and from 0.5 to 3 miles wide.

#### • Naturalness

The WSA remains generally natural. Most imprints are associated with vehicle use, but none is considered substantially noticeable within the unit as a whole. About 40 percent or 5,050 acres within an area of mostly slickrock fins are untouched.

Two short roads were constructed off the Pritchett Canyon boundary road for mineral exploration in the mid-1970s. The first runs east for about 0.5 mile in T. 26 S., R. 21 E., secs. 23 and 24, ending at a small drill pad. The second runs along the north side of a butte paralleling the boundary road for about 0.75 mile in T. 26 S., R. 21 E., sec. 25, then rejoins the boundary road. It then runs about 1 mile east into the WSA in T. 26 S., R. 22 E., sec. 30. A row of drill holes runs along this road. Although constructed, the roads have not been maintained and so are considered as ways and were not used as boundaries for the

WSA. They may have been constructed after FLPMA. In addition, a vehicular way extends about 0.75 mile up a side drainage of Hunters Canyon. The route is not heavily used and tracks are limited to the wash bottom and where they disappear after each major rain storm.

A way extends about 1 mile into the WSA along the Moab Rim cliff on the southern tip of the WSA, leading to a natural arch. This drive is described in a local jeep tour guide book (Barnes, 1977). Because of the fin topography and slickrock, the way is not noticeable from a distance. A 0.3-mile-long way extends up Moonflower Canyon. The way was used as a route for a water pipeline constructed in 1984. The pipeline carries water from a spring development in the canyon to private land outside the WSA. Construction of the spring development and pipeline was authorized in 1976 (pre-FLPMA) and the right to develop was affirmed by IBLA. The pipeline route has been recon-toured and rehabilitated. In all, there are approximately 3.55 miles of way within the WSA. Although these are the most substantial imprints in the WSA, they are felt to be substantially unnoticeable within the unit as a whole because of the topographic screening, minimal grading, and lack of vegetation on the surrounding bare rock.

In addition to vehicular ways, vehicle tracks can be found in the northern end of the WSA near the Moab Rim jeep trail (boundary road). These are from four-wheel, three-wheel, and two-wheel vehicles. Because of the sandy soils, the tracks would revegetate quickly if use were discontinued. Tire tracks across slickrock are generally not noticeable, except from the immediate vicinity. In total, the area disturbed comprises about 300 acres.

Seismic lines were run by helicopter across the WSA in 1981, 82, and 83. All three lines generally paralleled the Moab Rim cliff. The first involved about 2.6 miles of the WSA (about 60 shot holes). The second involved two sections of the WSA, each about 1.5 miles long (about 15 shot holes each). The third was 2 miles long (16 shot holes). Each drill hole was located in sand pockets. All access was by helicopter. In some sections of the north end of the WSA, for about 1.5 miles, burn marks remain on the slickrock. A 69 kv powerline runs through the northwestern portion of the WSA for approximately 0.9 mile.

These imprints combined cover about 305 acres (less than 2 percent) of the WSA. With the exception of the 5 acres disturbed for the powerline, none are felt to

# BEHIND THE ROCKS WSA

Table 1  
Summary of Environmental Consequences

Alternatives	
Resources	No Action/No Wilderness All Wilderness (12,635 Acres) (Proposed Action)
Impacts on Wilderness Values	<p>Wilderness values would not be protected by wilderness designation and loss would occur as intrusions increase. Due to uranium exploration and oil and gas exploration and development in the foreseeable future, naturalness and opportunities of solitude and primitive recreation would be directly lost on about 64 acres and indirectly lost on up to an additional 1,264 acres. The only special feature that would be significantly affected would be Class A scenery which would be reduced in quality in disturbed and surrounding areas in the northwestern and southern portions of the WSA.</p> <p>Wilderness designation would preserve overall the wilderness values in the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 14 acres and indirectly reduced in quality on up to an additional 379 acres. Special features would be preserved except Class A scenery could be reduced in quality on disturbed and surrounding areas.</p>
Impacts on Vegetation	<p>Vegetation types and threatened, endangered, or sensitive plant populations would not be significantly affected because the 64 acres of projected surface disturbance would affect only 0.5 percent of the vegetation in the WSA and mitigation would be required.</p> <p>The vegetation types, including endangered and sensitive species, would be protected by this alternative because potential surface disturbance would be reduced to 14 acres or 0.1 percent of the WSA.</p>
Impacts on Mineral and Energy Exploration and Production	<p>Implementation of this alternative would not adversely affect minerals and energy resource exploration and production beyond those restrictions already in place because mineral leasing of mining claims and development could continue as at present.</p> <p>Wilderness designation would preclude potential exploration and development opportunities for oil and gas resources projected to occur in the WSA. Production of these resources would be foregone. It would also limit potential exploration and development opportunities for locatable minerals to those under mining claim at the time of designation. Significant locatable mineral production would not be foregone because the probability of development is low even if the WSA is not designated wilderness.</p>
Impacts on Wildlife Habitat and Populations	<p>Wildlife habitat and populations including threatened, endangered or other special status animal species would not be significantly affected because only 0.5 percent of the habitat in the WSA would be disturbed and mitigation would be required.</p> <p>Wildlife including endangered and special status species would be protected by this alternative. Only 0.1 percent of the habitat in the WSA would be disturbed.</p>

# BEHIND THE ROCKS WSA

Table 1 (Continued)  
Summary of Environmental Consequences

Alternatives	
Resources	No Action/No Wilderness
	All Wilderness (12,635 Acres) (Proposed Action)
Impacts on Visual Resources	Visual resources would be protected by existing management restrictions. However, visual quality would be reduced on 64 acres that would be disturbed as well as on surrounding areas. The disturbance would be from mineral exploration activities and the development of acres.
Impacts on Cultural Resources	Inadvertent loss or damage to cultural resources including 5 known sites may occur due to mineral exploration, surface development and/or development of access to State lands. Intentional vandalism and artifact collection may increase due to increased activity and accessibility. Cultural resource management would continue without regard to wilderness management.
Impacts on Recreation	Opportunities for primitive recreational use would be reduced in quality on 64 directly disturbed acres of the WSA surrounding the disturbed area as well as in areas adjacent to the disturbance. Off-road vehicle use would be precluded. Primitive recreational use would increase.
Impacts on Local Economic Conditions	Overall, economic conditions would not be significantly affected. Mineral activities would increase local employment by only 10 temporary and 2 permanent jobs. Recreation-related expenditures could contribute up to \$65,700 annually to the local economy.
	Visual resources would be protected throughout the WSA. Visual quality would be reduced on about 14 acres that would be directly disturbed as well as on surrounding acres. The disturbance would be from mineral exploration activities and the development of access.
	Cultural resources including 5 known sites would receive additional protection with this alternative. Management of cultural resources may be restricted in order to protect other wilderness values.
	The quality of primitive recreational use would be preserved overall in the WSA. However, opportunities for primitive recreational use would be reduced in quality on 14 directly disturbed acres as well as in areas adjacent to the disturbance. Use of vehicles would be precluded in the WSA but would not decline in the region. Primitive recreational use would increase at rates similar to those for the No Action/No Wilderness Alternative.
	There would be no major economic affects from wilderness designation. There would be a slight loss in oil and gas related jobs (10 jobs, 3 to 6 months temporary and 2 jobs permanent) from the No Action/No Wilderness Alternative. Increases in primitive recreation visitors could provide up to \$65,700 annually to the local economy.

## BEHIND THE ROCKS WSA

impair the naturalness of the WSA as a whole and will become less noticeable with the passage of time due to natural weathering processes.

All but 5 acres of the WSA is considered as meeting the wilderness standard for naturalness.

- Solitude

The WSA offers outstanding opportunities for solitude. Unusual topographic screening is created by the sandstone fins, and vertical isolation is created by the Moab Rim.

The size of the WSA neither enhances nor detracts from opportunities present. The long, narrow configuration might detract from opportunities, if not for the extreme vertical relief within and along the perimeter of the WSA.

Topographic screening contributes most toward outstanding opportunities for solitude. The tall, narrow fins form interconnecting passageways that provide a myriad of potential travel routes and block both sights and sounds of nearby parties. The vertical separation afforded by the Moab Rim, the cliff above the Colorado River, and to a lesser extent by Pritchett Canyon, enhance the remoteness of the WSA and the feeling of isolation. Vegetation screening within the WSA is minimal.

Sights and sounds of human activities are present from many places within the WSA. Most notably, the Town of Moab and settlement in Spanish Valley are both visible and audible all along the Moab Rim, as is traffic along U.S. Highway 191. From the northern edge of the WSA, State Highway 279 (the Potash Road) on the north side of the river, the paved Kane Springs Canyon Road (known locally as the Egg Ranch Road) on the south side of the river, private homes and farmland land along the Kane Springs Canyon Road, and two large powerlines are all visible. A major utility corridor runs just outside the WSA at the base of the Moab Rim cliffline. It contains three transmission lines and two buried natural gas pipelines. The pipelines cut over the cliffline just south of the WSA. A maze of oil exploration seismograph lines, roads, and drill locations lie south of the WSA on the sand flats properly named Behind the Rocks; these are visible from the south edge of the WSA and from other vantage points. Occasionally, heavy ORV use of boundary roads could influence solitude within the WSA. More distant activities may be visible from

portions of the WSA, particularly the Potash plant to the west and drilling activities to the north.

Regardless of the outside influences, it is easy for a visitor to find seclusion within the WSA due to the screening and alternate travel paths afforded by the sandstone fins. In these areas, sights and sounds of others within the unit can easily be avoided. In the open drainages in the central portions of the WSA it would be more difficult to find a secluded spot, but the sandstone ledges offer some opportunities.

In spite of outside influences, most of the WSA (12,585 acres) provides opportunities that meet the outstanding criterion for lands under wilderness review. About 50 acres near the Kane Springs Canyon road and the 69 kv powerline do not meet the standards of solitude. The massive sandstone fins provide exceptional screening potential. Where sights and sounds of outside activities do occur, the magnificent vistas dwarf their impact. The WSA provides for a dispersion of visitors throughout.

- Primitive and Unconfined Recreation

The WSA offers outstanding opportunities for hiking, backpacking, and related activities. Rock scrambling and climbing are also possible. With its beautiful red sandstone fins, geologic and archaeological features, and scenic vistas, the WSA is well suited for sightseeing and photography. The fins provide a myriad of potential hiking routes; the alcoves provide camping spots. Both the Indian Fortress and Otho Arch serve as destination points, adding to the interest of the area. Opportunities for hunting are not good because of the scarcity of big game. Although some horsepacking takes place along the eastern side, the interior of the WSA is too rugged for prime opportunities and, in places, impassable for horses.

The primitive recreation opportunities on 12,585 acres within the WSA meet the outstanding criterion for lands under wilderness review. The extremely unusual fin topography enhances hiking and sightseeing opportunities to a degree not often equalled in the region. About 50 acres near the Kane Springs Canyon road and the 69 kv powerline do not meet the standard for primitive recreation.

- Special Features

The geologic features and resulting landscape of the WSA are unique. Although four arches are known, the WSA has potential for other arches or geologic

# BEHIND THE ROCKS WSA

features not yet discovered. Scenery within the WSA is spectacular; the entire WSA is rated Class A for scenic quality. Panoramic views of southeastern Utah from vantage points in the WSA are also notable. The Indian Fortress is unlike other Indian ruins in the vicinity; its purpose is still unknown. The mastodon petroglyph may be significant in dating its parent culture. The possibility for paleontologic resources is present within the WSA. The WSA holds promise for other cultural sites yet undiscovered. The geologic structures and cultural values provide educational values.

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. There are two animal species (peregrine falcon and black-footed ferret) listed as endangered that may occur in the WSA. The Jones cycladenia, *Cycladenia humilis* var. *jonesii*, is a threatened species that may also occur within the WSA. There are seven animal species and four plant species that are considered sensitive which may occur in the WSA. The WSA has migratory populations of cougar and desert bighorn sheep which are wildlife species associated with wilderness. Refer to the Vegetation and Wildlife Including Special Status Species sections for additional information.

## • Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV type of juniper-pinyon woodland. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. The ecoregion and PNV types represented by this WSA are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

This WSA is within a 5-hour drive from two standard metropolitan statistical areas. These are Salt Lake City-Ogden, Utah, and Provo-Orem, Utah.

## Air Quality

The WSA has a PSD Class II air quality classification (1977 Clean Air Act amendments). Arches and Canyonlands National Parks are nearby Class I areas. Arches is only 3 miles north of the WSA. Prevailing winds are from the west-southwest.

The WSA can be seen from many high-use areas including Moab, the La Sal Mountains, Arches and Canyonlands National Parks, Dead Horse Point State Park, Anticline Overlook on Hatch Point and U.S. High-

way 191. The WSA provides panoramic vistas of Moab and Spanish Valley, the Colorado River, Canyonlands and Arches National Parks, the La Sal Mountains, the Book Cliffs, and the areas to the northwest. Visibility, both looking in and from the WSA, is an important value. Visibility in the WSA is good with few pollutants. Visual range in this portion of Utah averages between 100 and 132 miles during the summer (Aerocomp, Inc., 1984).

Occasionally, there is a smog problem in the Moab vicinity that could adversely affect views from the WSA, although the WSA itself is not affected because of its elevation and the barrier effect of the Moab Rim. Generally occurring during winter thermal inversions, the source of smog is reported to be mainly wood stoves used for home heating in Moab. The smog sometimes lasts for several days. When it dissipates it generally drains to the north. The problem appears to have worsened in recent years because of the increased popularity of wood stoves for home heating.

## Geology and Topography

The Behind the Rocks WSA is within the Canyonlands Section of the Colorado Plateau Physiographic Province. This section is characterized by bare rock surfaces, plateaus, and steep-walled canyons.

The Triassic Kayenta Formation and the Jurassic-Triassic Navajo Sandstone are exposed in the WSA. The Kayenta Formation is a reddish-brown sandstone with interbedded siltstone, limestone, and shale, and crops out over about 25% of the area. The Navajo Sandstone, a pale-orange sandstone containing some sandy limestone and stringers of red chert, make up the rest of the WSA. The Navajo Sandstone inter-tongues with the Kayenta Formation. The subsurface includes 5,000 feet of Mesozoic and Paleozoic rocks overlying the Precambrian basement.

The WSA lies in a large northwest-trending structural basin called the Paradox Basin. Diapiric movement of evaporite deposits deformed the basin into northwest-trending anticlines and synclines that later were faulted. The WSA is between the Kings Bottom syncline on the southwest, and Spanish Valley, a collapsed salt anticline, on the northeast.

The Navajo has split apart vertically along parallel joint systems and weathered into massive fins some 100 to 500 feet high, 50 to 200 feet wide, and up to 0.5 mile long. The fins are closely spaced, sometimes just a few feet apart. Arches, alcoves, and potholes

# BEHIND THE ROCKS WSA

have formed in the fins. The fins are similar to but more pronounced than fin areas on the east side of the Moab Valley or the northeast part of the Arches National Park. The Kayenta Sandstone is exposed where drainages have worn through the Navajo in the southern and central portions of the WSA. The underlying Wingate Sandstone is exposed along the Moab Rim; the Chinle slope is outside the WSA.

The WSA contains at least three arches formed from the Navajo fins and one formed from the Kayenta. Other arches probably exist in the WSA but have not yet been discovered. Angel Rock (the "vanishing angel") is within the WSA along the Moab Rim; this is a spire formed from the Wingate Cliff which is a prominent landmark of the Moab Valley. A rock slab with dinosaur tracks, from the Kayenta Formation, lies on the opposite side of the Colorado River from the WSA, indicating a potential for paleontological resources within the WSA. Dinosaur fossils have also been found in the Navajo Formation across the Moab Valley from the WSA, but they are considered extremely rare.

Elevations in the WSA range from 6,530 feet atop the Moab Rim (a 1,000- to 1,800- foot-high cliff) to 4,100 feet where Pritchett Canyon leaves the WSA at the northwest corner. Several drainages have cut short, wide canyons running west across the WSA to Hunters Canyon and Pritchett Canyon. A topographic feature on the northeastern edge of the WSA is a hidden valley extending along the Moab Rim above the Moab Valley.

## Soils

The Behind the Rocks WSA is characterized by rock fins and slick rock. About 50 percent of the WSA is rock outcrop. About 50 percent is shallow or deep sandy soils occurring between rock fins on sloping benches.

The sandy soils are highly susceptible to wind erosion when disturbed. Table 2 describes soil characteristics and land types and Table 3 describes erosion conditions. The soils and rockland within the WSA are classified as slightly saline and are estimated to produce an average of 33 lb of salt per acre per year.

Table 2  
Soil Characteristics and Land Types

Soil Characteristics and Land Type	Percent of the Area	Acres	Estimated Rate of Erosion (cubic yards/acre/year)	
			Present Condition	Bare Soil Surface
Rock Outcrop	50	6,318	0	0
Shallow or deep sandy soils on sloping structural bench	50	6,317	1	5
Totals	100	12,635		

Source: Hansen, 1985.

About 99 percent of the WSA is unsuited to seeding because of rock outcrop and sandy, droughty soils. There is a fair potential for seeding on 1 percent of the WSA.

Table 3  
Erosion Condition

Erosion Class	Erosion Rate cubic yards/acre/year	Annual Soil Loss Under Present Conditions			Annual Soil Loss if Disturbed		
		Percent of Area	Acres	Cubic Yards	Percent of Area	Acres	Cubic Yards
Very High	20	-	-	-	-	-	-
High	10	-	-	-	-	-	-
Medium	5	-	-	-	50	6,317	31,585
Low	1	50	6,317	6,317	-	-	-
Very Low	0.1	-	-	-	-	-	-
None	0	50	6,318	-	50	6,318	-
Totals		100	12,635	6,317 <sup>a</sup>	100	12,635	31,585 <sup>a</sup>

Source: Hansen, 1985.

Average annual soil loss in cubic yards per acre: 0.5 under present conditions; 2.5 if disturbed.

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## Vegetation Including Special Status Species

Vegetation growth within the WSA is restricted because of a high percentage of rock outcrop and lack of water. Vegetation is confined to sandy pockets between bedrock fins and areas of blowsand where soils have formed.

Existing vegetation types include desert shrub (3,160 acres) and juniper woodland (1,895 acres) as shown on Table 4. Individual plant species include stunted juniper and pinyon pine trees, yucca, prickly pear cactus, rabbitbrush, blackbrush, cliffrose, serviceberry, snowberry, and grasses (USDI, BLM, 1983). Although there are no riparian areas identified, an occasional cottonwood, sagebrush, and shrub willow can be found in drainage bottoms. A few isolated hanging gardens may occur in alcoves above the Colorado River. Exotic species found within the WSA include Russian olive, tamarisk, and poison ivy; one Catalpa tree grows in Pritchett Canyon.

Table 4  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Desert shrub	3,160	25
Juniper woodland	1,895	15
Barren	<u>7,580</u>	<u>60</u>
Total	12,635	100

Source: USDI, BLM, 1983.

One endangered plant species, Cycladenia humilis var. ionesii, and two Category 2 candidate species, Asclepias cutleri and Lygodesmia entrada, may occur in the WSA. Two sensitive species, Astragalus isleyi and Zigadenus vaginatus, may also occur in the WSA (see Appendix 4 in Volume I).

The Behind the Rocks WSA is located in the Colorado Plateau Province as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNV type of the WSA is juniper-pinyon woodland.

## Water Resources

The WSA is within the Colorado River Basin. No perennial streams cross the area, but two intermittent drainages, Hunters Canyon and Pritchett Canyon, are along the southern and western boundaries. Ephemeral drainages carry runoff from the WSA to these water courses. Throughout the area, storm runoff is im-

pounded in natural slickrock potholes, some of which are quite deep. These potholes have not been mapped. A spring development and 0.3-mile-long pipeline, authorized in 1976 (pre-FLPMA), were constructed in Moonflower Canyon in 1984. The right to develop under the 1976 right-of-way to provide agricultural water to private land outside the WSA was affirmed by the Interior Board of Land Appeals (IBLA).

The WSA is within Water Right Adjudication area 05. The water is not fully appropriated (UDNRE, DWR, 1988). There is very little water development in this area because of its geology. Isolated springs may be open to appropriations not to exceed 0.015 cfs. Temporary and fixed-time applications may exceed this limit.

There has not been a water inventory for the WSA. The spring in Moonflower Canyon is the only spring presently known to exist within the interior of the WSA. There are several springs and seeps located along the boundary of the WSA and the Moab Valley escarpment. These include the springs in the intermittent drainages, Kings Bottom Spring, and several unnamed springs draining into Moab Valley. No water quality or flow data are available for these springs, so the actual groundwater flow paths and the magnitude and quality of the resource are not known.

Precipitation falling on the higher elevations probably is temporarily impounded within the highly weathered fracture and joint systems in this area. This water probably infiltrates slowly and flows along these zones of higher permeability. The magnitude and direction of these zones control the depth and direction of groundwater movement. When the water encounters a deeper, less permeable geologic unit, it flows laterally to emerge as a spring or seep on the cliff faces.

Springs associated with the intermittent drainages may emerge from bedrock or may be associated with water stored in the alluvial material filling the canyon bottoms.

The water quality standards for Colorado River and tributaries, from Lake Powell to State line are as follows: Class 1C (protected for domestic purposes with prior treatment by treatment processes as required by the Utah Department of Health); Class 2B (protected for boating, water skiing, and similar uses, excluding recreational bathing [swimming]); Class 3B (protected for warm water species of game fish and other warm water aquatic life); and Class 4 (protected for

# BEHIND THE ROCKS WSA

agricultural uses, including irrigation of crops and stockwatering).

Groundwater quality is not known but, due to the shortness of the flow paths and the absence of highly saline geologic formations, the TDS concentrations are low. Generally, the water quality is acceptable for recreation, livestock, and agricultural uses.

## Mineral and Energy Resources

The energy and mineral resource rating summary for the Behind the Rock WSA is given in Table 5. Appendix 5 in Volume I describes the mineral and energy resource rating system.

Table 5  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Potash	f3	c3	1 to 10 million metric tons
Uranium/Vandium	f2	c2	Less than 500 metric tons
Copper	f2	c1	Less than 50,000 metric tons
Manganese	f2	c1	Less than 100,000 metric tons

Source: SAI, 1982; USDI, BLM, 1987a.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

The WSA could contain deposits of vanadium and copper which are currently listed as strategic and critical minerals (USDoD, 1988). Although listed as strategic, copper is relatively common and supplies currently exceed domestic demand.

### • Leasable Minerals

There are no known deposits of any leasable minerals in the WSA. Currently, there are no active drilling, mining, or exploration activities for leasable minerals.

### • Oil and Gas

Oil and gas have been produced in the vicinity of the WSA from both Pennsylvanian- and Mississippian-age pools. Pennsylvanian production has come from structural traps in the Ten Mile field located 24 miles to the northwest, from the Long

Canyon, Shafer Canyon and Bartlett Flat fields located six to 12 miles to the west-northwest, the Wilson Canyon and Pine Ridge fields located 12 to 15 miles to the southeast of the WSA, and the Lion Mesa fields located 4 miles to the southwest. The Shafer Canyon and Bartlett Flat fields have been abandoned, the Ten Mile and Lion Mesa fields are shut-in, and Long Canyon, Wilson Canyon, and Pine Ridge fields are currently producing. Combined cumulative production from these fields, as of December 1986, was approximately 1.1 million barrels of oil and 1.4 billion cubic feet of gas. Individual fields have produced from a few thousand barrels of oil and no gas (Ten Mile, Lion Mesa, and Pine Ridge) to 890 thousand barrels of oil and 955 million cubic feet of gas at the Long Canyon field. Production from Shafer Canyon, Bartlett Flat, and Wilson Canyon has ranged from 38 to 74 thousand barrels of oil and 21 to 117 million cubic feet of gas.

Oil and gas have been produced from the Mississippian in the Salt Wash field located 28 miles to the northwest, Big Flat field located 10 miles to the west-northwest, and the Lisbon, Big Indian, and Little Valley fields located 15 to 20 miles to the southeast of the WSA. The Big Flat field has been abandoned, the remaining fields are currently producing. Combined cumulative production from these Mississippian fields (as of December 1986) has been approximately 48.7 million barrels of oil and 495 billion cubic-feet of gas. Individual fields range from 47 million barrels of oil and 450 billion cubic-feet of gas at Lisbon, to 1.3 million barrels of oil and 11.6 billion cubic feet of gas at Salt Wash and 92 to 208 thousand barrels of oil and 50 million to 19 billion cubic feet of gas at the Big Flat, Little Valley, and Pine Ridge fields.

The USGS estimates that the entire Paradox Basin of southeastern Utah and western Colorado contains 1.2 billion barrels of undiscovered recoverable oil and 3.8 trillion cubic-feet of undiscovered recoverable natural gas (SAI, 1982). The majority of this will be found in Mississippian- and Pennsylvanian-age rocks, which to date have accounted for nearly 90 percent of the oil and 85 percent of the natural gas produced in southeastern Utah.

The best potential future discoveries within the WSA occur in the Mississippian-age strata, particularly in the northwestern and central portions of the WSA, which is located on the western flank of the Spanish Valley salt anticline. This location



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provides a structural configuration similar to that found at the Lisbon Valley field. Although the surface structure in the Paradox fold and fault belt is not necessarily indicative of Mississippian subsurface structure, general inferences can be made based on occurrence of the salt anticlines. These structures were formed in Late Permian and Early Triassic time by subsurface salt flowage to the southwest away from the Uncompahgre Uplift. The salt occurred in the Pennsylvanian Paradox Formation. Wherever the salt encountered deep pre-Pennsylvanian fault blocks, it was forced upwards forming the surface anticlines seen today. The ancient buried fault blocks are assumed to trend in roughly the same direction as the surface anticlines (northwest-southeast). However, these buried fault blocks are generally offset to the southwest by 1 to 5 miles.

A key factor to Mississippian oil and gas potential is the development of porosity necessary to form a reservoir. Wells drilled in the vicinity of the WSA have provided encouraging results encountering good pressures with shows of oil and gas, and more importantly, porosity. Although noncommercial, these wells combined with data from other sparsely scattered wells indicate that there is potential for a Mississippian pool in the WSA.

A third factor influencing the potential of this area is the abundance of source rocks found in organic-rich black shales of the Paradox Formation. Recent studies by Hite and others (1984) of Paradox Formation cores in the Gibson Dome area indicate that Paradox shales in that area have the potential to provide 4,970 barrels of oil per acre. If the faulting along the eastern boundary of the WSA has juxtaposed Paradox Formation source rocks next to Mississippian reservoir rocks, then the potential exists for fields of the same magnitude of size as those found in Mississippian pools in the regional vicinity of the WSA.

The potential for Pennsylvanian discoveries in the WSA is somewhat lower, primarily due to poor development of reservoir characteristics and difficulties in well completions in the Paradox Formation in this portion of the basin. The Pennsylvanian fields in the vicinity of the WSA produce from structurally-controlled fracture systems within the black shales of the Paradox Formation. However, the folding and faulting which caused these fractures, combined with the interlayered salts in this zone, have to some extent over

pressurized these potentially productive zones and made well completions difficult. Techniques have recently been developed to overcome the completion problems and interest in Pennsylvanian pools in the area was picking up rapidly prior to the worldwide collapse of oil prices in 1986. This factor, combined with difficult and expensive access and development into this topographically constrained WSA, indicates the search for Pennsylvanian pools in this area in the near future is doubtful. Nonetheless, oil and gas industry interest in this area is evident by continued leasing within and directly adjacent to the WSA, and seismic activity (1981-1982).

As a result of the foregoing geologic considerations, the WSA has a favorability rating for oil and gas resources of f3, indicating potential for between 10 and 50 million barrels of oil and/or between 60 and 300 billion cubic feet of gas, with the certainty of occurrence as low (c2) (SAI, 1982). This was based on an analysis that indicated all the wells drilled in the immediate vicinity of the WSA had been dry, but since the WSA was in a petroleum-producing province and was underlain by strata productive in fields nearby, it contained some potential for occurrence. Subsequent analysis by BLM of well records indicates that 10 wells were drilled within 2 miles of the WSA. Of these 10 wells, seven had good shows of oil and/or gas, one had no tests in the well, one had no data available, and the last recovered only sulfurous water in the Mississippian. Two of the wells were drilled immediately adjacent to the boundaries of the WSA, one on the east and one on the southwest. The well on the east boundary was directionally drilled by Cities Service underneath the WSA. The well recovered a significant amount of gas from perforations and swabbing in the Mississippian, the gas flowing at one time up to 214 thousand cubic-feet of gas. The well was plugged and abandoned because of the difficulty encountered in drilling the well through a fault zone and the Pennsylvanian salt section. This well essentially proved that there was gas present in the Mississippian strata underneath the WSA. The well drilled on the southwestern boundary had a good core show in the Mississippian that showed bleeding oil, stain, odor, and fluorescence. Further testing showed the well to be noncommercial at the time it was drilled in 1961, and it was plugged and abandoned. Based on these results, BLM has upgraded the certainty of occurrence to moderate (c3).

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Under the current land use plan, 290 acres are in Category 1 (standard stipulations); 5,805 acres are in Category 3 (no surface occupancy); and 6,540 acres are in Category 4 (closed to leasing). There are presently four post-FLPMA oil and gas leases in the WSA, covering 890 acres.

- Potash

Within the Moab District, bedded potash is found within the Paradox Formation underlying the Paradox Basin over an area extent of 2,800 square miles. The size and quality of these deposits put them in a category of "world class" potash deposits. Sylvite, the mineral contained in the potash, is currently being mined by a solution process from a depth of approximately 2,800 feet in an area about 5 miles west of the WSA. This mine has produced roughly 3.5 million tons since 1965. Analysis of data indicate that the potash underlying the WSA would be at depths of 7,000 to 8,000 feet. Potash beds may have been adversely affected by folding and faulting characteristic of this part of the Paradox Basin, possibly resulting in thin and discontinuous beds. For economic reasons, depths to recoverable potash cannot exceed 4,000 feet, and the beds should be thick enough (more than 8 feet) to accommodate mechanized operations (Dames and Moore, 1978).

Potash has a favorability rating of (f3), indicating a potential for 1 to 10 million metric tons of potash underlying the WSA, with 750,000 tons to 7.5 million tons considered recoverable (SAI, 1982). As a result of data showing a potash-bearing formation underlying the WSA and the close proximity to a producing mine, the degree of certainty that the resource exists is moderate (c3) (SAI, 1982). There are currently no leases or prospecting permits for potash in the WSA.

- Locatable Minerals

There are no known deposits of locatable minerals in the WSA. There are presently 165 mining claims covering 3,300 acres.

- Uranium and Vanadium

The Colorado Plateau section of southeastern Utah contains some of the largest and most important uranium and vanadium deposits in the U. S. It is estimated that 50 percent of the nations' total uranium reserves and 36 percent of the potential ura-

anium resources are contained in the Colorado Plateau (SAI, 1982). Principal uranium/vanadium bearing strata in the region are the Jurassic Morrison Formation, the Triassic Chinle Formation, and the Permian Cutler Formation (USDI, USBM, 1988a). The Morrison Formation has been removed by erosion from the WSA; the Chinle and Cutler are present at depth (0 to 1,500 feet).

Data from surrounding outcrop and mine measurements (Doelling, 1969) indicate that the WSA is situated immediately adjacent to an ancient Chinle stream channel system to the southwest. This favorable area produces from the Lisbon/Big Indian mining district located 15 to 20 miles to the southeast, and the lower Cane Creek area less than a mile from the northwestern portion of the WSA. Several of the mines in the Lisbon/Big Indian district are still active and have produced over 6 million tons of ore containing 46 million pounds of uranium and 18 million pounds of vanadium since the early 1950s. The Cane Creek mines have produced intermittently in the past 10 years and have recovered approximately 3,690 tons of ore containing 21,500 lbs of uranium and 10,900 lbs of vanadium. The Cane Creek mines were positioned just to the northeast of the favorable Chinle belt (Doelling, 1969). Therefore, the WSA would be located northwest of this belt also.

In the Draft EIS the WSA was assigned a favorability rating of (f3), indicating a potential of 500 to 1,000 metric tons of uranium oxide (SAI, 1982). Based on available information, BLM has reduced the favorability rating to an (f2), indicating the area has potential for less than 500 metric tons of uranium oxide. This is based on the position of the WSA, which is marginal to the inferred Chinle belt, and on reported production from the mines in lower Cane Creek, which is also marginal to the favorable Chinle belt. The certainty of occurrence is low (c2) based on the lack of drill data and direct evidence of mineralization at the surface.

- Copper and Manganese

The Colorado Plateau in eastern Utah has produced only relatively small amounts of copper, but its occurrence is widespread. The copper has been recovered principally as a by-product of uranium mining operations. Copper production from the region surrounding the WSA has come principally from four areas: (1) near the town of Moab in lower Cane Creek, (2) the Big Indian/Lisbon

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Valley mining district southeast of the WSA, (3) the White Canyon area located 40 miles southwest of the WSA, and (4) the Monument Valley area located 70 to 80 miles southwest of the WSA. The deposits are confined principally to the Shinarump Member of the Chinle Formation. Doelling (1969) indicates that mines from the Interriver uranium mining district, of which Cane Creek is part, average 0.8 percent copper. This would indicate that roughly 30 metric-tons of copper have been recovered from this area. Ore in the Lisbon Valley/Big Indian districts had produced 150,000 metric tons of copper through 1960, mostly from two mines, at an average grade of 1.4 percent.

The WSA has a favorability rating of f2 for copper, indicating a potential for less than 50,000 metric tons (SAI, 1982). The certainty of occurrence is very low (c1) based on the lack of data from wells or outcrops within the WSA.

Manganese deposits in southeastern Utah occur in the Morrison and Summerville formations (Jurassic). Some deposits also occur in the less favorable Chinle Formation, and some manganese production has been reported from the Chinle in the region. The WSA has a favorability rating of (f2), indicating the potential for less than 100,000 metric tons. The certainty of occurrence is very low (c1) based on the lack of any data (SAI, 1982).

### • Salable Minerals

Sand and gravel deposits are known to exist in the WSA, particularly in canyon bottoms. There are also minor quantities of building stone associated with the Kayenta Formation. The salable minerals within the WSA have little or no commercial potential, because they are of poor quality and there are ample similar materials outside the WSA.

### Wildlife Including Special Status Species

The area provides habitat for a variety of wildlife species. Mule deer, coyote, bobcat, cottontail rabbit, chukar partridge (an exotic species), and a variety of reptiles, amphibians, and rodents may be found throughout the WSA. Several species of raptors and song birds also inhabit the area. Cougar and desert bighorn sheep may occasionally visit the area.

Due to the lack of precipitation, the nature of the soils, redrock cliffs, and extremely hot summer temperatures, this area is not capable of supporting a

diversity of vegetation sufficient to produce large populations of big game animals. The most common big game species present is mule deer and they are found in relatively small numbers. The UDWR estimates the resident mule deer population to be about 39 animals (consuming 81 AUMs). Deer migrate from the WSA in summer due to lack of water. Cougar may visit the WSA occasionally in winter to hunt deer. Desert bighorn sheep are found in canyons along the Colorado River and may sometimes visit the WSA. No population estimates for bighorn sheep are available from the UDWR for this WSA.

Upland game includes mourning dove and cottontail rabbit. Chukar partridge can be found along the talus slope northeast of the WSA, on the flats to the south of the WSA, and probably within the WSA as well.

Several species of snakes and lizards are present. The most common are horned lizard, Great Basin sagebrush lizard, northern plateau lizard, northern tree lizard, sideblotched lizard, whiptail lizard, collared lizard, gopher snake, striped whipsnake, and the midget faded rattlesnake. Most of these species could be found throughout the WSA. Amphibians would not be common in this WSA. The tadpole shrimp, a crustacean, may be present in potholes.

The most common birds in the WSA are canyon wren, rock wren, red-tailed hawk, great horned owl, kestrel, prairie falcon, and raven. Juncos are a winter visitor to this WSA. Habitat for most of these species is unit wide. There have not been any raptor nests found in the WSA.

The cliffs, fins, ledges, crevices, and holes in the cliff face also provide perches and nesting habitat for red-tailed hawk, great horned owl, prairie falcon, kestrel, and raven. Small mammals, bats, and songbirds also depend on these cliffs, ledges, and crevices for cover and nest sites.

The black-footed ferret and the American peregrine falcon are endangered species that may be found in the area. There are no known eyries within this WSA. Desert bighorn sheep and golden eagles (a BLM sensitive species) may possibly be found in the WSA. Both species are sensitive to human intrusion. Potential habitat would extend over the entire WSA acreage. Other special status species that could occur in the WSA are six FWS Category 2 candidate species (see Appendix 4 in Volume I). These are the Great Basin Silverspot butterfly, southwestern otter,

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ferruginous hawk, long-billed curlew, southern spotted owl, and western yellow-billed cuckoo.

The WSA is entirely within UDWR Deer Herd Management Unit 30A. There is no crucial wildlife habitat. No wildlife habitat improvements or vegetation manipulation areas, existing or proposed, are within the WSA.

### Forest Resources

Forest resources in the WSA include scattered, small stands of pinyon pine and Utah juniper trees. An estimated 221 cords of firewood are located in the WSA. There has been no significant harvest of woodland products and none is expected in the foreseeable future because of the sparseness of the resource and difficult access. Occasional use by campers may occur.

### Livestock and Wild Horses/Burros

Grazing is an historical use in this WSA. The entire WSA lies within the Blue Hills Grazing Allotment (61,789 acres, 2,700 AUMs). The WSA comprises 20 percent of the total allotment area. One operator is licensed to graze cattle on this part of the allotment from November 1 to February 28. Use of the WSA is minimal because of inaccessibility, lack of water, and poor quality forage. Grazing capacity within the WSA, about 60 AUMs more than 40 acres are required to produce one AUM because of extensive rock outcrop and poor soils.

No range improvements are within the WSA, and no opportunities have been identified for possible improvements.

Predator control was not conducted during the 1986-1987 period in the grazing allotments that comprise the Behind the Rocks WSA (USDA, APHIS, 1988).

Wild horses or burros are not known to frequent the WSA.

### Visual Resources

The Behind the Rocks WSA contains striking scenery unique to the area. Its rugged terrain is an intricate maze of sandstone fins, deep crevices, spires, arches, alcoves, and potholes. The rounded organic shapes have eroded from the Navajo petrified sand dunes. The rock landscape is rich in form, line, and texture. Unusual color contrasts occur. The pink and buff rocks change to orange, red, and purple as the

sun angle changes. The fins create a play of shadows visibly moving across rock faces. Desert varnish has streaked the fins with ribbons of black, brown, and purple. Striated layers of sand are cemented into solid rock. Isolated potholes filled with water serve as small mirrors that reflect the sunlight.

In a visual study (Ray Mann Associates, Inc., 1977) the entire WSA (12,635 acres) was rated as having Class A scenery and high visual sensitivity. It is also in a foreground/midground zone. The entire 12,635 acres are under VRM Class II management objectives. Refer to Appendix 7 in Volume I for an explanation of the BLM VRM rating system.

### Cultural Resources

The WSA is in an area known for visible signs of past Indian inhabitants. No cultural inventory has been made of the WSA, but five sites have been reported (USDI, BLM, 1988). Table 6 summarizes known

Table 6  
Known Cultural Resource Sites

Name	Description of Site
The Fortress	Two 15- to 20-foot-diameter dry wall stone rings, 2 to 3 feet high, and a small two-room granary, with scattered lithics and potsherds (reportedly Pueblo II). Also, Archaic, Pueblo, and Ute petroglyphs and pictographs; historic inscriptions dating to 1892.
Mastodon Petroglyph	Petroglyph of a mastodon-like animal, just on the north WSA boundary. Possibly Paleo-Indian.
Petroglyphs	Two sites near Pritchett Canyon.
Otho Arch	Natural arch with historic inscriptions.

Source: USDI, BLM, 1983.

cultural resource sites. Of these sites, three are prehistoric, one has both prehistoric and historic aspects, and the fifth is historic. The three prehistoric sites are petroglyph panels. The combination site has three structures and rock art. The structures are locally called the Indian Fortress. Nearby are a set of historic inscriptions and a panel of petroglyphs and pictographs. Another set of historic inscriptions is found near a natural arch (Otho Arch) on the west side of the WSA.

The presence of a prehistoric granary just outside the WSA along the Colorado River and of many petroglyph panels just outside the WSA along each side of the Colorado River, the Moab Rim, and Hunters

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Canyon indicates that additional sites probably exist within the WSA.

The Old Spanish Trail, dating to the 1830s and followed by Mexican traders and early explorers, went through Spanish Valley just east of the WSA. European use of the WSA probably dates from the 1870s when permanent settlement of Moab occurred. The WSA has been used for livestock grazing since before the turn of the century; a cattle trail runs up the cliff into the WSA along the hidden valley above Moab, ending near the Indian Fortress.

There are no designated National Register sites within the WSA. It is estimated that the WSA may contain as many as 30 cultural sites, 13 of which would have National Register potential. The Indian Fortress (about 5 acres) could qualify.

### Recreation

Behind the Rocks WSA offers recreational opportunities in the form of hiking, camping, backpacking, photography, sightseeing, and other similar uses. There are fins suited for technical climbing, rappelling, or scrambling. Some horse packing takes place. The WSA is not known as a hunting area due to lack of big game. Perimeter roads are popular four-wheel drive trails, and the northern end of the WSA (about 300 acres) currently receives some ORV use.

Although it is only 1 mile from Moab and within a few hundred yards of settled areas in Spanish Valley (south of Moab), the WSA is isolated by virtue of the cliffline west of Moab and the extremely rugged topography. Access is via the Moab Rim jeep trail in the northern end, the Pritchett Canyon road (passable only to four-wheel drive vehicles), the trail up Hunters Canyon on the west side, or from the Behind the Rocks road south of the WSA. There are numerous places where a wilderness user could hike into the WSA from along these roads and trails. Access up the cliff face is generally along the foot trails through Hidden Valley or past Jackson Reservoir, although other hiking routes are possible. Access routes up the cliff face and up Pritchett Canyon involve crossing State or private lands.

Although use statistics for the area are not precisely known, current use is probably around 2,450 visitor days per year. Approximately 75 percent of the use is for primitive recreation and 25 percent for ORV-related recreation activity. The WSA probably attracts one or two parties of hikers/backpackers

per week in the summer season. Local scout groups have made periodic horseback and hiking trips from Moab to the Indian Fortress. Perimeter jeep roads are heavily used during Easter and Labor Day weekends during the annual Moab jeep safari, increasing related ORV use, hiking, and sightseeing in the WSA.

With the Grand RMP, the entire 12,635-acre WSA would be closed to ORV use under 43 CFR 8560. This designation would not apply to the road up Pritchett Canyon nor to the main Moab Rim jeep trail, but would apply to short spur routes branching from them into the WSA, as well as to the 300 acres in the northern end of the WSA that currently receive some ORV use.

There are no designated or maintained trails, campsites, or facilities within the WSA. The boundary roads and one short trail within the WSA are described in a jeep tour and hiking book (Barnes, 1978 and 1985), and the Moab Rim trail is described as a hiking route in a Utah hiking guidebook (Hall, 1982).

### Land Use Plans

Land use is relatively intense north and northeast of the WSA. Moab and the settlement in Spanish Valley reach up to the base of the cliff. Major highways (U-279 and U.S. 191) run along the Colorado River and along the foot of the Moab Rim. Three major powerlines (69-, 138-, and 345-kilovolt [kv]) and two major cross-country natural gas pipelines (MAPCO and Northwest Pipeline) run along a utility corridor near the bottom of the cliff just outside the eastern boundary of the WSA. The land along the Colorado River is used for farming and some residences along the paved Kane Springs Canyon road just north of the WSA. A powerline (69-kv) right-of-way running to the potash plant runs through the northwestern portion of the WSA. The area immediately south of the WSA has been intensively used for mineral exploration (seismic surveys and drilling). There are no private lands or existing rights-of-way or pending applications within the WSA. There are no facilities within the WSA.

The State has one section in-held (refer to Map 1). It remains undeveloped but is under mineral and grazing lease (UDNRE, DSLF, 1988). A second State section, which is also under mineral and grazing lease, juts into the WSA along the western border. Tracts of State and private lands zigzag along the north and northeastern borders. The State has retained mineral rights to one tract with Federal surface, which is

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adjacent to the WSA on the east. This was originally a State grant, but portions were reconveyed to the Federal government by warranty deed with the State retaining rights to all minerals. Part of this tract (135 acres) was originally included in the WSA; was deleted by a notice in the Federal Register on May 11, 1983, and reinstated by a recent United States District Court decision (*Sierra Club et al. vs. Watt*, 4-19-85).

The policy of the State is to maximize economic returns from State lands and to reserve its position regarding exchange of in-held lands (see Chapter 1 in Volume I). In 1986, the Utah State Legislature passed S.C.R. No. 1 opposing any additional wilderness designation in Utah and urging that State lands not be exchanged out of wilderness areas.

The WSA is managed by BLM's Grand Resource Area under the Grand RMP. It is managed under multiple use with some restrictions on ORV use and oil and gas activity, as noted in the description of the No Action/No Wilderness Alternative. The RMP has been reviewed by the Governor of the State of Utah and is consistent with State plans and policies. The RMP does not address potential wilderness designation for the WSA. Wilderness designation is part of the BLM multiple-use concept and the BLM land use plan is linked to the Statewide Wilderness EIS through inclusion of the present plan as the No Action/No Wilderness Alternative.

A powersite withdrawal along the Colorado River includes 340 acres of the WSA. This withdrawal dates to 1909 and was initiated to reserve potential areas for hydroelectric powersites. The portion of the withdrawal within the WSA is on top of the cliff, well above any potential reservoir level. Development of the potash mine to the west, Atlas Minerals uranium mill near Moab, and private residences along this part of the Colorado indicate that development of a hydroelectric dam and reservoir would be highly unlikely.

The WSA is located in both Grand and San Juan Counties. Both counties have a county master plan; neither favors wilderness designation within the county. Both plans generally emphasize continuation of present use and maximum mineral development. The Grand County Master Plan recognizes the WSA as an area ". . . of critical environmental concern which we want preserved. Not enough is known regarding subsurface minerals and resources . . . [This area] must be studied intensively, including drillings and other appropriate samplings" (University of Utah,

BCD, 1979). The San Juan County Master Plan (Planning and Research Associates, 1967) predates wilderness considerations. It includes goals of making the natural and scenic resources of the county available to tourists and encouraging the development of mineral resources to support the county economy. The plan noted that livestock and agricultural operations were an important but minor part of the economy. The plan zones the area of the WSA as being open range with the potential for agricultural development in the Moab Valley.

The Grand and San Juan County Commissions both endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah.

### Socioeconomics

#### • Demographics

Although the WSA straddles southern Grand County and northern San Juan County, the socioeconomic area of influence for the WSA is confined to Grand County and the Moab area because of the WSA's proximity to this town. Grand and San Juan Counties can be summarized as rural and sparsely populated. Mining accounts for the majority of jobs in each county and, since 1980, both have suffered from significant unemployment as a part of a nationwide recession and a downturn in mining and milling.

From 1970 to 1980, the population of Grand County grew from 6,688 to 8,250, an overall increase of about 23 percent. Table 7 presents baseline and projected population data for Grand County.

Table 7  
Baseline and Projected Population and Employment Growth  
Grand and San Juan Counties

	1980	1990	2000	2010
<b>Grand County</b>				
Population	8,250	7,000	7,000	8,700
Employment	3,702	2,900	3,100	3,900
<b>San Juan County</b>				
Population	12,400	12,900	12,900	15,000
Employment	3,980	3,800	4,300	5,100

Source: Utah Office of Planning and Budget, 1987.

It is estimated that between 1980 and 1987, the population decreased to about 7,250. Population projections indicate that the number of people living in Grand County in the year 2010 will be about 8,700

## BEHIND THE ROCKS WSA

for about a 5 percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Grand County comprises 3,615 square miles (about three times the size of Rhode Island). About 80 percent of the county is owned by the Federal government, 15.5 percent by the State, and 4.5 percent by private landowners (USDC, Bureau of the Census, 1981).

Between 1970 to 1980, the population of San Juan County was fairly static and grew by less than a 2-percent annual growth rate. The 1985 population was 12,500. Since 1983, the county's population has declined by approximately 500 (USDI, BLM, 1987b). The two largest communities in the county are Blanding (1980 population 3,118) and Monticello (1980 population 1,929). Approximately 40 percent of the county's population resides in these communities. Table 7 presents baseline and projected population data for San Juan County. Population projections for the county indicate that the number of people living in San Juan County in the year 2010 will be about 15,000 for about a 21 percent increase over 1980 levels (Utah Office of Planning and Budget, 1987). San Juan County is one of the largest in Utah, comprising 7,885 square miles (about the size of New Jersey). About 85 percent of the county is owned by the Federal Government, 6 percent by the State, and 8 percent by private landowners (University of Utah, BEBR, 1982).

### • Employment

Table 7 shows the baseline and projected total employment for Grand and San Juan Counties to the year 2010. Both Grand and San Juan Counties are part of the Southeast MCD. Table 8 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980 the leading employment sectors for the MCD were mining (28 percent), government (18 percent), and trade (15 percent). It is projected that by the year 2010 employment in the MCD will increase by about 27 percent, and that services will increase to 18 percent, trade to 17 percent, and government to 15 percent of the total. While mining, agriculture, and construction sectors will decline (Utah Office of Planning and Budget, 1987).

Table 8  
Southeast Multi-County District  
Employment <sup>a</sup>

	1980	1990	2000	2010
Agriculture	1,203	1,100	1,100	1,100
Mining	6,368	3,500	4,500	5,700
Construction	1,360	700	900	1,100
Manufacturing	551	600	700	800
Transportation, Utilities	1,563	1,800	2,000	2,200
Trade	3,289	3,600	4,000	4,800
Finance, Insurance, Real Estate	424	400	400	500
Services	2,067	3,200	4,000	5,300
Government	3,994	4,100	3,800	4,400
Nonfarm Proprietors	1,715	2,000	2,200	2,800
<b>Totals</b>	<b>22,534</b>	<b>21,000</b>	<b>23,600</b>	<b>28,700</b>

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Carbon, Emery, Grand, and San Juan Counties.

### • Sales and Revenues

Economic-related activities in the WSA include mineral exploration, mineral leasing, livestock production, and recreation. Table 9 summarizes local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Table 9  
Local Sales and Federal Revenues

Source	Annual Local Sales <sup>a</sup>	Annual Federal Revenues
Oil and Gas Leases	None	\$ 1,780
Mining Claim Assessment	\$16,500	None
Livestock Grazing	\$ 1,200	\$ 92
Recreational Use	<u>\$10,045</u>	<u>0</u>
<b>Total</b>	<b>\$27,745</b>	<b>\$ 1,872</b>

Sources: USDI, BLM, 1974; Volume I, Appendix 9.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

The WSA has 165 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy. The geophysical exploration that has been conducted in the WSA has generated some temporary local employment and income.

One livestock operator has a total grazing privilege of 60 AUMs within the WSA. If this forage were utilized, it would account for \$1,200 of livestock sales and \$300 of ranchers' returns to labor and investment.

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The WSA's nonmotorized recreational use is low and related local expenditures are low and insignificant to the local economy. The WSA's motorized recreational use is also low and related local expenditures are low and insignificant. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that the Statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Behind the Rocks WSA is estimated as about 2,450 visitor days per year.

The WSA generates Federal revenues from mineral leases and livestock grazing fees (refer to Table 9).

Oil and gas leases in the WSA cover approximately 890 acres. At \$2 per acre, lease rental fees generate up to \$1,780 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 60 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$92 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements.

### ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis assumptions and guidelines for all alternatives are described in the Introduction to Volume V. The following analysis is based on implementation of the Action Scenarios presented in the Description of the Alternatives.

#### No Action/No Wilderness Alternative

- Impacts on Wilderness Values

Because the WSA would not be designated wilderness, the identified wilderness values would not receive the degree of protection afforded by application of the BLM Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be somewhat protected by limitations placed on potential

surface-disturbing activities (i.e., VRM Class II management on 12,635 acres, management under oil and gas leasing Category 4 (closed to leasing) on 6,540 acres and oil and gas leasing Category 3 (no surface occupancy) on 5,805 acres, and ORV closure throughout the WSA.

In the foreseeable future, disturbance of approximately 64 acres from uranium exploration, oil and gas exploration and development and access to a State section, would result in a direct loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas. Disturbance would mainly be in the northwestern and southern portions of the WSA. Most special features including archaeological values, endangered and sensitive species, animals associated with wilderness, geologic features and paleontological values, would not be significantly affected because the direct disturbance (64 acres) would only involve 0.5 percent of the WSA. In addition, appropriate measures would be taken to protect endangered and sensitive species and archaeological and paleontological values prior to any surface-disturbing activity. Refer to the Cultural Resources and Wildlife and Vegetation Including Special Status Species sections for more information. Some Class A scenery would be reduced in quality in the disturbed areas.

During the period of activity, the visual and audible disturbance from mineral exploration and development and access development would reduce the quality of opportunities for solitude and primitive recreation not only on directly disturbed areas but also indirectly on adjacent portions of the WSA. As much as 10 percent (1,264 acres) of the WSA could be so affected in the foreseeable future.

The 2 to 7 percent annual increase in visitor use would be expected to eventually reduce the quality of wilderness values if restrictions are not applied because the additional use, although primitive in nature, will be large for such a small unit (refer to the Recreation section).

The extent that disturbance would occur over the long term, and, therefore, the long-term loss of wilderness values that would occur is not accurately known. Loss would occur, however, as intrusions increase.

Conclusion: Wilderness values would not be protected by wilderness designation, and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive



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recreation would be directly lost on 64 acres, and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 1,264 acres. Class A scenery would be reduced in quality on disturbed areas.

### • Impacts on Vegetation including Special Status Species

The potential maximum disturbance of 64 acres (2 acres access and 62 acres associated with minerals exploration and development) would affect only 0.5 percent of the WSA and would not significantly alter the WSA's sparse vegetation.

The WSA would be closed to ORV use, all but 290 acres in the south portion of the WSA would be either closed to oil and gas leasing or subject to the no surface occupancy stipulation and the entire WSA would be closed to potash leasing.

The one endangered species, three Category 2 candidate species (Asclepias cutleri and Lygodesmia entrada) and two sensitive species (Astragalus isleyi and Zigadenus vaginatus) that may occur in the WSA are of restricted distribution. However, the habitats of these species extend beyond WSA boundaries. There is a slight potential that individual plants of these species could be disturbed by locatable minerals exploration on 42 acres. This situation would only exist where such minerals operations would occur on sites of 5 acres or less, where a plan of operations and approval are not required under 3809 Regulations. The Endangered Species Act and subsequent regulations apply to these operations and any loss would be inadvertent. It is not anticipated that mineral-related actions in the WSA would threaten the continued existence of any of the special status plant species. Before authorizing any surface-disturbing activities, BLM would require site-specific clearances of the potentially disturbed areas. If any threatened or endangered species are located, BLM would initiate consultation with FWS as required by the Endangered Species Act and BLM policy. BLM would request a biological opinion when appropriate (see Appendix 4 in Volume I). Appropriate mitigation measures, such as avoidance of sensitive areas, would be implemented. Because necessary measures would be taken to protect these species, the viability of populations of threatened, endangered, or other special plant species would be preserved with the No Action/No Wilderness Alternative.

Conclusion: There would be no impacts to threatened, endangered, or other special status plant species. The 64 acres of projected surface disturbance would affect less than 1 percent of the vegetation in the WSA, therefore, vegetation types would not be significantly impacted.

### • Impacts on Mineral and Energy Exploration and Production

The WSA would remain open to exploration and development of mineral and energy resources without consideration of wilderness values. Therefore, mineral and energy resources would not be affected by the No Action/No Wilderness Alternative.

Conclusion: Implementation of the No Action/No Wilderness Alternative would not adversely affect mineral exploration or production.

### • Impacts on Wildlife Habitat and Populations Including Special Status Species

Wildlife could be adversely affected by possible surface disturbance associated with developing access to State in-held land (2 acres) and with mineral exploration and development (62 acres), especially if it were to occur in the form of roads and drill pads throughout the WSA. About 98 percent of the WSA, however, is restricted in terms of energy leasing. These restrictions benefit wildlife in the WSA by restricting areas where disturbance would be allowed. The remaining acreage (290 acres) could be disturbed by exploration and development of mineral leases. Adverse impacts to wildlife would be short term while work was ongoing, and habitat could be enhanced over the long term by reclamation and revegetation.

There is a slight potential that individual animals of the two endangered species (black-footed ferret and peregrine falcon) and six Category 2 candidate species (Great Basin Silverspot butterfly, southwestern otter, ferruginous hawk, long-billed curlew, southern spotted owl, and western yellow-billed cuckoo) that may occur in the WSA, could be disturbed by locatable minerals exploration. This would only occur where such mineral operations are less than 5 acres, and where a plan of operation and approval is not required under the 43 CFR 3809 Regulations. The Endangered Species Act and subsequent regulations apply to these operations and any losses would be inadvertent. It is not anticipated that mineral-related actions in the WSA would threaten the continued existence of any of the special status animal species.

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Prior to authorizing any surface-disturbing activities, BLM would conduct site-specific clearances of the potentially disturbed areas. If any threatened or endangered species are located, BLM would initiate consultation with FWS as required by the Endangered Species Act and BLM policy. BLM would request a biological opinion when appropriate (refer to Appendix 4 in Volume I). Appropriate mitigation measures, such as avoidance of sensitive areas, would be implemented. Because necessary measures would be taken to protect these species, the viability of populations of threatened, endangered, or other special status animal species would be preserved with the No Action/No Wilderness Alternative.

Conclusion: Wildlife habitat and populations including threatened, endangered, or other special status animal species would not be significantly affected. About 0.5 percent of the habitat in the WSA would be disturbed.

### • Impacts on Visual Resources

With this alternative, visual quality in the WSA would be protected by limitations placed on potential surface-disturbing activities (i.e., 12,635 acres would be closed to ORV use; oil and gas categories would include Category 3 [no surface occupancy] on 5,805 acres and Category 4 [closed to leasing] on 6,540 acres; and the entire 12,635 acres would be managed under VRM Class II objectives requiring that activities not be apparent).

However, 62 acres of mineral-related exploration and development and 2 acres of disturbance associated with development of access to State in-held lands are possible. Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual quality would be degraded in localized areas. VRM objectives would probably not be met in VRM Class II areas during the short term. Even after rehabilitation, some permanent localized degradation would be expected. It is anticipated that most activities would occur in the northwestern and southern portions of the WSA.

Conclusion: Visual resources would be protected by existing management restrictions but some visual degradation would occur on 64 disturbed acres and surrounding areas.

### • Impacts on Cultural Resources

There is a potential for 62 acres of surface disturbance by mineral exploration and development, and 2 acres with the development of access to State in-held lands under this alternative. Some sites could be subject to disturbance or loss in areas where locatable mineral exploration and development occurs on areas less than 5 acres in size and is not subject to regulations contained in 43 CFR 3809. However, sites in the WSA would continue to receive protection under existing Federal and State antiquities laws, and the probability of such minerals and access activities occurring on or near cultural sites is low. Before authorizing any surface-disturbing activities, inventories for the purpose of site recordation and mitigation of impacts would take place prior to any surface disturbance. Still, inadvertent loss or damage could occur in the disturbed area. Increased access due to mineral development would lead to increased vandalism of sites. There are no existing sites within the WSA on the National Register of Historic Places; however, some of the sites do have National Register potential.

With this alternative, archaeological sites would be subject to standard cultural resource management procedures (Neumann and Reinburg, 1988). Stabilization, interpretation, and excavation could proceed without the restrictions of wilderness values maintenance.

Conclusion: Inadvertent loss or damage to archaeological sites may occur due to mineral exploration, surface development, and/or development of access to State lands. Intentional vandalism and artifact collection may increase due to increased activity and accessibility. Cultural resource management would continue without regard to wilderness management.

### • Impacts on Recreation

The entire 12,635 acres would be closed to ORV use under the Grand RMP. This designation would not apply to the road in Pritchett Canyon or to the main Moab Rim jeep trail.

Primitive recreation values would be foregone on the 64 acres and adjacent areas where potential mineral and energy surface-disturbing activities could take place but would be protected overall with Category 3 and 4 oil and gas stipulations, ORV closures and closure to potash leasing. The future trends in recreational use of the WSA are unknown. However, based on a review of several projections (UDNRE, DPR,

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1985; UDNRE, ORA, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; Cordell and Hendee, 1982; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 to 7 percent per year over the next 30 years. At this rate, primitive recreational use is expected to increase from the 1,840 current primitive visitor days per year to between 3,468 and 16,036 primitive visitor days by the year 2020. Such use may have to be controlled before reaching projected levels to protect recreational and other resource values.

Vehicular recreation activities (currently 610 visitor use days annually) within the WSA would cease, but opportunities would still be available on perimeter jeep roads.

**Conclusion:** Opportunities for primitive recreational use would be directly reduced in quality on 64 acres and indirectly reduced in quality on surrounding areas. ORV use would be precluded. Primitive recreational use would increase.

### • Impacts on Local Economic Conditions

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. If the oil and gas in the WSA were explored and developed, it would lead to an increase in employment and income for Grand County. The original activities would require up to 10 temporary jobs lasting from 3 to 6 months for each of the two projected wells. Production would only provide two permanent jobs. Neither situation would result in a significant increase in employment, income or sales in Grand County.

There would be no livestock-related economic losses because the existing grazing use (60 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures, could increase at a rate of 2 to 7 percent per year over the next 30 years. If this is the case, primitive recreational use in the area would increase to between 3,468 to 16,036 visitor days/year by the year 2020. Recreation-related expenditures average \$4.10 per visitor day. Thus, up to \$65,750 could be contributed to the local economy.

Federal and State revenues would not be reduced by this alternative. There are approximately 5,205 unleased acres in the WSA which are open to oil and gas leases. If leased, they would bring up to \$10,410 additional Federal lease fee revenues per year. Half of these monies would be allocated to the State, a portion of which could reach the local economy. Collection of livestock grazing fees (\$92 per year) would continue.

**Conclusion:** Overall economic conditions would not be significantly affected. Mineral activities would provide ten temporary and two permanent jobs which would not increase local employment significantly. Recreation-related expenditures could contribute up to \$65,750 annually to the local economy.

### All Wilderness Alternative (Proposed Action) (12,635 Acres)

#### • Impacts on Wilderness Values

Designation and management of all 12,635 acres as wilderness would contribute to the preservation of the wilderness values in the Behind the Rocks WSA. The potential for surface-disturbing activities would be reduced through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness would be protected on 12,630 acres that meet the standards for naturalness, and 5 acres that do not. Solitude and primitive recreation would be protected on approximately 12,585 acres that meet and 50 acres that do not meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA, including Class A scenery, archaeological and paleontological values, endangered or sensitive species, and wildlife associated with wilderness, would also be protected.

Although protected, complete preservation of wilderness values would not be assured because of the existence of valid existing rights. In the foreseeable future, disturbance of up to 14 acres is anticipated from exploration of valid uranium mining claims, and for providing access to a State section (T. 26 S., R. 22 E., sec. 32). Wilderness values of naturalness and opportunities for solitude and primitive recreation would be directly lost on the disturbed areas. Opportunities for solitude and primitive recreation would also be indirectly reduced in quality on adjacent portions of the WSA. As much as 3 percent of the WSA (379 acres) could be indirectly affected. Most special

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features, including endangered and sensitive species, archaeological and paleontological values, and wildlife associated with wilderness, would not be significantly affected because the direct disturbance would involve only 0.1 percent of the WSA and appropriate measures would be taken to protect endangered and sensitive species and archaeological and paleontological values prior to any surface-disturbing activity. Some Class A scenery would be reduced in quality on the disturbed areas. Refer to the Visual Resources, Cultural Resources, Wildlife and Vegetation Including Special Status Species sections for more information. Mitigation to protect wilderness values would be applied, but loss of wilderness values would be allowed if development involving valid existing rights could not be otherwise achieved. All in all, the disturbance would probably not be substantially noticeable in the area as a whole.

Over the long term, there would be no potential for loss of wilderness values due to development of new leases and mining claims. The potential for other long-term development is not known but would be less with this alternative than with the No Action/No Wilderness Alternative due to application of mitigation that would protect wilderness values subject to valid existing rights.

The 2 to 7 percent annual increase in visitor use that would occur with time would be primitive in nature and would be managed so as to not result in loss of wilderness values. Visitor limitations might be necessary.

Continued use and maintenance of the 69-kv powerline would conflict with wilderness management goals.

**Conclusion:** Wilderness designation would preserve overall the wilderness values in the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 14 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 379 acres. Special features would be preserved except that Class A scenery would be reduced in quality in the areas.

### • Impacts on Vegetation including Special Status Species

The vegetation resource, including the one endangered and four other special status plant species, would be provided with additional protection over the entire

WSA. Potential disturbance would be reduced from 64 to 14 acres. Prior to any surface disturbance, appropriate clearances, and, if required, consultation with the FWS would be undertaken. Therefore, impacts on special status plant species would not be significant.

**Conclusion:** Vegetation resources, including special status species would receive additional protection because potential surface disturbance would be reduced from 64 to 14 acres.

### • Impacts on Mineral and Energy Exploration and Production

#### • Leasable Minerals

Designation of the WSA would have an impact on exploration for and production of oil and gas. Post-FLPMA leases (currently covering 890 acres of the WSA) could be developed if valid discoveries are made. However, it is believed that existing leases will expire before discoveries are made prior to designation. Undiscovered oil and gas resources would not be explored or produced. The potential of the area is moderate, with 10 to 50 million barrels of oil or 60 to 300 billion cubic feet of natural gas. Production of these resources would be foregone with this alternative.

The area could not be leased for potash development. The WSA is underlain by potash deposits; however, structural deformation occurring during and after deposition have made the WSA only moderately favorable for potash occurrence. It is estimated that there are 75,000 to 7.5 million tons of potash recoverable under the WSA that could be foregone under this alternative. However, due to the rugged terrain, compared with producing areas nearby, development is unlikely even without wilderness designation.

#### • Locatable Minerals

There are 165 mining claims covering 3,300 acres (26 percent) of the WSA. Claims located prior to wilderness designation could continue to be worked in accordance with valid rights existing at the time of wilderness designation. Claims would be subject to a validity exam and those not current in assessment or not showing a valid discovery would be declared null and void. Exploration activities would be limited following wilderness designation.

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The uranium/vanadium-bearing strata are known to occur in the WSA; however, due to the depth of overburden, the favorable host rocks are well below the surface and economic costs of extraction would be high. Development and production is, therefore, not anticipated following exploration with or without wilderness designation.

- Salable Minerals

The opportunity to recover salable minerals would be foregone with this alternative. However, such minerals within the WSA are not unique and have little commercial value because of poor qualities. Therefore, development of economic deposits would not be lost.

Conclusion: Wilderness designation would preclude exploration and development opportunities for oil and gas resource projected to occur in the WSA and production of these resources would be foregone. It would also limit potential exploration opportunities for locatable minerals to those under mining claim at the time of designation. However, significant locatable mineral production would not be foregone.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

Wildlife would benefit from the provision of solitude and reduction of direct surface disturbance from 64 acres with the No Action/No Wilderness Alternative to only 12 acres with wilderness designation. The two endangered and six other special status species which may occur in the WSA would be provided with additional protection over the entire area. Prior to any surface disturbance (an estimated 14 acres), appropriate clearances and, if required, consultation with the FWS would occur. Because only 0.1 percent of the WSA would be affected, no significant impacts to wildlife habitat or populations, including special status species would occur.

Conclusion: The wildlife habitat and populations including special status species, would be protected by the All Wilderness Alternative. About 0.1 percent of the wildlife habitat in the WSA would be disturbed.

- Impacts on Visual Resources

Wilderness designation would contribute to the preservation of the area's visual resources. The potential for surface-disturbing activities that could impair visual quality would be reduced through management

under VRM Class I, which generally allows for only natural ecological change and from closure of the entire area to mineral leasing and location.

About 12 acres could be disturbed by exploration of mining claims and 2 acres would be disturbed by developing access to in-held State land. Although mitigating measures would be applied to reduce visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation, some permanent localized degradation could be expected. If roads for exploration of mining claims could not be denied, VRM Class I objectives may not be met on small portions of the WSA. But visual quality would probably not be significantly reduced in the WSA as a whole.

Conclusion: Visual resources would be protected throughout the WSA. Visual quality would be reduced on the 14 acres directly disturbed by mineral exploration activities and development of access as well as in surrounding areas.

- Impacts on Cultural Resources

As much as 12 acres could be disturbed by mineral exploration and development; however, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any and all proposed surface disturbance and would mitigate any adverse impacts. Inadvertent loss or damage to cultural resources could occur, although these impacts are expected to be minimal.

There is potential for increased vandalism to cultural resources due to increased recreational use of the WSA. However, the benefit of protection afforded by wilderness management would outweigh any potential adverse affect from vandalism caused by increased recreational activity, and the overall impact would be positive.

Conclusion: Cultural resources would be protected by the All Wilderness Alternative.

- Impacts on Recreation

The entire 12,635 acres would be closed to recreational ORV use. This would be a continuation of present management under the Grand RMP. ORV closure does not apply to the road up Pritchett Canyon or to the main Moab Rim jeep trail. Other areas similar to

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the WSA are found in other parts of the Grand Resource Area and would not be closed to ORV use; therefore, ORV use would likely not experience an overall decline in the vicinity of the WSA.

Exploration of valid mining claims would reduce the quality of primitive recreational opportunities in disturbed (14 acres) and adjacent areas. However, because mineral production is not anticipated, the quality of the primitive recreational experience would be preserved in the WSA as a whole.

As discussed for the No Action/No Wilderness Alternative, recreational use of the WSA is estimated to increase about 2 to 7 percent per year over the next 30 years in relation to population increases and current trends of recreational use. Based on this projection, visitor use would be expected to increase to between 3,468 to 16,036 visitor days per year by the year 2020. However, visitor use may have to be controlled to protect wilderness and other resource values and may not reach projected levels.

**Conclusion:** The quality of primitive recreational use would be protected in the WSA. Loss of quality would occur in the disturbed acres (14 acres) and in adjacent areas. Use of vehicles would be precluded in the WSA but would not decline in the region. Primitive recreational use would increase at rates similar to those for the No Action/No Wilderness Alternative.

### • Impacts on Local Economic Conditions

Overall, there would not be significant changes in current trends of population and employment. There could be a slight increase in local income distribution.

Because of restrictions placed on the use of resources under wilderness designation, there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 9), as well as loss of potential increases in income and Federal revenues that could occur under the No Action/No Wilderness Alternative.

The potential to find oil and gas in the WSA is moderate (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). Valid existing oil and gas leases and mining claims could be developed, but designation would preclude new leases and claims from being established in the WSA. Precluding exploration and development of leaseable minerals would not alter existing economic conditions, but could alter future economic conditions from

what they would be with mineral development under the No Action/No Wilderness Alternative.

Wilderness designation would result in the loss of 10 jobs (3 to 6 months) temporarily, and two permanent jobs because of the loss of oil and gas exploration and development. However, this level of employment would not have a significant impact on the economy of Grand County. Development of locatable minerals is not anticipated with or without wilderness designation. Therefore, there would be no economic effects from the loss of locatable mineral activities.

Livestock use and ranchers' income would continue as at present with \$1,200 of livestock sales and \$300 of ranchers' return to labor and investment.

As discussed in the No Action/No Wilderness Alternative, increases in primitive recreational use could result in between 3,468 and 16,036 visitor days per year by the year 2020. Related local expenditures (average of \$4.10 per visitor day) would contribute up to \$65,750 a year to the local communities.

The loss of 890 acres now leased would cause an eventual loss of up to \$1,780 per year of lease fees to the Federal Treasury. There would also be a potential loss of up to \$10,410 annually in Federal revenues from the 5,205 acres that could be leased without designation. In addition to these rental fees, any potential royalties from new lease production could also be foregone.

**Conclusion:** There would not be major economic affects from wilderness designation. There would be a slight loss in oil- and gas-related jobs (ten 3 to 6 months temporary, and two permanent) from the No Action/No Wilderness Alternative. Increases in primitive recreation visitors could provide up to \$65,700 annually to the local economy.

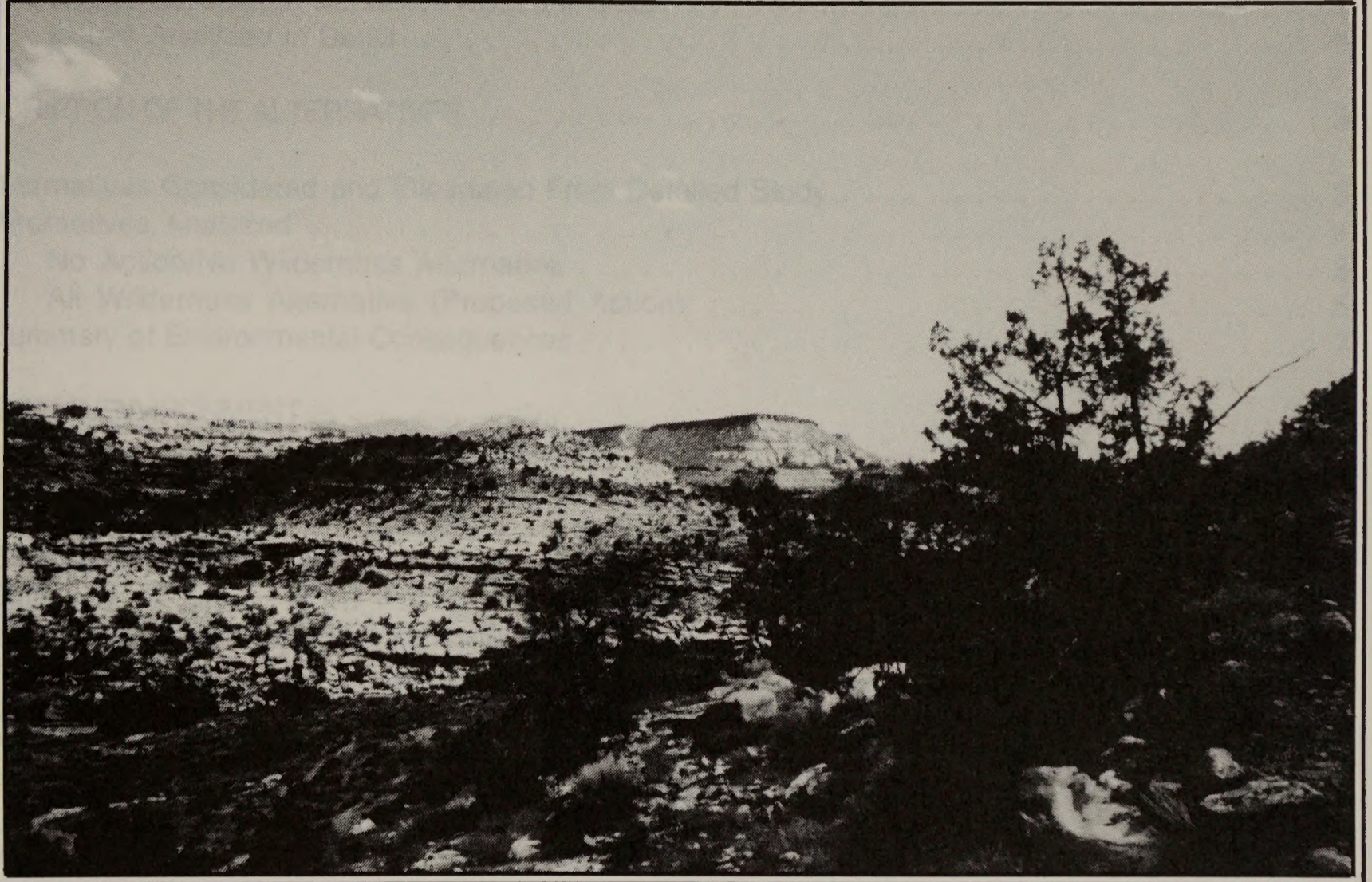
# Mill Creek Canyon WSA

## INTRODUCTION

General Description of the Area

Changes for the Final EIS

Special Issues Identified During the Review Process



Cultural Resources

Recreation

Land Use Plans

Socioeconomic

## ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

No Action/No Watershed Alternative

All Watershed Alternative (Proposed Action)





# MILL CREEK CANYON WSA

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# MILL CREEK CANYON WSA

(UT-060-139A)

## INTRODUCTION

### General Description of the Area

The Mill Creek Canyon WSA is situated between Moab and Castle Valley, Utah. It is about 7 miles wide (east-west) and 4 miles long (north-south) and contains approximately 9,780 acres of BLM-administered land entirely within Grand County. No State land lies within the WSA; however, five State holdings border the WSA on the north and south. The WSA is bordered on the west by the cliffline of the main branch of the Mill Creek drainage; on the north by a cliffline and the Sand Flats Road; on the east by Wilson Mesa and the Manti-LaSal National Forest; and on the south by the Between the Creeks region.

The WSA is characterized by deep canyons and re-treating escarpments. Pinyon-juniper woodland and blackbrush are the dominant vegetation species. Mill Creek is a perennial stream that runs adjacent to the WSA along its west boundary.

The WSA has a semiarid climate characterized by hot summers and moderately cold winters. Annual temperatures range from 115 degrees Fahrenheit (F) to - 20 degrees F. Average annual precipitation ranges from approximately 9 to 16 inches. Most precipitation occurs as late summer thunderstorms. Average annual snowfall is between 10 and 20 inches.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume V, the following changes specific to the WSA have been made since publication of the Draft EIS.

1. A small portion of the boundary of the WSA (T. 26 S., R. 22 E., secs. 3 and 4) has been redrawn to correct an error in the Draft EIS maps. Approximately 1 mile of cherry-stemmed road has been deleted. This change did not require acreage adjustments.

2. The BLM Proposed Action in the Draft EIS was the No Action/No Wilderness Alternative. The BLM Proposed Action for the Final EIS is the All Wilderness Alternative (9,780 acres). Refer to Appendix 11 in Volume I for rationale for the Proposed Action.

3. The anticipated surface disturbance presented in the Draft EIS (815 acres) was based on the assump-

tion that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities projected to be feasible within the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of surface disturbance estimates from the 815 acres reported in the Draft EIS to 41 acres of surface disturbance for the Final EIS.

### Specific Issues Identified through Scoping and Public Comment

#### • Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume V (i.e., impacts on air quality, geology and topography, water rights, and land use plans and policies), the following issues or impacts specific to the Mill Creek Canyon WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below:

1. Soils: Estimates of surface disturbance without wilderness designation have been revised downward from the 815 acres reported in the Draft EIS to 41 acres, 10.4 percent of the WSA in the Final EIS. There is currently some ORV use taking place in the WSA, but under the Grand Resource Area RMP future use would be limited to designated roads and trails. Given this new scenario, the impacts on soils would be reduced and would not be significant with any of the alternatives.

2. Vegetation Including Special Status Species: Estimates of surface disturbance without wilderness designation have been revised downward from the 815 acres reported in the Draft EIS to 41 acres of surface disturbance in the Final EIS. Given this new scenario, the impacts of direct disturbance of vegetation would

STATEWIDE  
POCKET MAP  
WSA  
NO. **56**  
SEE VOL. I

## MILL CREEK CANYON WSA

be reduced and would not be significant with any of the alternatives (less than 0.4 percent of the WSA). One threatened species, Cycladenia humilis var. ionesii and one Category 2 candidate species, Lygodesmia entrada, may occur in the WSA. BLM would conduct site-specific clearances of potentially disturbed areas and consult with the FWS concerning impacts on these and other special status plant species. Therefore, impacts on vegetation are not analyzed in detail for the Mill Creek Canyon WSA.

3. Water Resources: The public is concerned that wilderness designation would interfere with development of water. Future developments, although none are proposed, could also increase sediment yield and affect water quality. There are 20 miles of perennial streams and two undeveloped springs in the Mill Creek Canyon WSA. The perennial streams originate in the WSA. Potential water uses in the WSA include livestock, recreation, and wildlife that would not be affected by wilderness designation. Therefore, impacts on water uses and quality are not significant issues for the Mill Creek Canyon WSA.

4. Wildlife Including Special Status Species: The public is concerned that without wilderness designation, mineral or other developments would destroy wildlife habitat and lead to reductions in wildlife populations. They are also concerned that use of ORVs would disturb wildlife and destroy habitat. The Mill Creek Canyon WSA provides habitat for a variety of animal species, but populations are generally low and no one species can be described as abundant. The riparian areas, however, do provide a higher concentration of some species during the year. Two endangered and five Category 2 candidate species may be found in the WSA.

Since only 41 acres of surface disturbance are expected in the WSA in the foreseeable future, wildlife habitats would not be significantly affected and no reductions in populations are projected. The Grand RMP limits the use of ORVs to the 4 miles of existing trails and ways. Recreation use is mainly primitive. Given these conditions, impacts on wildlife habitat and populations are not significant issues for the Final EIS.

5. Forest Resources: The only forest resources in the WSA are scattered pinyon pine and juniper trees. There is no commercial firewood cutting and noncommercial woodland harvest is minimal. For these reasons, impacts on forest resources are not a significant issue for analysis in the Final EIS.

6. Livestock Management: The public is concerned that wilderness designation would interfere with livestock management by placing restrictions on predator control, access for maintenance of existing range improvements, moving of livestock, and by preventing future range improvements. However, under the Wilderness Management Policy (BLM Manual 8560) there will be no curtailments in grazing simply because an area is wilderness. Several methods of predator control would be allowed in designated wilderness, and predator control has not been required in the area for several years. There are only two springs identified as proposed improvements in the WSA. These developments could be allowed under wilderness management. For these reasons, impacts on livestock management are not significant issues for the Mill Creek Canyon WSA.

7. Visual Resources: As discussed above for vegetation, only 41 acres of surface disturbance are projected for the WSA in the Final EIS. Therefore, visual resources would not be significantly affected. Visual resources are not addressed in the Final EIS as a separate topic, but are addressed in relation to naturalness in the Wilderness Values section.

8. Cultural Resources: Cultural resources could be destroyed by surface-disturbing projects, use of vehicles, or vandalism. However, only 25 cultural resource sites have been recorded in the Mill Creek Canyon WSA and only 41 acres of surface disturbance is projected. Visitation is approximately 1,912 visitor days per year and mainly primitive. The Grand Resource Area RMP limits vehicle use to the 4 miles of ways inside the WSA. Additionally, inventories for the purpose of site recordation and mitigation of impacts would take place prior to any surface disturbance in the future. Given these conditions, impacts on cultural resources are not significant issues for the Mill Creek Canyon WSA.

### • Issues Analyzed in Detail

The significant issues for the Mill Creek Canyon WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on mineral exploration and production.
3. Impacts on recreation use of the WSA.

# MILL CREEK CANYON WSA

## 4. Impacts on local economic conditions.

Comments made during the public comment period for the Draft EIS centered mainly on the need for, and adequacy of, the wilderness inventory; the rationale for the BLM Proposed Action; the need for further inventories of resource values; analyses of the impacts; and BLM's assessments of wilderness values, visual resources, mineral values, riparian/watershed values, and recreation values (primitive and motorized).

See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 56, for responses to specific comments about the Mill Creek Canyon WSA.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated From Detailed Study

During the initial scoping, a Partial Wilderness Alternative was suggested that would eliminate from further study potential energy management conflict areas. However, because the entire WSA has essentially equal potential for oil and gas development, consideration of a Partial Wilderness Alternative would not eliminate potential oil and gas conflicts. Therefore, a Partial Wilderness Alternative was not analyzed for this WSA.

Alternatives that would add State and Federal lands, mainly along the northwestern and southern borders of the WSA while deleting other small areas along the southeastern boundary (net addition of about 4,790 acres), were suggested by the public during the public comment period for the Draft EIS.

Approximately 1,250 acres are State land and are not included in the wilderness study (refer to Volume VII-B General Comment Response 6.4). Public lands outside the WSA boundary were considered and dropped during the Inventory Phase of the wilderness review and are not analyzed in the Final EIS (refer to Volume VII-B, General Comment Response 3.1).

### Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action/No Wilderness; and (2) All Wilderness (Proposed Action) (9,780 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are

made based on management projections under each alternative. These assumptions are indicated in each case. The analysis assumptions presented in the Introduction to Volume V are also applicable.

#### • No Action/No Wilderness Alternative

With this alternative, none of the 9,780-acre Mill Creek Canyon WSA would be designated by Congress as part of the NWPS (refer to Map 1). The area would continue to be managed in accordance with the Grand RMP (USDI, BLM, 1983). No State, private, or split-estate lands are located within the WSA.

#### • Management Conditions and Constraints

All 9,780 acres would remain open to mineral location, leasing, and sale. Development work, extraction, and patenting would be allowed on the 104 existing mining claims (2,080 acres) and future mining claims. Development would be guided by unnecessary or undue degradation regulations (43 CFR 3809) without concern for wilderness values. Two existing post-FLPMA oil and gas leases on 361 acres of the WSA could be developed under Category 1 (standard stipulations). Future leases could be issued under Category 1 on 8,030 acres and Category 3 (no surface occupancy) on 1,750 acres.

Although minerals would be managed as described, mineral exploration and development are not anticipated, except possibly for oil and gas, because the level of known resources and the probability of their development are too low to support a development assumption. Appendix 6 in Volume I explains the mineral exploration and development assumptions.

The present domestic livestock grazing use in the WSA would continue as authorized in the Grand RMP (currently 580 AUMs). Use of the existing range development (one short fence) would continue. New range developments (two proposed spring developments) could be implemented without wilderness considerations as authorized by the RMP.







Vehicular use would be limited to existing ways and new access routes.

The entire area would remain open to woodland product harvest. However, harvest is not

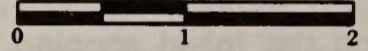
# MILL CREEK CANYON WSA

## Map 1 LAND STATUS Mill Creek Canyon WSA UT-060-139A

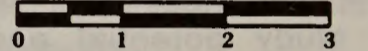
### Legend

-  WSA Boundary
-  National Forest Boundary
-  State Land Within or Adjacent to WSA
-  Forest Service/Park Service Administered Land
-  Private Land Within or Adjacent to WSA
-  BLM Administered Land Within or Adjacent to WSA

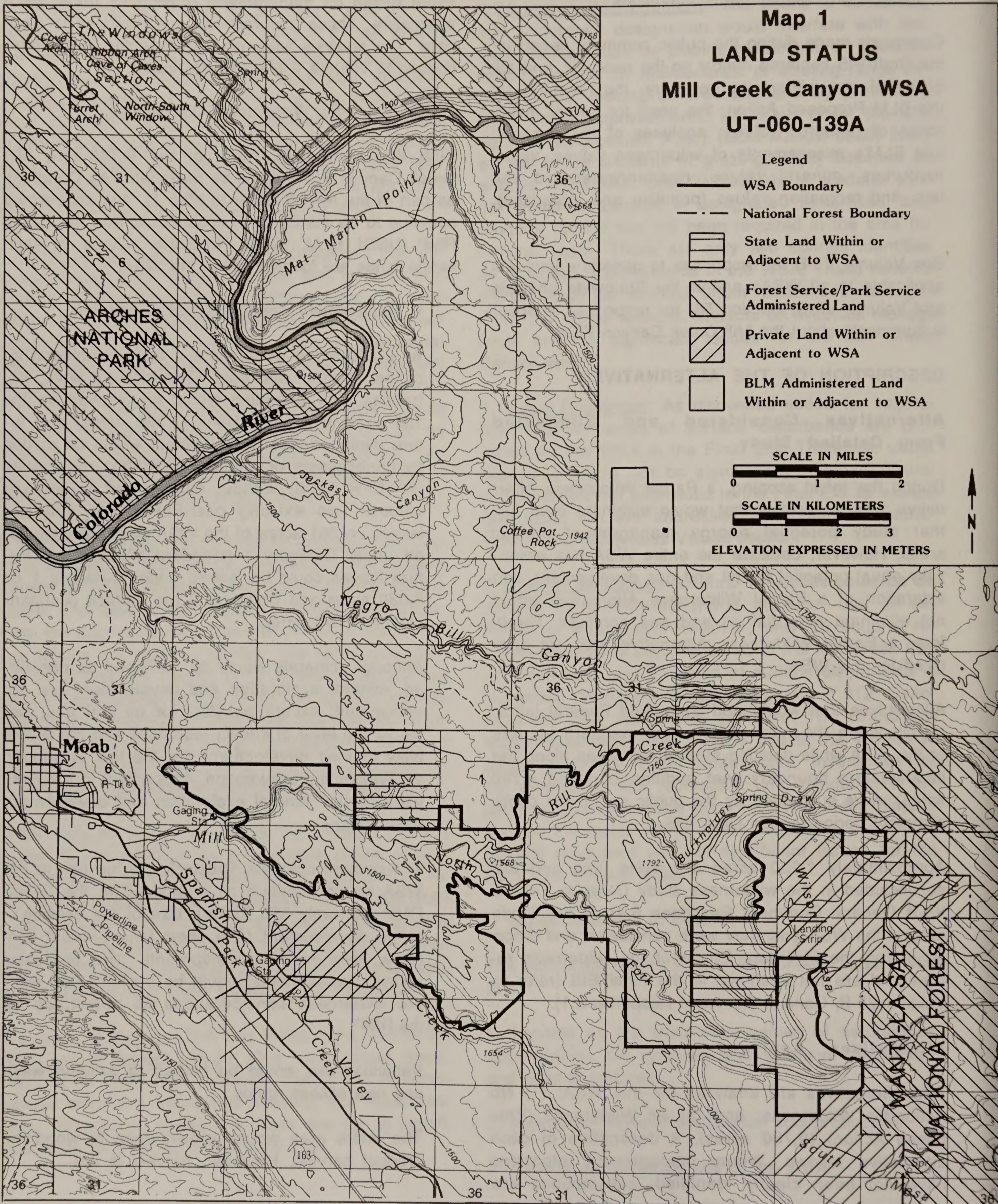
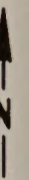
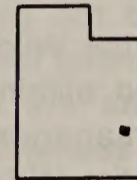
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



R. 22 E.

R. 23 E.

## MILL CREEK CANYON WSA

expected because of the sparseness of the resource.

The WSA would continue to be managed as VRM Class III on 7,820 acres and VRM Class IV on 1,960 acres.

- Action Scenario

Given BLM management actions described above and the resources described in the Affected Environment, BLM anticipates that implementation of the No Action/No Wilderness Alternative would result in approximately 41 acres of surface disturbance. Oil and gas exploration including up to 8 miles of access roads would disturb about 40 acres and 1 acre would be disturbed by development of two springs. No locatable mineral resource exploration or development is anticipated in the foreseeable future. No rangeland projects for livestock, wildlife or watershed improvement are planned.

No disturbance is projected to occur in the future from ORV activity because use would be restricted to existing vehicular ways by management constraints and rough terrain.

Recreation use is projected to increase over the current estimated use of 1,912 annual visitor use days at a rate of 2 to 7 percent per year. About 75 percent of the use would be primitive in nature, and about 25 percent would involve vehicular activity on 4 miles of existing ways and on future access roads.

- All Wilderness Alternative (Proposed Action)

With the All Wilderness Alternative, all 9,780 acres of the Mill Creek Canyon WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character. No State, private, or split-estate lands are located in the WSA. The figures and acreages given under this alternative are for Federal lands only.

- Management Conditions and Constraints

After wilderness designation, all 9,780 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be

allowed to continue on that portion of the approximately 2,080 acres of 104 existing mining claims, and any located prior to wilderness designation, that are determined to be valid. Development would be guided by unnecessary or undue degradation regulations (43 CFR 3809), with consideration given to wilderness values. Two existing post-FLPMA oil and gas leases involving 320 acres would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown. New oil and gas leases would not be issued.

Present domestic livestock grazing would continue as authorized in the Grand RMP. The 580 AUMs in the WSA would remain available to livestock as presently allotted. Use and maintenance of one short (0.25 mile) fence would continue in the same manner as in the past based on practical necessity and reasonableness.

The entire 9,780-acre area would be closed to ORV use except for (1) users with valid existing rights if approved by BLM in accordance with 43 CFR 8560 provisions; or (2) occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. About 4 miles of existing vehicular ways would not be available for vehicular use except as indicated above.

Visual resources would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

- Action Scenario

Given the BLM management actions described above and the resources described in the Affected Environment, BLM anticipates 1 acre of surface disturbance in the foreseeable future with this alternative. The disturbance would result from development of two springs. It is projected that mineral resources would not be developed following wilderness designation. No other rangeland, wildlife, or watershed improvement projects are expected following designation.

No disturbance is projected to occur from ORV activity because of management constraints and rough terrain.

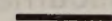

Recreation use is projected to increase above the current estimated primitive-type use of 1,434

# MILL CREEK CANYON WSA

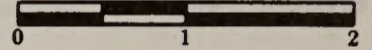
## Map 2 ALL WILDERNESS ALTERNATIVE

### Mill Creek Canyon WSA UT-060-139A

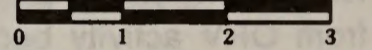
#### Legend

-  All Wilderness Alternative (9,780 acres)
-  National Forest Boundary

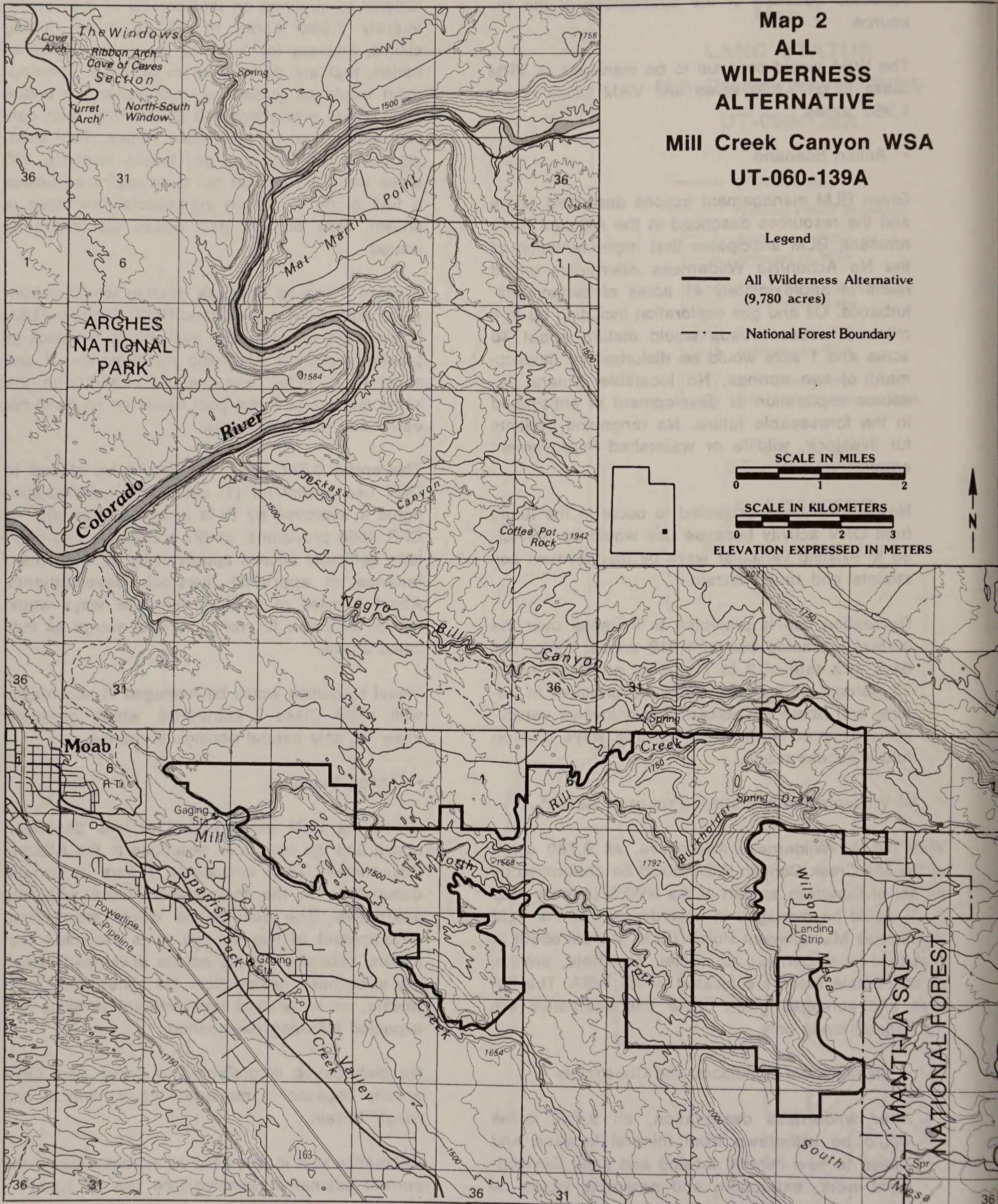
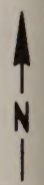
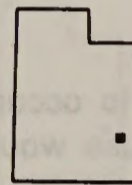
#### SCALE IN MILES



#### SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



R. 22 E.

R. 23 E.



# MILL CREEK CANYON WSA

annual visitor days at a rate of 2 to 7 percent per year. Vehicular use (currently estimated at 478 visitor use days) would be curtailed.

## Summary of Environmental Consequences

Table 1 summarizes the environmental consequences of the alternatives analyzed in detail.

## AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

### Wilderness Values

#### • Size

The WSA is of sufficient size (9,780 acres of BLM-administered land) to meet wilderness criteria. It is 7 miles wide (east to west) and 4 miles long (north to south).

#### • Naturalness

All 9,780 acres of the WSA remain essentially natural in character. An old trail was bladed into Mill Creek; however, it fades out as it reaches the bottom of the drainage. This way becomes a cattle trail that continues downstream and then enters the North Fork of Mill Creek. Evidence of conventional seismic activity can be found in the southwest portion of the WSA between Mill Creek (outside of the WSA) and the North Fork of Mill Creek. Seismic lines total 3 miles in length. Placer mining has occurred recently near Wilson Mesa. Overall, there are 4 miles of vehicular ways in the WSA. All of the above intrusions are substantially unnoticeable.

Since establishment of the WSA, a number of placer gold explorations and helicopter seismic activities have occurred. The placer gold explorations are as follows:

1. Three exploratory trenches (2 1/2' X 60' X 6') were dug in the NW1/4, sec. 11, T. 26 S., R. 23 E. Total disturbance was approximately 1 acre. Reclamation was completed in 1986.

2. Seven hand-dug holes (approximately 3 feet deep) and about 65 (three feet deep) backhoe holes were completed to determine the depth of the gold ore body. Reclamation was completed in 1986.

3. One trench (1' X 3' X 100') and one pit (6' X 6' X 9') were dug to determine a gold ore body, resulting in approximately 2 acres of total disturbance. Reclamation will be completed before 1991.

4. An instream placer gold exploration activity was conducted during 1984. The disturbance was minimal because the claimant used a hand held vacuum dredge in the potholes of the stream. The plan of operations was determined to be nonimpairing. No reclamation was required and equipment was removed.

5. One unauthorized placer gold activity occurred within the WSA. It involved one hole (40' X 60' X 3') located on an old seismic line. The disturbance is less than 1 acre in the NW1/4 of Sec. 11, T. 26 S., R. 23 E. Reclamation has been completed.

Also, the following seismic activities have taken place within the WSA:

1. Western Geophysical conducted a helicopter seismic operation during 1983. The notice of intent was received and the EA was completed on October 14, 1983. All work was determined to be nonimpairing. Only minimal disturbance occurred and work was completed.

2. Frontier Exploration conducted a helicopter seismic operation during 1984. All work was determined to be nonimpairing. The work was completed and all necessary reclamation were completed.

Upon final reclamation of the placer gold exploration activities, the entire WSA will meet the Wilderness Act criteria for naturalness.

#### • Solitude

The WSA offers outstanding opportunities for solitude within portions of the unit due to the variety of the topography. The area does not give the visitor a feeling of vastness. The configuration of the WSA is of considerable importance in assuring protection of the

# MILL CREEK CANYON WSA

Table 1  
Summary of Environmental Consequences

Alternatives	
Resource	No Action/No Wilderness
Impacts on Wilderness Values	<p>All Wilderness (9,780 Acres) (Proposed Action)</p> <p>Wilderness values would not be protected by wilderness designation and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 41 acres and indirectly reduced in quality on up to 1,467 acres. The loss would be due to mineral exploration activities. Special features would not be significantly affected. Vehicular use of 4 miles of ways and future exploration roads would occasionally detract from opportunities for solitude and primitive recreation in the WSA.</p>
Impacts on Mineral and Energy Exploration and Production	<p>Wilderness designation would preserve the wilderness values in the WSA.</p> <p>The opportunity for leasable and locatable minerals exploration would be foregone. However, the loss of development potential would not be significant because there is only low certainty that economically recoverable minerals are in the WSA and the probability of development is low even if the WSA is not designated wilderness.</p>

# MILL CREEK CANYON WSA

Table 1 (Continued)  
Summary of Environmental Consequences

Alternatives	
Resource	No Action/No Wilderness
Impacts on Recreation	<p>The quality of the primitive recreation opportunity would be reduced on disturbed areas (41 acres) and surrounding areas. It is projected that both primitive and vehicular recreation use would steadily increase in the WSA and without management constraints, inherent recreational values could be reduced. Some primitive recreation use may be displaced with ORV-related use in the future, especially if new mineral-related access is developed. This impact, however, will be tempered with ORV management that would limit future ORV use to designated roads and trails.</p>
Impacts on Economic Conditions	<p>The economics of the local recreation-related businesses would be beneficially affected by the projected increase in recreational use. Also, additional mineral leasing revenues could be expected with this alternative. Although these increased revenues may not significantly affect the economy of Grand County, they would appreciably increase the income of several local businesses.</p>
	<p>All Wilderness (9,780 Acres) (Proposed Action)</p>
	<p>Future vehicular use would be eliminated with this alternative. This would not be significant regionally because there are other suitable ORV areas nearby. Primitive recreation use would increase and would require management guidance to prevent loss of the inherent recreational values.</p>
	<p>With this alternative, economic conditions in Grand County would be about the same as with the No Action/No Wilderness Alternative because recreation use would increase and no major mineral or other economic developments would be foregone. Federal revenues would decrease due to the loss of leasing rental fees and possible future mineral exploration opportunities.</p>

## MILL CREEK CANYON WSA

wilderness values. The WSA is basically shaped like an hourglass, the center being constricted down to about 0.50 mile in width. The main branch of Mill Creek is not included in the WSA but instead is adjacent to the western boundary of the WSA. A constriction is also found along the west side where the unit narrows down to about 0.50 mile. Private land on Wilson Mesa intrudes into the eastern portion of the unit creating two legs, one encompassing the North Fork of Mill Creek and one encompassing Burkholder Draw to the north. The Mill Creek constriction narrows to 0.5 mile for a distance of 0.75 of a mile. The narrow constrictions inhibit the ability to protect existing opportunities for solitude from potential uses outside the WSA.

Sheer canyon walls provide vertical separation and screening. The depth and winding nature of the canyon enhances topographic screening. In the eastern half of the canyon, the cliff walls become less sheer, with several side canyons branching off the main drainage. Vertical separation is not so pronounced here. The winding nature of the eastern half of the canyon also provides some screening. The side canyons that branch off the main drainage provide additional topographic screening. Topographic screening is also provided by sandstone fins in the western part of the unit near the canyon mouth. The upper elevations of the unit consist primarily of wind-blown sand and sandstone formations. Some topographic screening is provided by this uneven terrain. Narrowness of the canyon can detract from the solitude when many people are in the area by limiting their opportunity to avoid each other.

Significant vegetation screening is provided by riparian vegetation along Mill Creek Canyon and by moderately dense pinyon-juniper growth in the eastern portion of the WSA. Vegetation screening diminishes in the canyon bottom in the upper portion of Mill Creek, and is absent in slickrock and low brush and grass-covered areas.

The area of outstanding solitude is principally associated with the North Fork of Mill Creek in the western half of the WSA. This area, combined with the nearby redrock fins, comprises about 2,800 acres of outstanding solitude opportunities. Solitude is limited in the central, southwestern and southeastern portions of the unit where the WSA is constricted to areas of 0.50 mile.

Sights and sounds of human activity outside the WSA are present from some locations within the WSA. The

western edge of the WSA borders Mill Creek and, in places, comes close to housing developments in Moab in the vicinity of Kayenta Heights and the Highlands. Agricultural activities exist on private land adjacent to the WSA. Vehicle noise from these sources can be heard within portions of the WSA. The Sand Flats Road provides a portion of the northern boundary of the WSA. Traffic on this road is visible and can be heard from within the WSA. Distant sounds of trucks on U.S. Highway 191 can be heard.

A visitor has no problem finding a secluded spot in the North Fork of Mill Creek and in Burkholder Draw. However, seclusion in the central, southwestern, and southeastern portions of the WSA is difficult to find.

Overall, a 2,800-acre portion of the WSA meets the outstanding criterion for solitude. The balance of the WSA, 6,980 acres, does not meet the outstanding criterion for areas under wilderness review.

- Primitive and Unconfined Recreation

Portions of the canyon provide outstanding opportunities for hiking, camping, backpacking, and nature study. Sandstone fins near the mouth of the canyon provide excellent photographic opportunities. The WSA is of limited value for hunting and fishing.

Overall, primitive recreation opportunities meet the standard for outstanding on approximately 2,800 acres (30 percent of the WSA) in the canyon and fin areas, and do not meet the standard in the remaining 70 percent of the area (6,980 acres).

- Special Features

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. There are two animal species (peregrine falcon and bald eagle) listed as endangered that may occur within the WSA. The Jones cycladenia, *Cyladenia humilis* var. *jonesii*, is a threatened species that may also occur within the WSA.

There are six animal species and one plant species that are considered sensitive which may occur in the WSA. Bobcat, cougar, elk, and black bear are wildlife species associated with wilderness that may occasionally visit the WSA. Refer to the Vegetation and Wildlife Including Special Status Species sections for additional information. The WSA has approximately 20 miles of perennial streams. The sandstone fins

# MILL CREEK CANYON WSA

near the mouth of the canyon are scenic geologic features.

Mill Creek is one of the few side drainages to the Colorado River in Utah that contains a perennial stream. This is of particular significance when considering its proximity to the community of Moab, making it easily available for public use. The WSA possesses several prehistoric sites of value as well.

- **Diversity**

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV type of juniper-pinyon woodland. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. The ecoregion and PNV types represented by this WSA are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

This WSA is within a 5-hour drive from two standard metropolitan statistical areas. These are Salt Lake City-Ogden, Utah, and Provo-Orem, Utah.

## **Air Quality**

The WSA has a PSD Class II air quality classification as per the 1977 Clean Air Act Amendments. The nearest Class I area is Arches National Park, about 3 miles to the northeast. Canyonlands National Park, another Class I area, is about 13 miles to the southwest. The LaSal Mountains are visible to the east from the WSA. Air quality in the WSA is considered good. Occasionally there is a smog problem in the Moab Valley that could adversely affect views from the WSA, especially the lower end. Generally occurring during winter thermal inversions, the source of smog is reported to be the wood stoves used for home heating in Moab. The smog sometimes lasts for several days. When it dissipates, it generally drains north over Arches National Park. The problem appears to have worsened in recent years due to increased popularity of wood stoves for home heating because of high gas prices. Visual range in the general vicinity averages between 100 and 132 miles during the summer (Aerocomp, Inc., 1984).

## **Geology and Topography**

The Mill Creek Canyon WSA is within the Canyonlands section of the Colorado Plateau Physiographic Province. This section is characterized by bare rock surfaces, plateaus, and steep-walled canyons.

The youngest rock exposed in the WSA is the Jurassic Entrada Sandstone. This formation, 200 to 300 feet thick, is white at the top but dark red in the middle and bottom. At the base of the Entrada lies the Dewey Bridge Member, usually about 50 feet thick. Immediately below the Entrada Sandstone is the Navajo Sandstone of upper Triassic and lower Jurassic age. The cross-bedded Navajo Sandstone is about 200 feet thick here and covers a much larger portion of the WSA than any of the other formations exposed at the surface.

Below the Navajo Sandstone is the Triassic Kayenta Sandstone, about 100 feet thick. The Kayenta is exposed on the surface in only a few locations in the WSA. Below the Kayenta is the Triassic Wingate Sandstone exposed in Burkholder Draw. Formed in an ancient desert environment, the Wingate Formation is similar to the Navajo Sandstone. The Wingate is the lowest formation in the local stratigraphic column which is superficially exposed in the WSA. The Wingate is 200 to 300 feet thick here (Hintze, 1973). This formation forms some of the canyon walls present in the area.

Subsurface sedimentary rocks include the Triassic Chinle Formation and Moenkopi Shale, the Permian Cutler Formation, and some Pennsylvanian Hermosa Group formations. In addition, intrusive Tertiary quartz-diorites of the La Sal Mountain laccolith are present at a relatively shallow depth in the eastern part of the WSA.

The Chinle is at least 100 feet thick, consists of numerous shales and sandstones, and contains ore grade uranium in many locales south of the La Sal Mountains. Below the Chinle is the Moenkopi Shale, a marine deposit about 100 feet thick. Below the Moenkopi is the Cutler Formation which is 200 to 300 feet thick and mostly consists of sandstones in this area. Below the Cutler, some Hermosa Group formations are present. This group could be as much as 2,000 feet thick here, although this is not as thick as the same formation to the south and east. The Hermosa Group includes the evaporites and limestones of the Paradox Formation.

The Mill Creek Canyon WSA is on the west flank of the La Sal Mountains, a small range consisting of laccoliths that have pushed up overlying sedimentary rocks. The uplift formed Wilson Mesa and South Mesa, prominent topographic features at the eastern extreme of the WSA. The area to the west of the mesas generally shows increasingly lower elevations.

# MILL CREEK CANYON WSA

However, several streams are present that have formed rather deep canyons (Hintze, 1973).

Topographically, the highest point in the WSA on the Wilson Mesa flats above the canyons is 7,000 feet above sea level. The lowest point, near the mouth of Mill Creek Canyon, is about 4,400 feet.

## Soils

This WSA contains two general soil mapping units. More specific soils information can be found in the Canyonlands Soil Survey (USDA, SCS, 1978).

Soils, where present, are generally very shallow, although very deep sandy soils have formed where sand has drifted and in canyon bottoms. Soils have predominantly formed from sandstones. The sandy soils are susceptible to wind erosion. Runoff is very rapid due to the high percentage of rock outcrop. Most erosion is natural in origin.

Table 2 describes soil characteristics and land types and Table 3 describes erosion condition.

Soil salinity class estimates indicate that the area is slightly saline with an average salinity production of 22 lb of salt per acre per year.

Seeding potential varies from unsuited to seeding to poor on 95 percent of the WSA due to steep slopes, rock outcrops, sandy (droughty), and shallow soils. Seeding potential is fair to good on 5 percent of the WSA.

Table 2  
Soil Characteristics and Land Types

Soil Characteristics and Land Type	Percent of the Area	Acres	Estimated Rate of Erosion (cubic yards/acre/year)	
			Present Condition	Bare Soil Surface
Rock Outcrop	20	1,956	0	0
Shallow and deep sandy soils on sloping structural benches and cuestas	55	5,379	1	5
Moderately deep to deep stony and loamy soils on steep canyon sides	20	1,956	1	10
Very deep loamy soils on gently sloping alluvial fans and floodplains	5	489	0.1	1
Totals	100	9,780		

Source: Hansen, 1985.

## Vegetation Including Special Status Species

The WSA contains five vegetation types as summarized in Table 4. Blackbrush is the dominant species throughout the WSA. Pinyon pine and juniper trees are found in varying densities. Big sagebrush is found on the better soils at upper elevations. Other species found scattered throughout the WSA are rabbitbrush, cliffrose, yucca, Mormon tea, snakeweed, snowberry, galleta grass, and Indian ricegrass. A narrow stand of riparian vegetation (628 acres), including cottonwood trees, is found along the North Fork of

Table 3  
Erosion Condition

Erosion Class	Erosion Rate cubic yards/acre/year	Annual Soil Loss Under Present Conditions			Annual Soil Loss if Disturbed		
		Percent of Area	Acres	Cubic Yards	Percent of Area	Acres	Cubic Yards
Very High	20	-	-	-	-	-	-
High	10	-	-	-	20	1,956	-
Medium	5	-	-	-	55	5,379	26,895
Low	1	75	7,335	7,335	5	489	489
Very Low	0.1	5	489	49	-	-	-
None	0	20	1,956	-	20	1,956	-
Totals		100	9,780	7,384 <sup>a</sup>	100	9,780	46,944 <sup>a</sup>

Source: Hansen, 1985.

Average annual soil loss in cubic yards per acre: 0.75 under present conditions; 4.8 if disturbed.

# MILL CREEK CANYON WSA

Table 4  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Blackbrush	1,760	18
Blackbrush/sagebrush	500	5
Pinyon-juniper/blackbrush	6,242	64
Pinyon-juniper/sagebrush	650	7
Riparian	628	6
Total	9,780	100

Source: USDI, BLM, 1983.

Mill Creek and that portion of Mill Creek in the southwest corner of the WSA. One threatened plant species, *Cycladenia humilis* var. *jonesii*, and one Category 2 candidate species, *Lygodesmia entrada*, may occur in the WSA (see Appendix 4 in Volume I).

The Mill Creek Canyon WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNV type of the WSA is juniper- pinyon woodland.

## Water Resources

The Mill Creek Canyon WSA is located within the Mill Creek watershed basin, in the Upper Colorado River hydrologic subregion.

The major drainages in this WSA are the North Fork of Mill Creek, Rill Creek, and Burkholder Draw. All drainages generally flow in a westerly direction from their respective headwaters along Porcupine Rim to the northeast and the LaSal Mountains to the east. There are approximately 20 miles of perennial stream present within the WSA. The perennial streams all originate in the WSA. The main branch of Mill Creek flows just outside the southern end of the WSA and continues in a northwesterly direction. The North Fork of Mill Creek joins the main branch of Mill Creek 0.25 mile downstream from the WSA boundary.

Approximately 4 miles downstream from this confluence, Mill Creek flows into the Colorado River. The North Fork has the largest drainage area in the WSA, and is a perennial stream for the most part. Burkholder Draw, in the northeast section of the WSA, contains the only perennial spring in the WSA, and it flows to the confluence with Rill Creek. Rill Creek, situated in the north- central section of the WSA, is perennial below the confluence with Burkholder Draw.

A water inventory of the WSA indicated only two undeveloped springs. There are no water wells in this WSA and, therefore, no groundwater quality data are available; however, the geologic formations in Mill Creek Canyon WSA have been found elsewhere to yield fresh water to wells. The WSA is within Water Right Adjudication Area 05. The water within the area is not fully appropriated except in some localized instances. Mill Creek is fully appropriated (UDNRE, DWR, 1988). Consideration may be given to isolated springs for appropriation, but claims may not exceed 0.015 cfs. Temporary and fixed time applications may exceed this limit.

The water quality standards for Mill Creek and tributaries, from confluence with Colorado River to headwaters are as follows: Class 2B (protected for boating, water skiing, and similar uses, excluding recreational bathing [swimming]); Class 3A (protected for cold water species of game fish and other cold water aquatic life); and Class 4 (protected for agricultural uses, including irrigation of crops and stockwatering). Water quality should be acceptable for recreation, wildlife, livestock, and agricultural uses.

## Mineral and Energy Resources

The energy and mineral resource rating summary for the Mill Creek Canyon WSA is given in Table 5. Refer to Appendix 5 in Volume I for a description of the rating system.

Table 5  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f3	c2	10 to 50 million barrels of oil; less than 60 to 300 billion cubic feet of natural gas
Potash	f3	c3	1 to 10 million metric tons
Uranium/Vandium	f2	c2	None
Gold	f1	c4	Minor quantities
Copper	f2	c1	Less than 50,000 metric tons
Manganese	f2	c1	Less than 100,000 metric tons

Source: SAI, 1982; USDI, BLM, 1987a.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

The WSA could contain deposits of vanadium, manganese, and copper that are currently listed as strategic and critical materials (USDoD, 1988). Although

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copper is listed as strategic, it is relatively common and supplies currently exceed demand.

### • Leasable Minerals

There are no known deposits of any leasable minerals in the WSA. Currently, there are no active drilling, mining, or exploration activities for leasable minerals.

### • Oil and Gas

Oil and gas have been produced in the vicinity of the WSA has come from the Pennsylvanian and Mississippian pools with geologic characteristics similar to those underlying the WSA. Pennsylvanian production has come from structural traps in the Ten Mile field 28 miles to the northwest, the Long Canyon, Shafer Canyon, and Bartlett Flat fields 12-15 miles west-southwest, the Wilson Canyon and Pine Ridge fields 24-28 miles to the southeast, and the Lion Mesa field 12 miles to the southwest. The Shafer Canyon and Bartlett Flat fields have been abandoned, the Ten Mile and Lion Mesa fields are shut-in, and the remainder are currently producing. Combined cumulative production from these Pennsylvanian fields has been approximately 1.1 million barrels of oil and 1.4 billion cubic feet of natural gas. Individual fields have produced from a few thousand barrels of oil and no gas (Ten Mile, Lion Mesa, and Pine Ridge) to 890 thousand barrels of oil and 955 million cubic feet of gas at the Long Canyon field. Production from Shafer Canyon, Bartlett Flat, and Wilson Canyon has ranged from 38-74 thousand barrels of oil and 21-117 million cubic feet of gas.

Oil and gas have been produced from the Mississippian in the Salt Wash field 33 miles to the northwest, Big Flat field 15 miles west-southwest, and the Lisbon, Big Indian, and Little Valley fields 24-28 miles to the southeast. The Big Flat field has been abandoned, the remaining fields are currently producing. Combined cumulative production from these Mississippian fields has been approximately 48.7 million barrels of oil and 495 billion cubic feet of natural gas. Individual fields range from 47 million barrels of oil and 450 billion cubic feet of natural gas at Lisbon, to 1.3 million barrels of oil and 11.6 billion cubic feet of gas at Salt Wash and 92-208 thousand barrels of oil and 50 million to 19 billion cubic feet of gas at the Big Flat, Little Valley, and Pine Ridge fields.

The USGS estimates that the Paradox Basin in south-eastern Utah and western Colorado contains 1.2 billion barrels of undiscovered recoverable oil and 3.8 trillion cubic feet of undiscovered recoverable natural gas (SAI, 1982). The majority of this will be found in Mississippian and Pennsylvanian rocks, which to date have accounted for nearly 90 percent of the oil and 85 percent of the natural gas produced in southeastern Utah. The best potential for future discoveries within the WSA occurs within Mississippian strata, particularly in the eastern half of the WSA which is located in the western flank of the Castle Valley salt anticline. This location provides a structural configuration similar to that found at the Lisbon Valley field. Although the surface structure in the Paradox fold and fault belt is not necessarily indicative of Mississippian subsurface structure, general inferences can be made based on occurrence of the salt anticlines. These structures were formed in Late Permian and Early Triassic time by subsurface salt flowage to the southwest, away from the Uncompahgre Uplift. The salt occurred in the Pennsylvanian Paradox Formation. Wherever the salt encountered deep pre-Pennsylvanian fault blocks, it was forced upwards forming the surface anticlines we see today. The ancient buried fault blocks are assumed to trend in roughly the same direction as the surface anticlines (northwest-southeast). However, these buried fault blocks are generally offset to the southwest by 1 to 5 miles.

A key factor to Mississippian oil and gas potential is the development of porosity necessary to form a reservoir. Wells drilled in the vicinity of the WSA have provided encouraging results, particularly a well drilled by Union Oil approximately 1 mile north of the WSA. Tests in this well encountered good pressure with a show of gas and, more importantly, found porosity. Although non-commercial, this well combined with data from other sparsely scattered wells indicate that there is potential for additional Mississippian pools in the region surrounding Moab.

A third factor influencing the potential of this area is the abundance of source rocks found in organic rich black shales of the Paradox Formation. Studies of the Paradox Formation cones in the Gibson Dome area indicate that Paradox shales in that area have the potential to provide 4,970 barrels of oil per acre (Hite, et al., 1984). If the faulting along the eastern margins of the



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WSA has juxtapose Paradox Formation source rocks next to Mississippian reservoir rocks, then the potential exists for fields of the same magnitude of size as those found in Mississippian pools in the regional vicinity of the WSA.

The potential for Pennsylvanian discoveries is somewhat lower, primarily due to poor development of reservoir characteristics and difficulties in well completions in the Paradox Formation in this portion of the basin. The Pennsylvanian fields in the vicinity of the WSA produce from structurally controlled fracture systems within the black shales of the Paradox Formation. However, the folding and faulting which caused these fractures, combined with the interlayered salts in this zone, have to some extent over pressurized these potentially producing zones and made well completions difficult. Techniques have recently been developed to overcome the completion problems and interest in Pennsylvanian pools in the area was picking up rapidly prior to the worldwide collapse of oil prices in 1986. This factor, combined with difficult and expensive access and development into this topographically constrained WSA, indicates the search for Pennsylvanian pools in this area in the near future is doubtful.

All of the WSA is open to oil and gas leasing under the BLM category system established in 1975 (USDI, BLM, 1975a). To date, the WSA has not experienced any serious oil and gas exploration, but interest in leasing and seismic activity continues.

As a result of the foregoing geologic consideration, the WSA has a favorability rating for oil and gas resources of (f3), indicating potential for between 10 and 50 million barrels of oil and/or between 60 and 300 billion cubic-feet of gas. The certainty of occurrence is low (c2) based on oil and gas shows near the WSA and the uncertainty of geologic conditions at depth associated with Mississippian potential (SAI, 1982).

Under the current land use plan, 8,030 acres are in Category 1 (standard stipulations) and 1,750 acres are in Category 3 (no surface occupancy). The Category 3 acreage is located along the riparian associated drainage of Rill Creek and North Fork of Mill Creek. There are presently two oil and gas leases (post-FLPMA) in the WSA covering 361 acres. All 361 acres have the wilderness protection stipulations attached to them.

### • Potash

Bedded potash is found within the Paradox Formation underlying the Paradox Basin. The size and quality of these deposits put them in a category of "world class" potash deposits. Sylvite, the mineral containing the potash, is currently being mined by a solution process from a depth of approximately 2,800 feet in an area about 10 miles west of the WSA. This mine has produced roughly 3.5 million tons since 1965, and has been an economically important facet of the Moab community.

The favorability rating for potash (f3) indicates a potential for one to 10 million metric-tons of potash underlying the WSA with 750,000 to 7.5 million metric tons considered recoverable (SAI, 1982). As a result of indirect data showing a potash bearing formation underlying the WSA, and the close proximity to a producing mine, the degree of certainty that the resource exists within the WSA is moderate (c3). There are currently no potash leases within or immediately adjacent to the WSA. Under the Grand Resource Area RMP, potash leasing has been prohibited within the WSA.

The potash market is currently depressed, partly because foreign supplies are more economic to develop and are in some cases government subsidized. In addition to these poor market conditions, potash beds underlying the WSA have been adversely affected by folding and faulting characteristics of this part of the Paradox Basin, possibly resulting in thin and discontinuous beds making development difficult. These factors, combined with the projected depth of the potash bearing beds (7,000-8,000 feet) and the limited topographic access, would indicate that it is unlikely new potash development would occur within the WSA in the foreseeable future.

### • Coal

Coal has been produced from Cretaceous strata approximately 25 miles north of the WSA in the Book Cliffs coal field. This Cretaceous strata produces coal on a regional basis and no other formations are known to contain commercial quantities of coal. All Cretaceous strata have been removed by erosion from within the WSA.

## MILL CREEK CANYON WSA

Therefore, the favorability rating for coal is f1, indicating there is no potential for resource occurrence. Available data results in a high degree of certainty (c4) that coal is not found (SAI, 1982).

### • Locatable Minerals

There are no known deposits of locatable minerals in the WSA. Mining claims for both lode or bedded deposits (uranium in this area) and placer gold deposits are present in the WSA. There are a total of 104 mining claims covering approximately 2,080 acres of the WSA.

#### • Uranium and Vanadium

The Colorado Plateau section of southeastern Utah contains some of the largest and most important uranium and vanadium deposits in the United States. It is estimated that 50 percent of the nation's total uranium reserves and 36 percent of the potential uranium resources are contained in the Colorado Plateau. In terms of past production and future potential, the Colorado Plateau around Moab is nationally important for uranium and vanadium.

Principal uranium/vanadium bearing strata in the region are the Jurassic age Morrison Formation, the Triassic Chinle Formation, and the Permian Cutler Formation. The Morrison Formation has been removed by erosion from the WSA. The Chinle and Cutler are present at a depth of zero to 1,500 feet. Data from surrounding outcrops and mines indicate that the WSA is in the vicinity of an ancient Chinle stream channel system known to contain uranium/vanadium deposits to the south of the WSA (USDI, USBM, 1988a).

The structural and stratigraphic setting of the WSA exhibits some geologic similarity to the Lisbon Valley/Big Indian uranium mining district to the south. The Big Indian belt of the Lisbon Valley area is one of the two most important uranium/vanadium producing areas in the nation, having produced over one 10-year period in 1956-65, almost 46 million pounds of uranium and 18 million pounds of vanadium. The host rock in the Big Indian belt is the base of the Chinle and the upper part of the Cutler Formation, both present at depth in the WSA.

In the Draft EIS, the WSA was assigned a favorability rating for uranium/vanadium of f3, indicat-

ing that it could contain between 500 to 1,000 metric-tons of uranium and/or vanadium (SAI, 1982). This was based on production from geologically similar areas to the south and west, and the proximity to a large Chinle stream channel system south of the WSA. After analysis of additional data, BLM decided to reduce the favorability rating from an (f3) to an (f2). The stream channel system in the Chinle, referred to by SAI, does not trend into the WSA, but rather is found in a northwest trend 5-8 miles west of the WSA. Combined with the fact the nearest production from this channel system is in the lower Cane Creek area 10-12 miles south of the WSA, and production from this mine has only recovered roughly 11 tons of uranium and 5 tons of vanadium, the favorability for large deposits within the WSA is low. The certainty of occurrence is still low (c2). The inferred stream channel orientation is based on outcrop analysis from scattered locations; therefore, there is a possibility that the channel could have been further to the east and north. However, the lack of drill hole and outcrop data within the WSA and the distance from known production, still results in a low level of certainty that uranium/vanadium resources underlie the WSA.

#### • Gold

The eastern edge of the WSA sits adjacent to an area called Wilson Mesa. Geologic literature has long reflected on the presence of placer gold on Wilson Mesa, derived from glacial outwash from the La Sal Mountains. Small mining operations on the mesa have intermittently recovered minor quantities of gold from these deposits. Since Negro Bill Canyon drains the La Sal Mountains and Wilson Mesa, it is projected that the gravels in the canyon contain minor quantities of gold. Past mining operations in streams draining Wilson Mesa south of the WSA have failed to recover commercial quantities of gold.

Although SAI did not evaluate the WSA for gold, existing data and experience indicate that only minor quantities of a noncommercial nature occur within the WSA. Therefore, it would have a low favorability with a high degree of certainty.

#### • Copper and Manganese

The Colorado Plateau in eastern Utah has produced only small amounts of copper. The copper

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has been recovered principally as a by-product of uranium mining operations. Copper production from the region surrounding Moab has come from four areas: (1) near the town of Moab in lower Cane Creek, (2) the Big Indian/Lisbon Valley mining district, (3) the White Canyon area 40 miles to the southwest, and (4) the Monument Valley area 70 to 80 miles southwest. The deposits are confined principally to the Chinle Formation of Triassic age, particularly the Shinarump Member. Cumulative copper output from each of the four areas combined has been less than 50,000 metric-tons.

The WSA has a favorability rating of (f2) for copper, indicating a potential for small deposits, probably for less than 50,000 metric-tons, on the basis of the widespread occurrence of copper throughout the Colorado Plateau (SAI, 1982). The certainty of occurrence is rated very low (c1) because of the lack of direct or indirect data suggesting its presence.

The chief host rocks for manganese in this region, the Morrison and Summerville formations, have been eroded from the WSA. The less favorable Chinle Formation occurs at depth in the WSA. On this basis, the WSA has a favorability rating of (f2), indicating potential reserves of less than 100,000 metric-tons of manganese. The certainty of occurrence is rated very low (c1) because of the lack of direct or indirect data suggesting its presence (SAI, 1982).

### • Salable Minerals

Salable minerals in the form of sand and gravel deposits are known to exist in the WSA in the canyon bottom. There are also minor quantities of building stone in the upper reaches of the canyon in the Kayenta Formation. The overall quantity and quality of these resources is low. In addition, access and transportation costs to recover these resources would be prohibitive in light of the abundance of these deposits in surrounding more easily accessible areas. Therefore, their importance and potential value is very low.

### Wildlife Including Special Status Species

Mill Creek Canyon provides habitat for a variety of wildlife species. Mule deer, elk, coyotes, bobcats, desert cottontail rabbits, chukar partridge, and a variety of reptiles, amphibians, and rodents may be found in the WSA. Several species of raptors and song

birds also inhabit the area. Cougar and black bear may occasionally visit the area.

Wildlife habitat types in the WSA include 628 acres of riparian vegetation along a perennial stream with several forks or tributaries, sandstone walls and fins, and an upland pinyon-juniper woodland/sagebrush vegetation community.

The most common big game species is mule deer, which is found in small numbers. Mule deer winter range is provided in the pinyon-juniper woodland/sagebrush vegetation community for approximately 77 deer (77 AUMs) each year. About five mule deer (12 AUMs) inhabit the perennial stream and riparian habitat areas yearlong. About 5,580 acres of crucial deer winter habitat are located in the WSA. The WSA is entirely within the UDWR Deer Herd Management Unit 30A. Approximately two elk (10 AUMs) winter in the pinyon-juniper sagebrush habitat type.

Upland game species include mourning dove, desert cottontail rabbit, and chukar partridge. Mourning dove are common during the summer months and their nests are located throughout the WSA. Cottontail and chukar are common yearlong residents.

There are several species of snakes, lizards, and amphibians in the WSA. The most common are horned lizards, Great Basin sagebrush lizard, Northern Plateau lizard, Northern tree lizard, sideblotched lizard, whiptail lizard, collared lizard, gopher snake, striped whipsnake, and midget faded rattlesnake. Most of these can be found throughout the WSA. Red-spotted toads and western spadefoot toads are common in the stream and riparian habitat types.

Fish species in Mill Creek are fathead minnows, red shiners, mottled sculpin, roundtail chub, and green sunfish. The stream habitat is composed of a series of pools, ripples, and cascades. Many of the pools are more than 2 feet and provide excellent resident fishery habitat. Macroinvertebrate samples in Mill Creek indicate a good range of species diversity and a high standing crop numbers. Primary species present are tolerant to sedimentation. Tadpole shrimp and fairy shrimp are present in slow-moving or standing water and in numerous pot holes in solid sandstone. The WSA contains approximately 5.5 miles of fish habitat.

The most common birds in the WSA are canyon wrens, rock wrens, redtailed hawks, golden eagles, great horned owls, kestrels, prairie falcons, ravens, pinyon jays, flickers, and rock doves. These species

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are common year-round. Summer visitors are robins, broadtailed hummingbirds, yellow rumped warbler, yellow warblers, killdeer, violet-green swallows, kingbirds, flycatchers, and many others. Summer species diversity of songbirds is high near the perennial stream in the riparian habitat where some nests may be found.

Cliffs, fins, ledges, crevices, and holes in the cliff faces also provide perches and nesting habitat for hawks, eagles, owls, falcons, and various other small nesting birds. Small mammals and bats also depend on these cliffs, ledges, and crevices for cover and nest sites.

The American peregrine falcon and the bald eagle are the only threatened or endangered species that may occasionally visit the area. There are no known falcon eyries or eagle nests in the area. The golden eagle is a BLM sensitive species known to inhabit the WSA. The WSA is also potential habitat for the black-footed ferret, an endangered species. Other sensitive species that could occur in the WSA are five FWS Category 2 candidate species. These are the Great Basin Silverspot butterfly, ferruginous hawk, western yellow-billed cuckoo, long-billed curlew, and southern spotted owl. Refer to Appendix 4 Volume I for details.

There are no existing or proposed wildlife habitat improvements or wildlife transplants proposed for the WSA.

## Forest Resources

The WSA does not possess commercial forest resources. The noncommercial pinyon-juniper woodland provides a potential source of firewood to neighboring residents; however, there is no commercial firewood cutting. Noncommercial woodland harvest is minimal and is expected to remain so for the foreseeable future.

## Livestock and Wild Horses/Burros

The Mill Creek WSA contains portions of three allotments. One of these (Bald Mesa) is administered by the Forest Service because of its proximity to the Manti-LaSal National Forest. Due to steep topography and a lack of forage, there are no AUMs in the lower portion of the Bald Mesa allotment which is located in the WSA. Table 6 gives livestock grazing use data for the WSA.

It is estimated that 80 AUMs are within the WSA for Between the Creeks allotment and 500 AUMs for the South Sand Flats allotment. The only range development of record is a short fence near the North Fork of Mill Creek. No vegetation manipulation is planned in the WSA. There are no developed water sources, but two spring developments are proposed. No wild horses or burros are found in the WSA.

Predator control was not conducted during the 1986-1987 period in the grazing allotments that comprise the Mill Creek Canyon WSA (USDA, APHIS, 1988).

Table 6  
Livestock Grazing Use Data

Allotments	Total Acres	Acres in ISA <sup>a</sup>	Total AUMs	Number of AUMs in ISA	Number and Kind of Livestock	Season of Use	Number of Permittees
South Sand Flats	9,880	7,435	595	500	108 Cattle	11/01-04/30	3
Between the Creeks	4,110	1,990	221	80	36 Cattle	10/27-04/30	1
Bald Mesa	NA <sup>a</sup>	355	-	-	-	NA	1
<b>Totals</b>	<b>13,990</b>	<b>9,780</b>	<b>726</b>	<b>580</b>			<b>5</b>

Sources: USDI, BLM File Data.

<sup>a</sup> Administered by USFS. No AUMs allotted on the BLM portion of the allotment.

# MILL CREEK CANYON WSA

## Visual Resources

The WSA is located in an area which was inventoried and evaluated with the BLM's VRM system in 1980. This work, as well as data obtained during the BLM Intensive Wilderness Inventory (USDI, BLM, 1980), serves as a reference for this report.

The WSA is 80 percent Class B and 20 percent Class C scenery, with high and low sensitivity levels and foreground/middleground distance zones.

The major landscape feature of the WSA is the diversity of landforms. Topography varies from narrow, sheer-walled canyon drainages with perennial streams to flat to gently rolling toplands. Massive sandstone outcrops are found throughout the WSA in the form of fins, ridges, domes, spires, and balanced or capped rocks. The predominant landform colors are dark reds, pinks, and grays. Textures vary from smooth to coarse.

Vegetation consists primarily of open stands of pinyon-juniper trees with desert shrubs. Riparian vegetation (willow, cottonwood, tamarisk) can be found along canyon drainages.

The WSA has 7,820 acres of VRM Class III and 1,960 acres of VRM Class IV. Appendix 7 in Volume I explains the BLM's VRM rating system.

## Cultural Resources

Historic and prehistoric remains represent a substantial part of the recreation values of the Mill Creek Canyon WSA. Although no completed inventory exists, at least 25 prehistoric sites are documented and a high probability exists for finding additional sites in the WSA. These include rockshelters, lithic manufacturing, and campsite locations of uncertain date, although several are either Archaic or Basketmaker II sites. Cultures represented in the region include the Paleo-Indian, Desert Archaic, Fremont, and possibly Anasazi, Ute, and historic European.

European influence in the region dates from the Dominique-Escalante Expedition of 1776 followed by Mexican traders on the Old Spanish Trail and French fur trappers in the 1810 through 1840 era. American explorers crossed the region just north and southwest of the WSA in the 1850s, and ranching spread to the WSA by the 1890s. Use of the WSA was made mostly from a ranch based in Moab and Castle Valley.

No known or nominated National Register sites occur in the WSA, although several have potential.

## Recreation

There are no documented use statistics for the Mill Creek Canyon WSA; however, the area is considered a popular local recreation spot. Present use levels are increasing. North Fork Mill Creek, a colorful sandstone canyon with a perennial stream, is the principal scenic attraction, providing hiking, backpacking, and backcountry camping opportunities. Recreation opportunities within the Mill Creek Canyon WSA are found in the canyon drainages, Between the Creeks, and Wilson Mesa area. Hikers frequent North Fork of Mill Creek because of the perennial stream and scenic red rock formations. Recreational hiking and swimming amount to about 1,434 visitor days per year.

Local recreation use of swimming holes is generally confined to the mouth of the canyon and in the North Fork a short distance above the confluence of the North Fork and Main branch of Mill Creek.

Old seismograph lines in and around the perimeter of the WSA and in the Between the Creeks area provide access for four-wheel drive vehicles. The current visitor use vehicular access is estimated to be 478 visitor days per year.

An access road to the WSA loops through private land at Hidden Valley Ranch near the Moab Golf Course and around to Flat Pass near Ken's Lake. Access is restricted at the private land by a gate which is occasionally locked. A bypass road has been constructed into Mill Creek. This is not in the WSA, but is visible from areas in the WSA. Vehicle use does not appear to be heavy on these trails. The route is used as an annual Jeep Safari route (known as Steel Bender). Forty-one vehicles made the trip in the 1983 safari. About 4 miles of ways are found in the WSA. The entire 9,780 acres have been identified in the Grand RMP for designation as an ORV limited use area, with use limited to designated roads and trails.

## Land Use Plans

No rights-of-way, private land, or non-Federal subsurface rights exist in the WSA. There are no State in-holdings within the WSA. Five State sections border the WSA on the north and east.

The WSA is managed according to the provisions in the BLM Grand RMP (USDI, BLM, 1983). The Grand

# MILL CREEK CANYON WSA

RMP has been reviewed by the Governor of Utah and found to be consistent with State plans. The RMP does not address potential wilderness designation for the WSA. Wilderness designation is part of the BLM multiple-use concept and the BLM land use plan is linked to the Statewide Wilderness EIS through analysis of the present plan as the No Action/No Wilderness Alternative.

The WSA is entirely within southern Grand County. The current Grand County Master Plan (University of Utah, BCD, 1979) does not favor wilderness but does recognize the value of "areas of critical environmental concern," specifically mentioned in the plan. This area is specifically mentioned as an area of critical environmental concern needing further studies for wilderness and resource values.

The Grand County Commission generally opposes wilderness designation in Grand County. The commission has also endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah.

## Socioeconomics

### • Demographics

The WSA is located in southern Grand County, with the western boundary only 0.5 mile from the community of Moab, which is the main gateway to the WSA. Grand County can be characterized as rural and sparsely populated. From 1970 to 1980, the population of Grand County grew from 6,688 to 8,250, an overall increase of about 23 percent. Grand County contains less than 1 percent of the State population of about 1.5 million (Utah Office of Planning and Budget, 1984).

Table 7 presents the baseline and projected population data for Grand County. It is estimated that between 1980 and 1987, the population decreased to about 7,250. Population projections indicate that the number of people living in Grand County in the year 2010 will be about 8,700 for about a 5-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

The majority of the county is unpopulated, with 97 percent of the settlement concentrated in or near Moab and about 65 percent of the county's population living in Moab.

Table 7  
Baseline and Projected Population and Employment Growth  
San Juan County

	1980	1990	2000	2010
Population	250	7,000	2,000	8,700
Employment	3,702	2,900	3,000	3,900

Source: Utah Office of Planning and Budget, 1987.

### • Employment

Table 7 shows the baseline and projected total employment for Grand County to the year 2010.

Grand County is part of the Southeast MCD. Table 8 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980 the leading employment sectors for the Southeast MCD were mining (28 percent), government (18 percent), trade (5 percent), and services (8 percent).

Table 8  
Southeast Multi-County District  
Employment\*

	1980	1990	2000	2010
Agriculture	1,203	1,100	1,100	1,100
Mining	6,368	3,500	4,500	5,700
Construction	1,360	700	900	1,100
Manufacturing	551	600	700	800
Transportation, Utilities	1,563	1,800	2,000	2,200
Trade	3,289	3,600	4,000	4,800
Finance, Insurance, Real Estate	424	400	400	500
Services	2,067	3,200	4,000	5,300
Government	3,994	4,100	3,800	4,400
Nonfarm Proprietors	<u>1,715</u>	<u>2,000</u>	<u>2,200</u>	<u>2,800</u>
Totals	22,534	21,000	23,600	28,700

Source: Utah Office of Planning and Budget, 1987.

\*includes Carbon, Emery, Grand, and San Juan Counties.

It is projected that by the year 2010, employment in the MCD will increase by 27 percent and that services will increase to 18 percent and trade to 17 percent of the total, while government will decline to 15 percent and mining to 20 percent of the total MCD employment. Agriculture currently represents about 5 percent of all employment and is projected to be about 4 percent in the 2010 (Utah Office of Planning and Budget, 1987).

### • Sales and Revenues

Economic-related activities in the WSA include livestock production, mineral exploration, and recreation. Table 9 summarizes local sales and Federal

# MILL CREEK CANYON WSA

revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Table 9  
Local Sales and Federal Revenues

Source	Annual Local Sales <sup>a</sup>	Annual Federal Revenues
Mining Claim Assessment	\$10,400	\$ 0
Oil and Gas Leases	\$ 0	\$ 722
Livestock Grazing	\$11,600	\$ 893
Recreational Use	\$ 7,840	\$ 0
Total	\$29,840	\$1,615

Sources: USDI, BLM File Data; Volume I, Appendix 9.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

The WSA has 104 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements. No oil and gas or mineral production has occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Five livestock operators have a total grazing privilege of 580 AUMs within the WSA. If all this forage were utilized, it would account for \$11,600 of livestock sales and \$2,900 of ranchers' returns to labor and investment.

The WSA's motorized and nonmotorized recreational and related local expenditures are moderate. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that the State-wide average local expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Mill Creek Canyon WSA is estimated as about 1,912 visitor days per year. This use would bring in approximately \$7,840 to the local economy.

The WSA generates Federal revenues from mineral leases and livestock grazing fees (refer to Table 10).

Oil and gas leases in the WSA cover approximately 361 acres. At \$2 per acre, lease rental fees generate up to \$722 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development

and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 580 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$893 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland improvements.

## ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. The analysis is based on the BLM management actions and anticipated activities presented in the Introduction to Volume V and the Description of the Alternatives for the Mill Creek Canyon WSA.

### No Action/No Wilderness Alternative

#### • Impacts on Wilderness Values

Because the WSA would not be designated wilderness, the identified wilderness values would not receive the degree of protection afforded by application of the BLM Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities (i.e., management under oil and gas leasing Category 3 (no surface occupancy) on 1,750 acres, and ORV limitations on all 9,780 acres).

In the foreseeable future, disturbance of approximately 41 acres from oil and gas exploration and from two spring developments would result in a direct loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas. Special features, including archaeological values, endangered and other special status species, scenic and geological features, wildlife associated with wilderness, and the perennial streams, would not be significantly affected because the direct disturbance would involve only 0.4 percent of the WSA. In addition, appropriate measures would be taken to protect endangered and sensitive species and cultural values prior to any surface-disturbing activity. Proposed spring developments would benefit wildlife special features associated with wilderness because of increased water sources.

## MILL CREEK CANYON WSA

During the period of activity, the visual and audible disturbance from mineral exploration and spring development would reduce the quality of opportunities for solitude and primitive recreation not only on directly disturbed areas but also indirectly on adjacent portions of the WSA. As much as 15 percent (1,467 acres) of the WSA could be affected in the foreseeable future.

Because future vehicular use would be limited by terrain and management to existing vehicular ways, no additional disturbance from ORV activity is anticipated in the future. The use of existing ways and future mineral-exploration roads would occasionally detract from opportunities for solitude and primitive recreation.

Without some management control, the increased visitor use (both primitive and vehicular) that would occur over time would be expected to reduce the quality of wilderness values. This is because the WSA is not large enough to incorporate the additional use without some control to prevent loss of quality of the primitive recreation experience.

The extent that disturbance would occur over the long term, and, therefore the long-term loss of wilderness values that would occur is not accurately known. Loss would occur, however, as intrusions increase.

Conclusion: Wilderness values would not be protected by wilderness designation and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 41 acres, and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to 1,467 acres. Special features would not be significantly affected.

### • Impacts on Mineral and Energy Exploration and Production

#### • Leasable Minerals

Oil and gas categories in the WSA would remain the same (8,030 acres open and 1,750 acres open with no surface occupancy). The wilderness stipulations on post- FLPMA leases would be lifted. Some 9,419 acres would be available for lease.

Oil and gas resources could be explored and developed without concern for wilderness values. However, the major drainages, and their riparian-

associated vegetation, would be protected by the no surface occupancy stipulation. Favorability for the occurrence of oil and gas in Mississippian Formations is moderate for the WSA; however, drilling activities surrounding the WSA have not resulted in any oil and gas discoveries. Therefore, oil and gas exploration would occur but the likelihood of production is low.

The entire WSA would remain open to potash leasing. The potash-bearing zones under the WSA are estimated to be well below 7,000 feet. The likelihood of the WSA being explored or developed for potash at these depths in the Paradox Basin is remote considering that more favorable areas exist elsewhere in the basin. Consequently, no potash exploration/development is anticipated.

#### • Locatable Minerals

Locatable mineral development could occur within the WSA. The entire 9,780 acres would remain open to mining claim location. Deposits of locatable minerals are determined to be small and have a low to very low certainty of occurrence. However, due to the erosion and/or depth of favorable host rocks, the unfavorable stream channel orientation, the long distance from known production, and the lack of drill hole and outcrop data, it is believed that the exploration or development of locatable minerals would not occur in the foreseeable future. Consequently, no surface disturbance is anticipated for locatable minerals within the WSA.

Conclusion: Oil and gas or other mineral exploration would not be affected by the No Action/No Wilderness Alternative.

### • Impacts on Recreation

ORV use would be limited to designated roads and trails in the entire WSA. ORV visitor use in the WSA is estimated at 478 visitor days per year.

Primitive recreation values would be foregone, at least temporarily, in those areas where potential mineral and energy surface-disturbing activities would take place (41 acres), and would be reduced in quality in surrounding areas.

The future increase in recreational use of the WSA is unknown. However, based on a review of several projections (UDNRE, ORA, 1980; UDNRE, DPR, 1985;



## MILL CREEK CANYON WSA

Utah Office of Planning and Budget, 1984; Jungst, 1978; Cordell and Hendee, 1982; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 to 7 percent per year to the year 2020. At this rate, overall recreational use is expected to increase from 1,912 current visitor days per year to between 3,600 to 16,700 visitor days per year at the end of 30 years. Because of this projected increase in visitor use, it may be necessary to restrict and/or stipulate certain uses to prevent destruction of the inherent recreational values. Assuming that the 2 to 7 percent increase would be uniform among all recreation uses in the WSA, primitive recreational use would increase from the estimated current use of 1,434 visitor days per year to between 2,700 and 12,500 visitor days per year over the next 30 years. Likewise, recreational activities utilizing vehicular access (mountain bike riding, hunting, sightseeing, etc.) would increase from 478 visitor days per year to between 900 and 4,200 visitor days.

Eventually, primitive recreational use could decline as vehicular use on ways and future roads increases.

**Conclusion:** With this alternative it is projected that both primitive and vehicular recreation use would continue to increase in the WSA. The quality of the primitive recreation opportunity would be reduced on 41 acres that would be directly disturbed and in surrounding areas. The quality of primitive recreation use may also be reduced by vehicular-related use in the future.

### • Impacts on Local Economic Conditions

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. The probability of economic development of minerals within the WSA is low (refer to the Mineral and Energy Resources section for a description of mineral and development potentials) and minerals likely would not contribute significantly to the local economy.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures, could increase at a rate of 2 to 7 percent per year over the next 30 years. At this rate, recreational use in the area would increase over the next 30 years from the current 1,912 annual visitor days to between 3,600 to 16,700 visitor days per year. Overall recreation-related expenditures average

\$4.10 per visitor day, recreation-related expenditures attributable to the WSA could increase to between \$14,750 and \$68,500 annually. This increase would be distributed among those local businesses that cater to the recreation-oriented trade.

Federal and State revenues would not be reduced by this alternative. There are 9,419 acres in the WSA open to oil and gas leases that are currently not leased. If leased, they would bring up to \$18,838 additional Federal lease fee revenues in addition to new royalties from lease production. Half of these monies would be allocated to the State, a portion of which could reach the local economy.

**Conclusion:** The economics of the local recreation-related businesses would be beneficially affected by the projected increase in recreational use and related local expenditures. Also, additional mineral leasing revenues could be expected with this alternative. Although these increased expenditures and revenues may not significantly affect the economy of Grand County, they would appreciably increase the income of several local businesses.

### All Wilderness Alternative (Proposed Action) (9,780 Acres)

#### • Impacts on Wilderness Values

Designation and management of all 9,780 acres as wilderness would preserve the wilderness values in the Mill Creek WSA. The potential for surface-disturbing activities would be reduced through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness would be protected on all 9,780 acres. Opportunities for solitude and primitive recreation would be protected on approximately 2,800 acres that meet and 6,980 acres that do not meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA, including the perennial streams, endangered and sensitive species, scenic and geological features, archaeological values, and wildlife associated with wilderness, would also be protected.

In the foreseeable future, disturbance of about 1 acre is anticipated from two spring developments. Spring developments would benefit wildlife special features associated with wilderness because of increased water sources that would result. The spring developments would be designed to meet wilderness

## MILL CREEK CANYON WSA

management criteria and upon completion would not be substantially noticeable in the area as a whole.

Vehicular use of existing ways would cease with ORV closure, improving the quality of opportunities for solitude and primitive recreation and naturalness.

Over the long term, there would be no potential for loss of wilderness values due to development of new leases and mining claims. The potential for long-term development of existing mining claims is not accurately known but would be less with this alternative than with No Action/No Wilderness due to application of mitigation that would protect wilderness values subject to valid existing rights.

Increased visitor use that would occur with time would be primitive in nature and would be managed so as to not result in loss of wilderness values. Visitor limitations may be necessary as part of the wilderness management plan.

Conclusion: Wilderness designation would preserve wilderness values where found throughout the WSA.

### • Impacts on Mineral and Energy Exploration and Production

#### • Leasable Minerals

Exploration for of up to 15 million barrels of recoverable oil or 90 billion cubic feet of recoverable natural gas would be foregone under this alternative.

Approximately 361 acres (post-FLPMA) are under oil and gas leases. No exploration or development of oil and gas is presently occurring within the WSA. Existing post-FLPMA leases could be explored and developed subject to the wilderness stipulations issued at the time of leasing. It is unlikely that these existing leases will be explored and developed or a showing of commercial quantities made prior to their 1988 expiration dates. Expired leases will not be reissued. Therefore, the opportunity for oil and gas exploration would be foregone. Because development is not projected in the foreseeable future without wilderness designation, loss of development potential would not be significant.

The area could not be leased for potash. However, the potash-bearing zones under the WSA are estimated to be well below 7,000 feet. The likelihood

of the area being explored or developed is remote due to more favorable areas elsewhere.

#### • Locatable Minerals

Approximately 2,080 acres are under mining claim within the WSA, principally for uranium. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. After wilderness designation, the WSA would be closed to location of mining claims.

However, because of the reasons cited in the No Action/No Wilderness Alternative it is unlikely that exploration or development would occur, even without wilderness designation. Therefore, this alternative would not result in a significant loss of recoverable uranium and associated mineral resources.

Conclusion: The opportunity for leasable and locatable minerals exploration would be foregone. The loss of development potential would not be significant.

### • Impacts on Recreation

The entire 9,780-acre WSA would be closed to recreational ORV use. This closure would also apply to the 4 miles of ways within the WSA. As discussed for the No Action/No Wilderness Alternative, primitive-type recreational use of the WSA is estimated to increase about 2 to 7 percent per year over the next 30 years in relation to population increases and current trends of recreational use. Primitive use could thus increase from the current estimated use of 1,434 visitor days per year to be between 2,700 and 12,500 visitor days per year. Publicity of the WSA that would likely follow wilderness designation could lead to the realization of the higher rate. However, management provided through a Wilderness Management Plan would control destructive increases in future recreation use, and the quality of the primitive recreation experience probably would not be negatively affected by the increased use. The vehicular activity in the WSA that could occur without designation would be eliminated. Because there are other suitable areas in the vicinity of the WSA, ORV use would probably not experience an overall decline in the vicinity of the WSA. Commercial outfitting could benefit from the publicity from wilderness designation.

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Conclusion: Primitive recreational opportunities would be preserved. Vehicular activity would be eliminated with this alternative. This would not be significant, however, due to other suitable areas nearby. Primitive recreation use would increase and would require management guidance to prevent destruction of the inherent recreational values.

- Impacts on Local Economic Conditions

The impacts on socioeconomics would be similar to the No Action/No Wilderness Alternative. There could, however, be a slight decrease initially in the amount of recreational income to the local area due to the loss of ORV opportunities. This loss may be negated with an increase in the primitive recreational use. The potential Federal revenues for oil and gas leasing on 9,419 acres (\$18,838) would be lost. Also, the monies expended on any exploration mineral resources would not occur.

Conclusion: Future economic conditions in Grand County would be about the same as the No Action/No Wilderness Alternative. Federal revenues would decrease due to the loss of leasing rental fees and the opportunity for future oil and gas exploration.

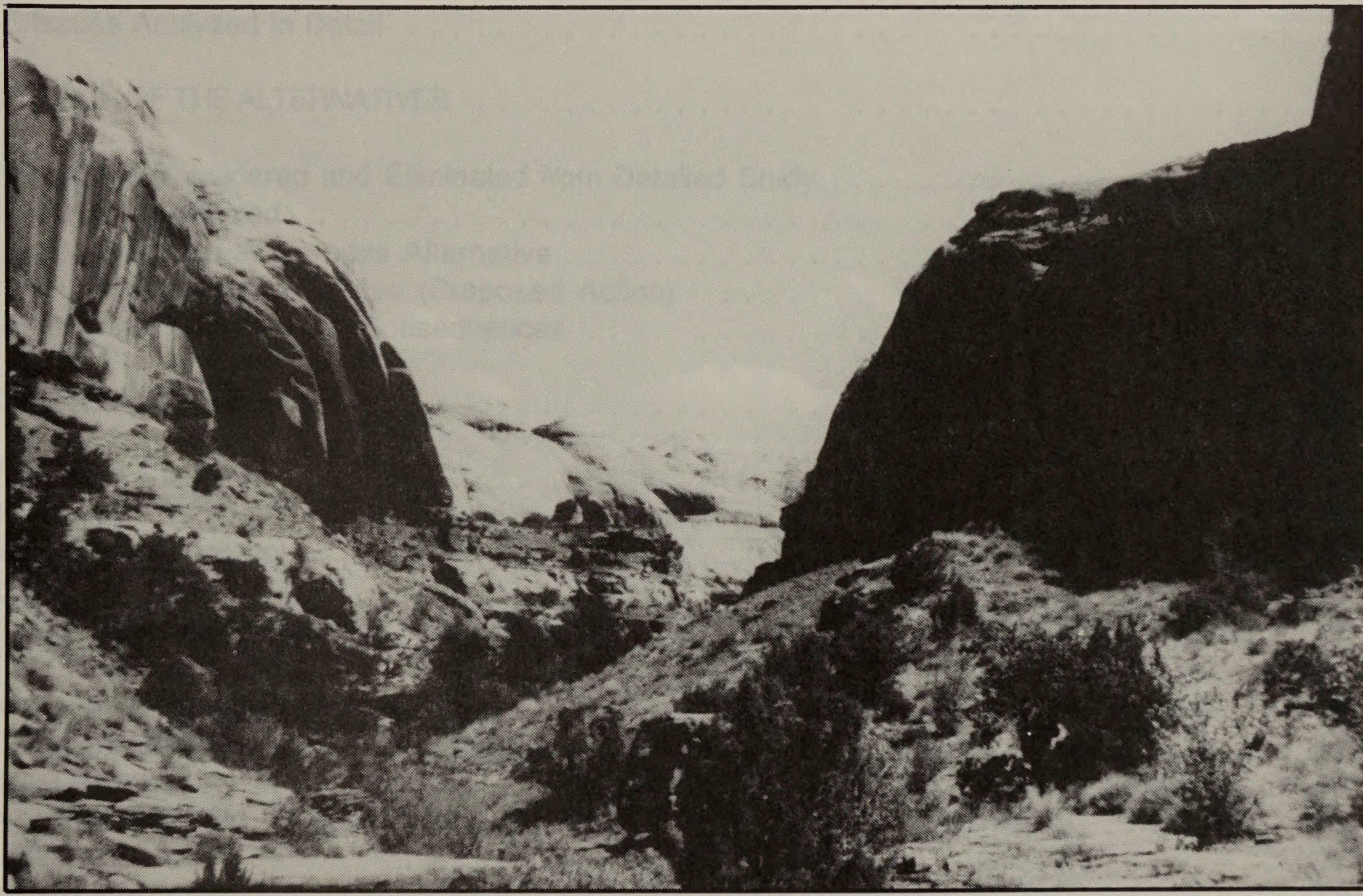


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# NEGRO BILL CANYON WSA

(UT-060-138)

## INTRODUCTION

### General Description of the Area

The Negro Bill Canyon WSA is located in Grand County immediately northeast of Moab, Utah. The WSA extends between Moab and Castle Valley. It is about 8 miles east to west, 0.5 to 2.5 miles north to south, and contains approximately 7,620 acres of BLM-administered land. No State or private land is in-held within the WSA; however, several State in-holdings border the unit on the north and south.

The WSA is bordered on the northwest by State Highway 128, on the north by State land and a traveled route, on the east by the Porcupine Rim, and on the south and west by the canyon rim, State land, and travel routes. The WSA is characterized by Negro Bill Canyon, which cuts into the Navajo Sandstone. A perennial stream with associated riparian vegetation and wildlife occupies the lower portion of the canyon. The balance of the unit is made up of undulating to flat topography covered with a variety of vegetation ranging from pinyon-juniper woodland to low shrubs. The western portion is comprised of a series of sandstone fins.

The WSA has a semiarid climate characterized by very hot summers and moderately cold winters. Annual temperatures range from 120 degrees Fahrenheit (F) to 10 degrees F. Average annual precipitation ranges from approximately 8 to 10 inches; half of that falls during the growing season. Most precipitation occurs as late summer thunderstorms. Average annual snowfall is between 10 and 20 inches.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume V, the following changes specific to the WSA have been made since publication of the Draft EIS.

1. The BLM Proposed Action in the Draft EIS was the No Action/No Wilderness Alternative. The BLM Proposed Action for the Final EIS is the All Wilderness Alternative (7,620 acres). Refer to Appendix 11 in Volume I for the rationale for the Proposed Action.

2. The anticipated surface disturbance presented in the Draft EIS (815 acres) was based on the assumption that all mineral and other resources potentially

within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities projected to be feasible within the foreseeable future. (see Appendix 6 in Volume I). This resulted in a reduction of surface disturbance estimates from the 815 acres reported in the Draft EIS to 40 acres of surface disturbance for the Final EIS.

### Specific Issues Identified Through Scoping and Public Comment

#### • Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume V (i.e., impacts on air quality, geology and topography, water rights, and land use plans and policies), the following issues or impacts specific to the Negro Bill Canyon WSA were discussed in the Draft EIS but are not analyzed in detail in the Final EIS for the reasons described below.

1. Soils: The public is concerned that without wilderness designation future activities in the WSA would result in soil disturbance, increases in soil erosion and loss of soil fertility. Because the disturbance estimate for the WSA has been reduced from 815 to 40 acres in the Final EIS, only 0.5 percent of the WSA would be disturbed and reclamation would be required. All but the lower 0.5 mile of road in Negro Bill Canyon would be closed to ORV use; about 1,325 acres in Negro Bill Canyon would be withdrawn from mineral entry; and 1,890 acres would be closed to oil and gas leasing or closed to surface occupancy. Therefore, impacts on soils are not significant issues for the Negro Bill Canyon WSA.

2. Water Resources: The public is concerned that wilderness designation would interfere with development of water. Future developments could also increase

STATEWIDE  
POCKET MAP  
WSA  
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sediment yield and affect water quality. There are 6 miles of perennial streams and seven springs in the WSA. The stream originates from springs within or near the WSA and there are no potential upstream uses for the water. Water within the WSA is used for livestock, wildlife and recreation. These uses would be compatible with wilderness management and springs could be developed consistent with wilderness management criteria. Only 40 acres of potential surface disturbance are projected (0.5 percent of the WSA) and required mitigation would reduce soil erosion. Therefore, impacts of on water uses and quality are not significant issues for the Negro Bill Canyon WSA.

3. Forest Resources: The only forest resources in the WSA are 3,353 acres of scattered pinyon pine and juniper trees. Demand is low as there are more favorable harvest areas nearby. For these reasons, impacts on forest resources are not significant issues for analysis in the Final EIS.

4. Livestock Management: The public is concerned that wilderness designation would interfere with livestock management by placing restrictions on access for maintenance of existing range improvements, moving of livestock, and by preventing future range improvements and placing restrictions on predator control. However, under the Wilderness Management Policy (BLM Manual 8560), there shall be no curtailments in grazing simply because an area is wilderness. Grazing reductions have already been imposed as a result of a grazing EIS.

There are no proposed rangeland developments which would be precluded by wilderness designation. One and one-half miles of way and some seismograph lines would be closed should the area be designated wilderness. However, since motorized vehicles are used very little in livestock management, little effect on management of livestock grazing is expected. Several methods of predator control would be allowed in designated wilderness and predators have not been controlled for several years on the allotments that comprise the WSA. For these reasons, impacts on livestock management are not significant issues for the Negro Bill Canyon WSA.

5. Visual Resources: As discussed above, only 40 acres of surface disturbance are projected for the WSA in the Final EIS. Therefore, visual resources would not be significantly affected. Visual resources are not addressed in the Final EIS as a separate topic,

but are addressed in relation to naturalness in the Wilderness Values sections.

6. Cultural Resources: As discussed in the Draft EIS, cultural resources could be destroyed by surface-disturbing activities. However, there are only three recorded sites in the Negro Bill Canyon WSA (none of National Register quality), and surface disturbance estimates for the No Action/No Wilderness Alternative has been reduced from 815 acres to 40 acres for the Final EIS. One mile of the road in Negro Bill Canyon would be closed and dispersed ORV use would occur on the flat areas about the canyon, but this is not an area of projected concentration of cultural resources. Additionally, inventories for the purpose of site recordation and mitigation of impacts would take place prior to any surface disturbance associated with oil and gas exploration. Given these conditions, impacts on cultural resources are not significant issues for the Negro Bill Canyon WSA.

7. Economic Conditions: Some, including State and local governments, are concerned that wilderness designation would preclude mineral or other economic developments and adversely affect local economic conditions. Others believe that primitive recreation use would increase following wilderness designation and would contribute to the local economy.

There are no existing or anticipated mineral developments or proposals for lands or realty activities which would be impaired with or without wilderness designation. Projected oil and gas exploration would provide only temporary jobs (3 to 6 months). Because no economic developments are expected and because recreational use would increase at a rate of 2 to 7 percent with or without wilderness designation, impacts on economic conditions are not significant issues for the Negro Bill Canyon WSA.

### • Issues Analyzed in Detail

The significant issues for the Negro Bill Canyon WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on vegetation including special status species.
3. Impacts on oil and gas exploration.

# NEGRO BILL CANYON WSA

4. Impacts on wildlife habitat and populations including special status species.

5. Impacts on recreational use of the WSA.

Comments made during the public comment period for the Draft EIS centered mainly on the need for, and adequacy of, the rationale for the BLM Proposed Action; the need for further inventories of resource values; and BLM's assessments of wilderness values (particularly solitude) and mineral values.

See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 57, for responses to specific comments about the Negro Bill Canyon WSA.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated from Detailed Study

An alternative that would add about 1,335 acres of State and 5,570 acres of BLM lands along the southern and northern borders of the WSA was suggested by the public during the public comment period for the Draft EIS. The proposal would also delete about 1,025 acres of BLM land near the upper end of Jackass Canyon for a net addition of about 5,880 acres. This alternative is not analyzed because the inclusion of State lands is not consistent with BLM's wilderness review guidelines (refer to Volume VII-B, General Comment Response 6.4) and because other public lands were dropped from study during the inventory phase (refer to Volume VII-B, General Comment Response 3.1). The proposed deletion would not result in impacts appreciably different than those described in the Final EIS.

### Alternatives Analyzed

Two alternatives are analyzed for the Negro Bill Canyon WSA: (1) No Action/No Wilderness; and (2) All Wilderness (Proposed Action) (7,620 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections with each alternative. These assumptions are indicated in each case. The analysis assumptions actions presented in the Introduction to Volume V are also applicable.

### • No Action/No Wilderness Alternative

With this alternative, none of the 7,620-acre Negro Bill Canyon WSA would be designated by Congress as part of the NWPS. The area would continue to be managed in accordance with the Grand RMP (USDI, BLM, 1983). No State or private land is located in the WSA (refer to Map 1).

### • Management Conditions and Constraints

With this alternative, 1,375 acres in Negro Bill Canyon would be designated as an Outstanding Natural Area (ONA) or Area of Critical Environmental Concern (ACEC) in accordance with the Grand RMP.

About 6,245 acres would remain open to mineral location and sale and 1,375 acres would be closed to mineral entry. Development work, extraction, and patenting would be allowed on 160 existing mining claims (3,200 acres) and future mining claims. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) without concern for wilderness values. The area would continue to be closed for potash exploration and production. There are no existing potash leases within the WSA. Five existing post-FLPMA oil and gas leases covering 368 acres of the WSA could be developed. Future leasing would be allowed under Category 1 (standard stipulations) on 5,340 acres, Category 2 (standard and special stipulations) on 410 acres, and Category 3 (no surface occupancy) on 1,820 acres. No leasing (Category 4) would be allowed on 50 acres.

Even though mineral resources would be managed as described above, no locatable mineral exploration or development is projected for the WSA because the level of known resources and the probability of their development are too low to support a development assumption (see Appendix 6 in Volume I for details on mineral energy resource exploration and development projections). It is projected that oil and gas exploration would occur but the probability of discovering a commercial deposit is low and oil and gas production from the WSA is not anticipated.

The present domestic livestock grazing use in the WSA would continue as authorized in the Grand RMP (200 AUMs). Use of the existing range developments would continue. These include about 0.25 mile of fence and a small livestock reservoir.





# NEGRO BILL CANYON WSA

## Map 1 LAND STATUS Negro Bill Canyon WSA UT-060-138

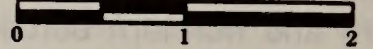
T. 24 S.

T. 25 S.

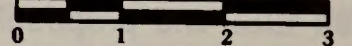
### Legend

-  WSA Boundary
-  National Park Service Administered Land
-  State Land Within or Adjacent to WSA
-  BLM Administered Land Within or Adjacent to WSA

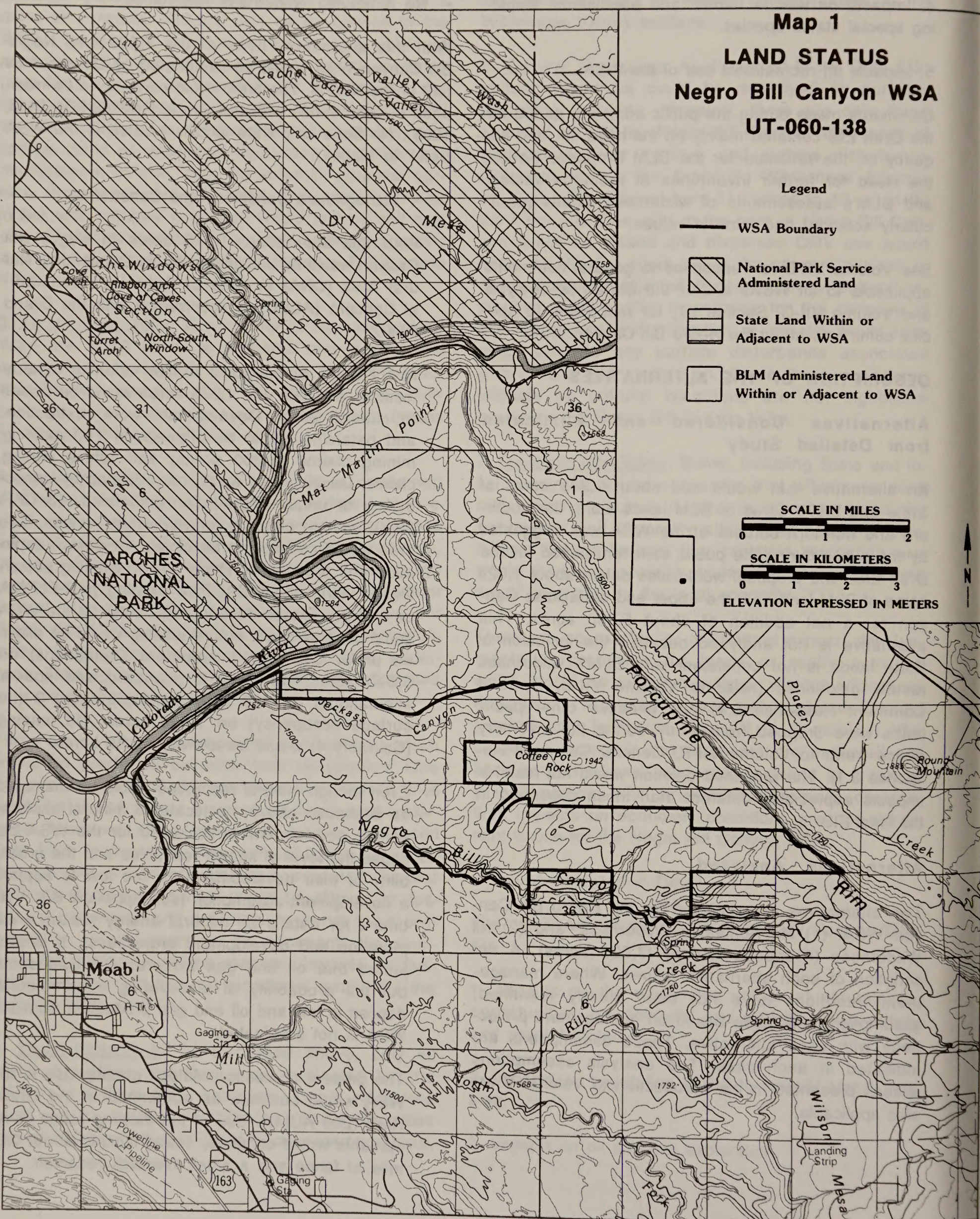
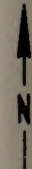
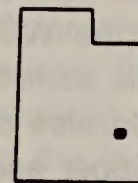
### SCALE IN MILES



### SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



R. 22 E.

R. 23 E.

## NEGRO BILL CANYON WSA

Livestock grazing would continue to be excluded from the lower 2.5 miles of Negro Bill Canyon to protect riparian habitat. No rangeland developments are proposed or planned in the WSA.

Power site classification withdrawals on 539 acres would continue to remain in effect. These classifications withdraw the lands from all public land laws but allow mineral entry.

Approximately 6,245 acres would be open to ORV use. Some 1,375 acres would be closed to vehicular use as directed by the Grand RMP. Approximately 1 mile of the 1.5 miles of existing road would be closed at the mouth of Negro Bill Canyon would be closed.

The entire area would be open to woodland product harvest. There is no harvest of forest products at the present time, nor is any expected in the foreseeable future because of the low level of wood production (391 cords) and the availability of better more trees in areas outside the WSA.

The area would continue to be managed under VRM Class II on 4,190 acres and Class IV on 3,430 acres.

- Action Scenario

Given the management actions described above and the resources described in the Affected Environment section, BLM projects that implementation of the No Action/No Wilderness Alternative would result in approximately 40 acres of surface disturbance for oil and gas exploration including up to 10 miles of access roads. This activity would most likely occur in the eastern half of the WSA. Geophysical operations will ultimately determine where exploratory holes will be drilled. Up to four drill locations could disturb 10 acres each from access road and drill pad construction. Each exploration well would average 10 employees per well. Activity would last from 3 to 6 months with each well. No commercial production is anticipated and rehabilitation would follow abandonment.

Mostly temporary disturbance from ORV activity is projected on up to 10 percent of the WSA, particularly in the flat areas above the canyons in the eastern portion of the unit.

Recreation use is expected to increase above the current estimated use of 3,370 annual visitor use days at a rate of 2 to 7 percent per year. About 70 percent of the use will continue to be primitive in nature, and 30 percent will involve use of mountain bikes or ORVs.

- All Wilderness Alternative (Proposed Action)

With the All Wilderness Alternative, all 7,620 acres of the Negro Bill Canyon WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character. No State private or split-estate lands are located in the WSA. Four State sections are adjacent to the WSA and likely would not be exchanged. The figures and acreages given under this alternative are for Federal lands only.

- Management Conditions and Constraints

After wilderness designation, all 7,620 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 3,200 acres of existing mining claims that may be determined to be valid. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809), with consideration given to wilderness values. No exploration or development is anticipated. Existing oil and gas leases (covering 368 acres of the WSA) would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown. The area would continue to be closed to potash exploration and development. There are no existing potash leases within the WSA.

Present domestic livestock grazing would continue as authorized in the Grand RMP. The 200 AUMs in the WSA would remain available to livestock as presently allotted. The lower 2.5 miles of Negro Bill Canyon would continue to be excluded from livestock grazing. Use and maintenance of rangeland developments existing at the time of designation (0.25 mile of fence and one small livestock reservoir) would continue in the same manner as in the past based on practical necessity and reasonableness.

Power site classification withdrawals on 539 acres would continue to remain in effect.

# NEGRO BILL CANYON WSA

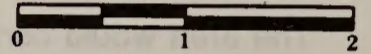
## Map 2 ALL WILDERNESS ALTERNATIVE

### Negro Bill Canyon WSA UT-060-138

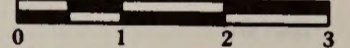
#### Legend

— All Wilderness Alternative  
(7,620 acres)

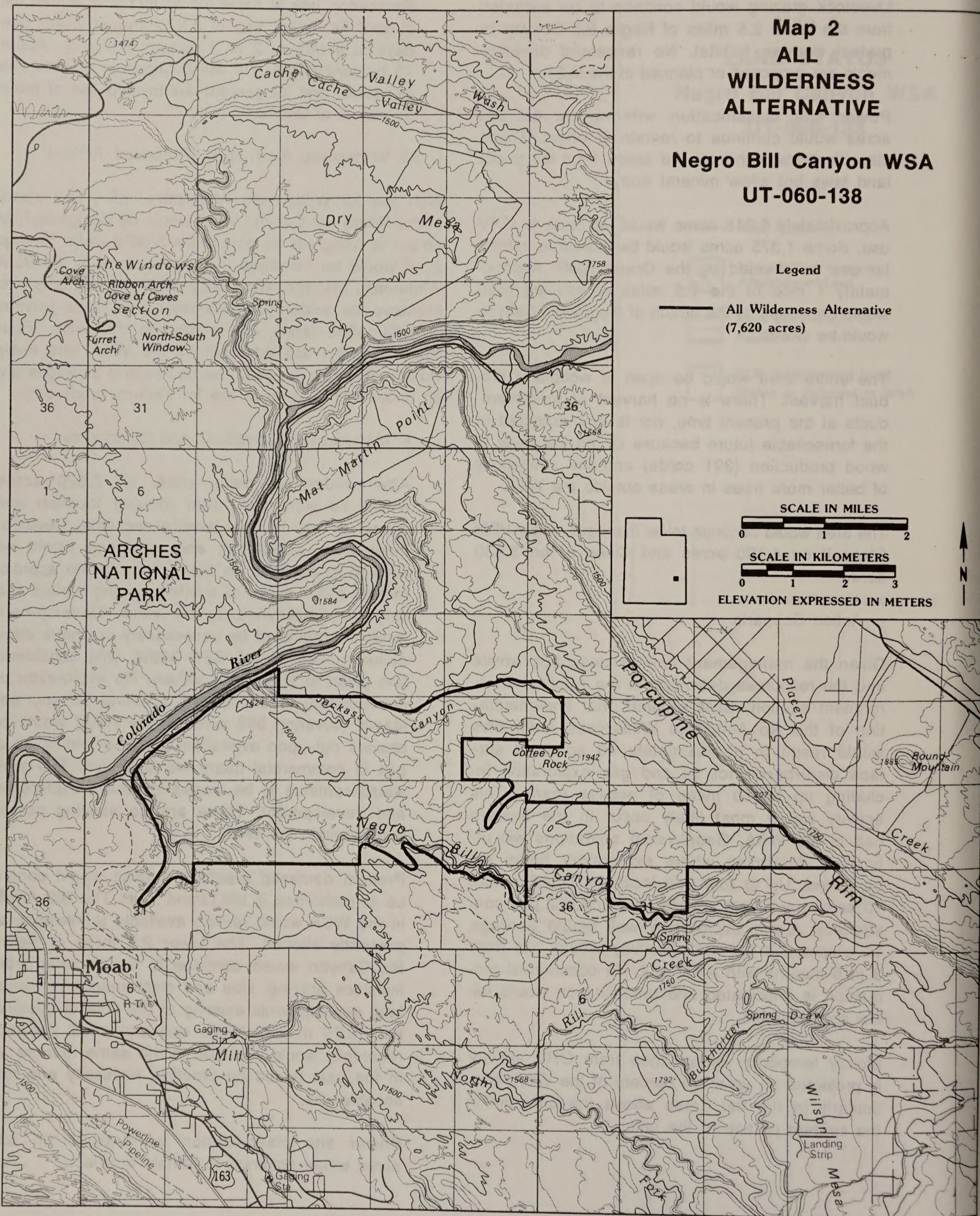
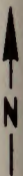
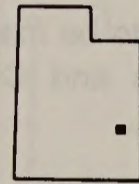
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



T. 24 S.

T. 25 S.

ARCHES  
NATIONAL  
PARK

Moab

R. 22 E.

R. 23 E.

# NEGRO BILL CANYON WSA

The entire 7,620-acre area would be closed to ORV use except for (1) users with valid existing rights if approved by BLM in accordance with 43 CFR 8560 provisions; or (2) occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. Approximately 1 mile of the 1.5 miles of existing road at the mouth of Negro Bill Canyon would be closed. About 0.5 mile of the road is cherry-stemmed and would remain open to vehicular access.

Harvest of forest products would not be allowed except for harvest of pine nuts or noncommercial gathering of dead-and-down wood for use in the wilderness if accomplished by other than mechanical means. There is no harvest of forest products at the present time, nor is any projected.

Visual resources would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

## • Action Scenario

BLM does not project any surface disturbance from mineral exploration or development or ORV use with this alternative.

Primitive recreation use is projected to increase above the current estimated primitive use of 2,350 annual visitor use days at a rate of 2 to 7 percent per year. Vehicular use in the WSA would cease.

## Summary of Environmental Consequences

Table 1 presents the environmental consequences of alternatives analyzed in detail.

## AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

## Wilderness Values

### • Size

At 7,620 acres, the WSA is of sufficient size to meet wilderness standards. The WSA is approximately 8 miles east to west and 0.5 to 2.5 miles north to south.

### • Naturalness

The WSA is generally natural in character but there are exceptions. A seismograph line extends 3 miles into the northern third of the unit. The line was constructed in 1962 and has been reclaimed in part but remains substantially noticeable at some locations. Where the line crosses washes, new routes to avoid the washes have been developed and show continual use by vehicles. A cross line extends both north and south from the main line in T. 25 S., R. 22 E., sec. 21. The southern line extends for 1.25 miles and ends in a star pattern. The northern portion of this line extends from the northeast through Jackass Canyon and joins the vehicle route forming a portion of the northern border (which is part of the Porcupine Rim Trail). Several additional seismograph trails are evident in this area, as well as in the northern and eastern portions of the WSA.

A small pre-FLPMA livestock reservoir is located in the southeast corner of Section 13. Approximately 100 acres are impacted by ORV use. A post-FLPMA fence is found 2.5 miles from the mouth of Negro Bill Canyon in Main Canyon. It is about 0.25 mile long and is constructed with green metal posts and four-strand barbed wire. A set of wood steps was constructed at the fence. Most of the imprints are substantially noticeable from viewpoints such as fins and to a lesser degree from ridgetop vantage points. From lower observation points these imprints are less noticeable and, in places, are hard to distinguish.

A mining road that was upgraded (unauthorized) after the passage of FLPMA extends up the bottom of Negro Bill Canyon for approximately 1.5 miles. Approximately 0.5 mile of this road at the mouth of the canyon was in existence prior to FLPMA and is cherry-stemmed. At the present time, the road is substantially noticeable due to continued use by motor vehicles, but has reclamation potential if closed. A pre-FLPMA cattle trail extends south from the canyon bottom in T. 25 S., R. 22 E., sec. 28, to the flats above.

# NEGRO BILL CANYON WSA

**Table 1**  
**Summary of Environmental Consequences**

Resource	No Action/No Wilderness	Alternatives All Wilderness (7,620 Acres) (Proposed Action)
Impacts on Wilderness Values	Wilderness values would not be protected by wilderness designation, and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 40 acres of the WSA due to mineral exploratory activities. Vehicular use of 0.5 mile of road and exploratory roads as well as ORV activity on the flats above the canyon would continue to be an annoyance that would detract from opportunities for solitude and primitive recreation in the WSA. As much as 760 acres would be directly affected. The quality of opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 3,050 acres adjacent to the areas of disturbance. Some special features, including Class A scenery and wildlife associated with wilderness, would be disturbed.	Wilderness designation would preserve wilderness values, including naturalness, outstanding opportunities for solitude and primitive recreation, and the special features of Class A scenery, endangered or special status species, wildlife associated with wilderness, and a perennial stream, wherever these values occur in the WSA.
Impacts on Vegetation	Vegetation types would be altered on 0.5 percent of the WSA. Continued management of the threatened, endangered, or other special status species would be required to insure that ORV use would not threaten populations of two special status plant species.	Vegetation types and special status species would be preserved by the All Wilderness Alternative because surface disturbance would not occur.
Impacts on Mineral and Energy Exploration and Development	Mineral and energy resource exploration and production in the Negro Bill Canyon WSA would not be affected because mineral leasing, location of mining claims and mineral development would not be restricted for protection of wilderness values.	Wilderness designation would preclude potential oil and gas exploration opportunities. Significant production of locatable, leasable, or salable minerals would not be foregone because the probability of development is low even if the WSA is not designated wilderness.



# NEGRO BILL CANYON WSA

Table 1 (Continued)  
Summary of Environmental Consequences

Resource	No Action/No Wilderness	Alternatives	All Wilderness (7,620 Acres) (Proposed Action)
Impacts on Wildlife Habitat and Populations	About 0.5 percent (40 acres) of the wildlife habitat in the WSA would be disturbed. Therefore, wildlife populations including special status species would not be significantly decreased.		Wilderness designation would protect wildlife habitat and populations and would provide additional solitude.
Impacts on Recreation	The quality of primitive recreation would be directly reduced on up to 800 acres and indirectly reduced on as much as 3,050 acres more. This would be due to oil and gas exploration and increased ORV use in accessible areas. Both primitive and motorized recreational use would increase in the foreseeable future. Limitation may have to be imposed on visitation in order to protect resource values.		The All Wilderness Alternative would benefit primitive recreation by eliminating surface-disturbing activities and increasing management attention and recognition of primitive recreation values. Primitive-type use would increase. ORV use would be eliminated from the WSA, but would not decline regionally because there are many similar areas outside but near the WSA that would be available for use.

## NEGRO BILL CANYON WSA

Two helicopter seismic exploration projects occurred within the WSA in 1982 and 1983. Both projects consisted of flying portable drill rigs to several locations where shallow exploratory holes were drilled. Tailings were backfilled into the holes and the small drill sites were rehabilitated. Total disturbance was less than 1 acre for each project.

In total, approximately 600 acres do not meet the naturalness criterion, with the remaining 7,020 acres being natural and meeting the criterion.

- Solitude

The WSA offers outstanding opportunities for solitude within portions of the unit due to the variety of topography present.

The size of the WSA is not a contributing factor to the wilderness values present. The area does not give the visitor a feeling of vastness. The configuration of the WSA is of considerable importance in the ability to assure protection of the wilderness values. The eastern and northeastern portions of the WSA are approximately 0.5 mile wide in places. One finger in the southwest portion of the WSA is less than 0.25 mile wide.

Sheer canyon walls provide vertical separation and screening. The depth and winding nature of the canyon enhances topographic screening. In the eastern half of the canyon, the cliff walls become less sheer, with several side canyons branching off the main drainage. Vertical separation is not so pronounced. The winding nature of the eastern half of the canyon provides some screening. The side canyons that branch off the main drainage provide additional topographic screening. Topographic screening is also provided by sandstone fins in the western part of the unit near the canyon mouth.

The upper elevations of the unit consist primarily of windblown sand and sandstone formations. Some topographic screening is also provided by this uneven terrain, but it is less than outstanding. Narrowness of the canyon can detract from the solitude when many people are in the area by limiting their opportunity to avoid each other.

Vegetation screening is provided by riparian vegetation along the creek in Negro Bill Canyon and from moderately dense juniper trees and pinyon pine growth in the eastern portion of the WSA. Vegetation screening does diminish in the canyon bottom in the

upper portion of Negro Bill Canyon and is absent in slickrock and low brush and grass-covered areas.

Solitude is limited in the central portion of the unit outside the canyon environment due to lack of vegetation screening, but increases in the northern and eastern portions of the WSA.

Sights and sounds of human activity outside the WSA are observable from some locations within the WSA. The western edge of the unit is bordered by State Highway 128, which is the major route between Moab and the community of Castle Valley. Also, portions of the Sand Flats Road are visible from the eastern portion of the unit. The Slickrock Bike Trail lies adjacent to the WSA on the south. The activities of people outside the WSA, primarily vehicle use with its associated noise, could adversely affect the opportunity for solitude in areas scattered throughout the WSA.

A visitor could easily find a secluded spot in the eastern portion of Negro Bill Canyon or in the fin portion near the western boundary. Opportunities are somewhat diminished in the lower portion of the canyon due to the WSA's narrowness. It would be difficult to find seclusion in the central portion of the unit due to lack of vegetation and topographic screening.

In summary, the Negro Bill Canyon portion of the WSA (1,375 acres or 18 percent of the WSA) meets the outstanding criterion for solitude. The balance of the WSA (6,245 acres) does not meet the outstanding solitude criterion for areas under wilderness review.

- Primitive and Unconfined Recreation

Portions of the canyon provide outstanding opportunities for hiking, camping, backpacking, and nature study. Sandstone fins near the mouth of the canyon also provide outstanding recreational hiking opportunities. The colorful sandstone formations, particularly in and near Negro Bill Canyon, offer excellent photographic opportunities. Horseback riding is gaining popularity in the WSA.

Primitive and unconfined recreation opportunities are outstanding on 2,300 acres of the WSA (the canyon and fins areas) and are less than outstanding on the remaining 5,320 acres.

# NEGRO BILL CANYON WSA

## • Special Features

Negro Bill Canyon is one of the few side drainages to the Colorado River in Utah that contains a perennial stream. This is of particular significance when considering its proximity to the community of Moab, making it easily available for public use. The WSA has approximately 6 miles of perennial stream.

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. There are three animal species (black-footed ferret, bald eagle, and peregrine falcon) listed as endangered that may occur in the WSA. The Jones Cycladenia, *Cycladenia humilis* var. *jonesii*, is a threatened plant species that may also occur within the WSA. In addition, there are seven animal species and one plant species that are considered sensitive which may occur in the WSA. Cougar and black bear, which are wildlife species associated with wilderness, may occasionally visit the area. Refer to the Vegetation and Wildlife Including Special Status Species sections for additional information. Approximately 55 percent of the WSA is rated Class A for scenic quality.

## • Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV type of juniper-pinyon woodland. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. The ecoregion and PNV types represented by this WSA are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

This WSA is within a 5-hour drive from two standard metropolitan statistical areas. These are Salt Lake City-Ogden, Utah, and Provo-Orem, Utah.

## Air Quality

The WSA has a PSD Class II air quality classification as per the 1977 Clean Air Act Amendments. Arches and Canyonlands National Parks are nearby Class I areas. Arches National Park is less than 1 mile away. Prevailing winds are from the west-southwest. The air quality generally meets Class II standards.

Visibility, both within and from the WSA, is an important value. Portions of the WSA can be seen from many high-use areas including the LaSal Mountains, the Colorado River, and Arches National Park. Visual

range in this portion of Utah averages between 100 and 132 miles during the summer (Aerocomp, Inc., 1984).

## Geology and Topography

The Negro Bill Canyon WSA is within the Canyonlands section of the Colorado Plateau Physiographic Province. This section is characterized by bare rock surfaces, plateaus, and steep-walled canyons.

Stratigraphically, the most striking formation exposed at the surface is the Jurassic-Triassic age Navajo Sandstone. The Navajo Formation, a red-to-white ancient sand dune stratum, is markedly crossbedded and is approximately 300 feet thick in the WSA. It comprises the bulk of the spectacular canyon walls of both Negro Bill and Jackass Canyons at their confluence with the Colorado River Canyon. The Navajo Sandstone frequently erodes into massive fins and arches. An example of these fins is located near the western edge of the WSA.

Below the Navajo is the Triassic Kayenta Formation. Usually redder than the Navajo, the Kayenta is thinly bedded through its 200-foot thickness in the WSA. It forms a portion of the canyon walls in both upper Jackass and Negro Bill Canyons. Below the Kayenta is the extremely massive Wingate Sandstone, which is up to 300 feet thick in the area. Although most of it is below the surface in the WSA, it also forms some of the spectacular canyon walls in the west and east ends of the WSA. Two other formations are exposed, but only in a very small area along the Colorado River Canyon in the extreme northwest portion of the WSA. The higher of the two is the Triassic Chinle Formation, which is approximately 300 feet thick. The oldest exposed formation is the Moenkopi, which is about 200 feet thick.

At depth, the WSA is underlain by Precambrian basement rock, found at about 16,000 feet. Above this is a Cambrian layer with a Devonian limestone sequence resting unconformably above. Mississippian Age Formations are represented by the Leadville Limestone. Above this lies the Pennsylvanian Hermosa Group. Lower Limestone Formations are followed by the Paradox Formation interbedded salts. The total thickness of the Paradox salts under the WSA is at least 4,000 feet. This is overlain by the Honaker Trail and Elephant Canyon fossiliferous limestones, about 1,000 feet thick here. Above the Hermosa Group is the Permian age Cutler, about 400 feet thick. Above this lies the Moenkopi, which is exposed in places in the WSA.

# NEGRO BILL CANYON WSA

Structurally the WSA is situated on the gentle eastern flank of the northwest-southeast trending Courthouse Syncline. The strata dips to the east at angles of one to five degrees. One fault of some significance is present in the north-central part of the WSA. This vertical fault strikes northwest and dips to the northeast. Displacement, however, is less than 100 feet. The fault dies out less than 0.25 mile into the WSA from the northern boundary.

Negro Bill Canyon is a side canyon generally trending west to east from the main Colorado River Canyon in south-central Grand County, Utah. A perennial stream is present in the canyon. This stream, a tributary of the Colorado, formed the canyon by erosive action. Also in the WSA, essentially paralleling Negro Bill Canyon, is a similar feature called Jackass Canyon. The stream in Jackass Canyon is intermittent.

Topographically, the highest point in the WSA is 4,769 feet above sea level on the flat above the canyons. The lowest point, where the perennial stream in Negro Bill Canyon nears the Colorado River, is about 3,995 feet above sea level.

## Soils

Negro Bill Canyon is characterized by steep-walled canyons. About 40 percent of the area is composed of shallow or deep sandy soils on sloping cuestas or structural benches intermixed with rock outcrop. About 20 percent is deep loamy soils on alluvial fans and floodplains along the floors of the canyon. About 40 percent is rock outcrop occurring as slickrock on the cuestas and steep canyon walls. The sandy soils on the cuestas are highly susceptible to wind erosion when disturbed.

Table 2 describes the soil characteristics and land types and Table 3 describes the erosion condition for the WSA.

Table 2  
Soil Characteristics and Land Types

Soil Characteristics and Land Type	Percent of the Area	Acres	Estimated Rate of Erosion (cubic yards/acre/year)	
			Present Condition	Bare Soil Surface
Rock Outcrop	40	3,048	0	0
Shallow to deep sandy soils on sloping structural benches and cuestas	40	3,048	1	5
Very deep loamy soils on gently sloping alluvial fans and floodplains	20	1,524	0.1	1
Totals	100	7,620		

Source: Hansen, 1985.

It is estimated that the soils and rock on about 40 percent of the WSA are nonsaline, while the remaining 60 percent of the area are slightly saline. The average annual salt production is estimated to be 37 lb per acre. Seeding suitability is poor on 85 percent of the WSA because of rock outcrops, steep slopes, and lack of moisture. Seeding suitability is fair on 15 percent of the WSA if wind erosion is controlled.

## Vegetation Including Special Status Species

Three vegetation types are located in the WSA and are summarized in Table 4.

Table 3  
Erosion Condition

Erosion Class	Erosion Rate cubic yards/acre/year	Annual Soil Loss Under Present Conditions			Annual Soil Loss if Disturbed		
		Percent of Area	Acres	Cubic Yards	Percent of Area	Acres	Cubic Yards
Very High	20	-	-	-	-	-	-
High	10	-	-	-	-	-	-
Medium	5	-	-	-	40	3,048	15,240
Low	1	40	3,048	3,048	20	1,524	1,524
Very Low	0.1	20	1,524	152	-	-	-
None	0	40	3,048	-	40	3,048	-
Totals		100	7,620	3,200 <sup>a</sup>	100	7,620	16,764 <sup>a</sup>

Source: Hansen, 1985.

Average annual soil loss in cubic yards per acre: 0.42 under present conditions; 2.2 if disturbed.

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Vegetation in the WSA is dominated by blackbrush and juniper trees. Other associated species are pinyon pine, snakeweed, and rabbitbrush, with grasses being Indian ricegrass, galleta grass, and cheatgrass. Barren areas composed largely of slickrock and other rock outcrop take up about 30 percent of the area. Vegetation in the riparian area (including hanging gardens) of Negro Bill Canyon includes Gambel's oak, river birch, willow, tamarisk, sagebrush, cottonwood, skunkbush, and reed canary grass.

Table 4  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Blackbrush	1,372	18
Pinyon-juniper-blackbrush	3,353	44
Riparian	610	8
Barren	2,285	30
Total	7,620	100

Source: USDI, BLM, 1983.

One endangered plant species, *Cycladenia humilis* var. *ionesii*, and one Category 2 candidate species, *Lygodesmia entrada*, may occur in the WSA (see Appendix 4 in Volume I). The habitats for both of these species extend beyond the WSA boundary.

The Negro Bill Canyon WSA is located in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNV type of the WSA is juniper-pinyon woodland.

## Water Resources

The Negro Bill Canyon WSA is within the lower part of Negro Bill Creek Watershed, in the Upper Colorado River hydrologic subregion.

There are approximately 10 miles of streams within the WSA. Of these, approximately 6 miles of stream in Negro Bill Canyon are perennial and approximately 4 miles of stream in Jackass Canyon are intermittent. Negro Bill is a spring-fed water source that drains into the Colorado River. The stream channel is stable and there is little evidence of channel deterioration. This is due in part to the series of beaver dams in the lower portion of the drainage. The dams also aid in the reduction of sediment load by increasing the pooling and ponding of water. Erosion of the stream bank is virtually absent due to the dense growth of riparian vegetation on the upper and lower banks. The main stream bank erosion problem is associated with

the road up Negro Bill Canyon. There are numerous places where the road crosses the channel or actually is located in the streambed.

The lower 2 miles of Negro Bill Canyon, plus lands within the WSA bordering the Colorado River, are under a power site reserve. This withdrawal dates to 1909. There are no active proposals to develop a hydroelectric facility in this area, and the likelihood of future projects is doubtful.

The WSA is within Water Right Adjudication Area 05. The water within the area is not fully appropriated except in some localized instances (UDNRE, DWR, 1988). Consideration may be given to isolated springs for appropriation but claims may not exceed 0.015 cfs. Temporary and fixed time applications may exceed this limit.

The water quality standards for the Colorado River and tributaries, from Lake Powell to State line are as follows: Class 1C (protected for domestic purposes with prior treatment by treatment processes as required by the Utah Department of Health); Class 2B (protected for boating, water skiing, and similar uses, excluding recreational bathing [swimming]); Class 3B (protected for warm water species of game fish and other warm water aquatic life); and Class 4 (protected for agricultural uses including irrigation of crops and stockwatering).

Seven unnamed springs have been inventoried in the WSA, but only four had flows sufficient for water quality testing. The data in Table 5 were obtained from these four springs in September 1981.

Table 5  
Water Quality of Sampled Springs

Water Quality Parameter	Range	Mean
Specific conductance	200 to 425 mmhos/cm	331 mmhos/cm <sup>a</sup>
pH	8.1 to 8.9	8.5
Water temperature	22 to 26 degrees C <sup>b</sup>	19 degrees C

Source: USDI, BLM, 1983

<sup>a</sup> millimhos per cubic meter

<sup>b</sup> Centigrade

Between 1978 and 1979, the data in Table 6 were obtained from nine samples taken at the mouth of Negro Bill Creek.

There are no water wells in the WSA and, therefore, no groundwater quality data; however, the geologic formations in Negro Bill Canyon WSA have been found

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elsewhere to yield fresh water to wells. Therefore, groundwater quality should be acceptable for recreation, wildlife, livestock, and agricultural uses.

Table 6  
Water Quality of Negro Bill Creek

Water Quality Parameter	Mean
Stream Flow	3.5 cfs
Specific conductance	349 mmhos/cm
Sodium	8.33 mg/l <sup>a</sup>
pH	7.95
Water temperature	11.4 degrees C

Source: USDI, BLM, 1983

<sup>a</sup> Milligrams per liter

## Mineral and Energy Resources

The energy and mineral resource rating summary for the Negro Bill Canyon WSA is given in Table 7. Appendix 5 in Volume I describes the mineral and energy resource rating system.

Table 7  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f3	c2	10 to 50 million barrels of oil; 60 to 300 billion cubic feet of natural gas
Potash	f3	c3	1 to 10 million metric tons
Uranium/Vandium	f2	c2	Up to 500 metric tons
Gold	f1	c4	Small quantities
Copper	f2	c1	Less than 50,000 metric tons
Manganese	f2	c1	Less than 100,000 metric tons

Source: SAI, 1982; USDI, BLM, 1987a.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

The WSA could contain deposits of vanadium, manganese, and copper that are currently listed as strategic and critical materials (USDoD, 1988). Although listed as strategic, copper is relatively common. Supplies currently exceed domestic demand.

### • Leasable Minerals

There are no known deposits of any leasable minerals in the WSA. There are no active drilling, mining, or exploration activities for leasable minerals.

### • Oil and Gas

Oil and gas produced in the vicinity of the WSA have been from both Pennsylvanian and Mississippian pools with geologic characteristics similar to those underlying the WSA. Pennsylvanian production has come from structural traps in the Ten Mile field, 28 miles to the northwest; the Long Canyon, Shafer Canyon, and Bartlett Flat fields, 12 to 15 miles west-southwest; the Wilson Canyon and Pine Ridge fields, 26-30 miles to the southeast; and the Lion Mesa field, 14 miles to the southwest. The Shafer Canyon and Bartlett Flat fields have been abandoned, the Ten Mile and Lion Mesa fields are shut-in, and the remainder are currently producing. Combined cumulative production from these Pennsylvanian fields as of December, 1986, was 1.1 million barrels of oil and 1.4 billion cubic-feet of natural gas. Individual fields have produced from a few thousand barrels of oil and no gas (Ten Mile, Lion Mesa, and Pine Ridge) to 890 thousand barrels of oil and 955 million cubic feet of gas at the Long Canyon field. Production from Shafer Canyon, Bartlett Flat, and Wilson Canyon has ranged from 38 to 74 thousand barrels of oil and 21 to 117 million cubic-feet of gas.

Mississippian oil and gas have been produced in the Salt Wash field, 33 miles to the northwest; Big Flat field, 15 miles west to southwest; and the Lisbon, Big Indian, and Little Valley fields, 25 to 30 miles to the southeast. The Big Flat has been abandoned, the remaining fields are currently producing. Combined cumulative production from these Mississippian fields has been approximately 48.7 million barrels of oil and 495 billion cubic-feet of natural gas. Individual fields range from 47 million barrels of oil and 450 billion cubic-feet of natural gas at Lisbon, to 1.3 million barrels of oil and 11.6 billion cubic-feet of gas at Salt Wash, and 92 to 208 thousand barrels of oil and 50 million to 19 billion cubic-feet of gas at the Big Flat, Little Valley, and Pine Ridge fields.

The USGS estimates that the Paradox Basin in southeastern Utah and western Colorado contains 1.2 billion barrels of undiscovered recoverable oil and 3.8 trillion cubic-feet of undiscovered recoverable natural gas (SAI, 1982). The majority of this will be found in Mississippian and Pennsylvanian rocks; which, to date, have accounted for nearly 90 percent of the oil and 85 percent of the natural gas produced in southeastern Utah.

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The best potential for future discoveries within the WSA occurs within Mississippian strata, particularly in the eastern half of the WSA which is located in the western flank of the Castle Valley salt anticline. This location provides a structural configuration similar to that found at the Lisbon Valley field. Although the surface structure in the Paradox fold and fault belt is not necessarily indicative of Mississippian sub-surface structure, general inferences can be made based on occurrence of the salt anticlines. These structures were formed in Late Permian and Early Triassic time by sub-surface salt flowage to the southwest, away from the Uncompahgre Uplift. The salt occurred in the Pennsylvanian Paradox Formation. Wherever the salt encountered deep pre-Pennsylvanian fault blocks, it was forced upwards forming the surface anticlines we see today. The ancient buried fault blocks are assumed to trend in roughly the same direction as the surface anticlines (northwest to southeast). However, these buried fault blocks are generally offset to the southwest by 1 to 5 miles.

A key factor to Mississippian oil and gas potential is the development of porosity necessary to form a reservoir. Wells drilled in the vicinity of the WSA have provided encouraging results, particularly a well drilled by Union Oil approximately 1 mile north of the WSA. Tests in this well encountered good pressure with a show of gas, and, more importantly, found porosity. Although non-commercial, this well combined with data from other sparsely scattered wells indicate that there is potential for additional Mississippian pools in the region surrounding Moab.

A third factor influencing the potential of this area is the abundance of source rocks found in organic rich black shales of the Paradox Formation. Studies of the Paradox Formation cones in the Gibson Dome area, indicate that Paradox shales in that area have the potential to provide 4,970 barrels of oil per acre (Hite, et al., 1984). If the faulting along the eastern margins of the WSA has juxtapose Paradox Formation source rocks next to Mississippian reservoir rocks, then the potential exists for fields of the same magnitude of size as those found in Mississippian pools in the regional vicinity of the WSA.

The potential for Pennsylvanian discoveries is somewhat lower, primarily due to poor development of reservoir characteristics and difficulties

in well completions in the Paradox Formation in this portion of the basin. The Pennsylvanian fields in the vicinity of the WSA produce from structurally controlled fracture systems within the black shales of the Paradox Formation. However, the folding and faulting which caused these fractures, combined with the interlayered salts in this zone, have to some extent over pressurized these potentially producing zones and made well completions difficult. Techniques have recently been developed to overcome the completion problems and interest in Pennsylvanian pools in the area was picking up rapidly prior to the worldwide collapse of oil prices in 1986. This factor, combined with difficult and expensive access into this topographically constrained WSA, indicates the search for Pennsylvanian pools in this area in the near future is doubtful.

The tract evaluated by SAI contains 9,420 acres and includes Drinks Canyon and a portion of Hal Canyon. The WSA accounts for 81 percent of this tract. The SAI rating (f3) indicates that potential exists within the tract for 10 to 50 million barrels of oil and 60 to 300 billion cubic-feet of gas. The certainty level (c2) indicates that some positive data exist within the vicinity of the tract or on trend with the tract.

The majority of the WSA (99 percent) is open to oil and gas leasing under the BLM category system established in 1975 (USDI, BLM, 1975a). Categories include: Category 1 (standard stipulations) on 5,340 acres; Category 2 (requiring special stipulations [no development within 0.24 miles from the Colorado River, to protect scenic and recreational values as well as the river's floodplain on an area along the Colorado River]), on 410 acres; and Category 3 (no surface occupancy) on 1,820 acres covering the lower two-thirds of Negro Bill Canyon. A no lease area (Category 4) lies along the southern boundary and covers less than 1 percent (50 acres) of the WSA. There are presently five post-FLPMA oil and gas leases in the WSA, covering 368 acres.

- Potash

Bedded potash is found within the Paradox Formation underlying the Paradox Basin. The size and quality of these deposits put them in a category of "world class" potash deposits. Sylvite, the mineral containing the potash, is currently being mined by a solution process from a depth of

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approximately 2,800 feet in an area about 10 miles west of the WSA. This mine has produced roughly 3.5 million metric tons since 1965 and is an economically important facet of the Moab community.

The favorability rating for potash (f3) indicates a potential for 1 to 10 million metric-tons of potash underlying the WSA, with 750 thousand to 7.5 million metric tons considered recoverable. As a result of indirect data showing a potash bearing formation underlying the WSA and the close proximity to a producing mine, the degree of certainty that the resource exists within the WSA is moderate (c3) (SAI, 1982).

There are currently no potash leases within or immediately adjacent to the WSA. The WSA has been designated as closed to potash exploration and development by the Grand RMP.

The potash market is currently depressed, partly because foreign supplies are more economic to develop and are in some cases government subsidized. In addition to these poor market conditions, potash beds underlying the WSA have been adversely affected by folding and faulting characteristic of this part of the Paradox Basin, possibly resulting in thin and discontinuous beds making development difficult. These factors, combined with the projected depth of the potash bearing beds (7,000 to 8,000 feet) and the limited topographic access, would indicate that it is unlikely that new potash development would occur within the WSA even without the closed designation.

- Coal

Coal has been produced from the Cretaceous strata approximately 25 miles north of the WSA in the Book Cliffs coal field. This Cretaceous strata produces coal on a regional basis, and no other formations are known to contain commercial quantities of coal. All Cretaceous strata have been removed by erosion from within the WSA.

Therefore, the favorability rating for coal is (f1), indicating there is no potential for resource occurrence. Available data results in a high degree of certainty (c4) that coal is not found (SAI, 1982).

- Locatable Minerals

There are no known deposits of locatable minerals in the WSA.

- Uranium and Vanadium

There are all or portions of 160 mining claims located presumably for uranium and vanadium within the WSA. They cover approximately 3,200 acres totalling about 42 percent of the area. All claims are concentrated in the western half and are current in assessment work.

The Colorado Plateau section of southeastern Utah contains some of the largest and most important uranium and vanadium deposits in the United States. It is estimated that 50 percent of the nation's total uranium reserves and 36 percent of the potential uranium resources are contained in the Colorado Plateau (SAI, 1982). In terms of past production and future potential, the Colorado Plateau around Moab is nationally important for uranium and vanadium.

Principal uranium/vanadium bearing strata in the region are the Jurassic age Morrison Formation, the Triassic age Chinle Formation, and the Permian age Cutler Formation. The Morrison Formation has been removed by erosion from the WSA. The Chinle and Cutler are present at a depth of zero to 1,500 feet. Data from surrounding outcrops and mines indicate that the WSA is in the vicinity of an ancient Chinle stream channel system known to contain uranium/vanadium deposits to the south of the WSA.

The structural and stratigraphic setting of the WSA exhibits some geologic similarity to the Lisbon Valley/Big Indian uranium mining district to the south. The Big Indian belt of the Lisbon Valley area is one of the two most important uranium/vanadium producing areas in the nation, having produced almost 46 million pounds of uranium and 18 million pounds of vanadium over one 10-year period in 1956 to 1965. The host rock in the Big Indian belt is the base of the Chinle Formation and the upper part of the Cutler Formation, both present at depth in the WSA.

In the Draft EIS, the WSA was assigned a favorability rating for uranium/vanadium of (f3), indicating that it could contain between 500 to 1,000 metric tons of uranium and/or vanadium



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(SAI, 1982). This is based on production from geologically similar areas to the south and west, and the proximity to a large Chinle stream channel system south of the WSA. After analysis of additional data, BLM decided to reduce the favorability rating from an (f3) to an (f2). The stream channel system in the Chinle, referred to by SAI, does not trend into the WSA, rather is found in a northwest trend 5 to 8 miles west of the WSA. Combined with the fact that the nearest production from this channel system is in the lower Cane Creek area 10 to 12 miles south of the WSA, and production from this has only recovered roughly 11 metric tons and 5 metric tons of vanadium, the favorability for large deposits within the WSA is low. The certainty of occurrence is still low (c2). The inferred stream channel orientation is based on outcrop analysis from scattered locations, therefore, there is a possibility that the channel could have been further to the east and north. However, the lack of drill hole and outcrop data within the WSA and the distance from production, still results in a low level of certainty that uranium/vanadium resources underlie the WSA.

## • Gold

The eastern edge of the WSA is adjacent to an area called Wilson Mesa. Geologic literature has long reflected on the presence of placer gold on Wilson Mesa, derived from glacial outwash from the LaSal Mountains. Small mining operations on the mesa have intermittently recovered minor quantities of gold from these deposits. Since Negro Bill Canyon is adjacent to Wilson Mesa, it is projected that the gravels in the canyon contain minor quantities of gold. Past mining operations in streams draining Wilson Mesa south of the WSA have failed to recover commercial quantities of gold.

Although SAI did not evaluate the WSA for gold, it is projected on the basis of existing data and experience that only minor quantities of a noncommercial nature occur within the WSA. Therefore, it would have a low favorability with a high degree of certainty.

## • Copper and Manganese

The Colorado Plateau in eastern Utah has produced only small amounts of copper. The copper has been recovered principally as a by-product of uranium mining operations. Copper production from

the region surrounding Moab has come from four areas: (1) near the town of Moab in lower Cane Creek, (2) the Big Indian/Lisbon Valley mining district, (3) the White Canyon area, 40 miles to the southeast, and (4) the Monument Valley area, 70 to 80 miles southwest. The deposits are confined principally to the Chinle Formation of Triassic age, particularly in the Shinarump Member. Cumulative copper output from each of the four areas combined has been less than 50,000 metric-tons.

The WSA has a favorability rating of (f2), indicating a potential for small deposits, probably for less than 50,000 metric-tons, on the basis of the widespread occurrence of copper throughout the Colorado Plateau. The certainty of occurrence is rated low (c1) because of the lack of direct or indirect data suggesting its presence (SAI, 1982).

The chief host rocks for manganese in this region (the Morrison and Summerville Formations) have been eroded from the WSA. The less favorable Chinle Formation occurs at depth in the WSA. On this basis, the WSA has a favorability rating of (f2), indicating potential reserves of less than 100,000 metric-tons of manganese. The certainty of occurrence is rated very low (c1) because of the lack of direct or indirect data suggesting its presence (SAI, 1982).

## • Salable Minerals

Salable minerals in the form of sand and gravel deposits are known to exist in the WSA in the canyon bottom. There are also minor quantities of building stone in the upper reaches of the canyon in the Kayenta Formation. The overall quantity and quality of these resources is low. In addition, access and transportation costs to recover these resources would be prohibitive in light of the abundance of these deposits in surrounding, more easily accessible areas. Therefore, their importance and potential value is very low.

## Wildlife Including Special Status Species

The area provides habitat for a variety of wildlife species. Mule deer, coyotes, bobcats, cottontail rabbits, beaver, chukar partridge, and a variety of reptiles and rodents may be found throughout the WSA. Several species of raptors and songbirds also inhabit the area. Cougar and black bear may rarely visit the area.

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Due to the lack of precipitation, the nature of the soils, redrock cliffs, and extremely hot summer temperatures, this area is not capable of supporting a diversity of vegetation sufficient to accommodate large populations of big game animals. The most common big game present are mule deer, which are found in relatively small numbers. The WSA is located in the UDWR Deer Management Herd No. 30A. Crucial riparian habitat (610 acres) for mule deer is located in canyon bottoms. Also, 3,353 acres of deer winter range have been identified by BLM in the WSA.

Chukar partridge and ringnecked pheasant are occasionally sighted in the canyon near the perennial stream. Chukar and pheasant are exotic species introduced in the area in the early 1960s. Mourning dove are common in the canyon during the early spring to early fall period. Desert cottontail rabbit are common unit wide.

Waterfowl occasionally occupy the area of the perennial stream in Negro Bill Canyon. The most common species are mallard, blue-winged teal, and common mergansers.

Several fish species can be found in the perennial stream in Negro Bill Canyon. The most common are bluehead sucker, roundtail chub, red shiner, fathead minnow, and plains killifish. Game fish include largemouth bass and green sunfish, although the small size of the stream precludes quality fishing.

The stream channel can be characterized as well developed and stable. Riparian vegetation is dense and diverse in species composition. Gravel bars and rocky substrata in the stream provide spawning habitat for fish. The stream does not have a developed sport fishery. Several beaver ponds are scattered along the perennial stream, and beaver activity has increased over the last few years.

Invertebrate production in the stream is very high, except in a few large ponds that have silted in. Studies indicate that invertebrate species in the stream are tolerant of sedimentation and some organic enrichment. Crayfish are abundant.

The most common reptiles and amphibians include striped whipsnake, gopher snake, midget faded rattlesnake, sideblotched lizard, and redspotted toad.

The most common birds in the WSA are canyon wrens, rock wrens, belted kingfishers, kestrels,

ravens, redtailed hawks, and golden eagles. Raptor nests are located on sandstone ledges in the canyon.

A survey of threatened and endangered wildlife indicated that available habitat for bald eagles, American peregrine falcons, and spotted owls exists in Negro Bill Canyon. Sightings of these species have not been reported in the WSA. Although potential habitat would extend throughout the entire WSA, there are no acres classified as critical. The golden eagle (a BLM sensitive species) is found in the WSA. Other special status species that could occur in the WSA are five Category 2 candidate species. These are the Great Basin Silverspot butterfly, ferruginous hawk, western yellow-billed cuckoo, long-billed curlew, and southern spotted owl. Refer to Appendix 4 in Volume I for details.

There are no existing or potential vegetation treatments for improvement of wildlife habitat. No wildlife transplants are proposed.

### Forest Resources

No commercial forest resources are located in the WSA and no woodland harvest has occurred. The potential exists for a harvest of 391 cords of firewood within the 3,353 acres containing juniper trees; however, due to more favorable resources being located elsewhere, harvest is not anticipated in the WSA in the foreseeable future.

### Livestock and Wild Horses/Burros

The WSA is within the North Sand Flats grazing allotment (20,534 acres and 798 AUMs). One operator is licensed on this allotment from November 1 to April 15 during most years. The WSA covers approximately 37 percent (616 acres) of the allotment and only about 25 percent (200) of the AUMs. The cattle do not make extensive use of the WSA because of inaccessibility, lack of water outside riparian areas, and poor quality forage. An average of about 60 AUMs are used. The lower 2.5 miles of Negro Bill Canyon are excluded from grazing except for trailing of stock during the early winter and spring. Negro Bill Canyon is one of the few access routes to the upper part of the allotment.

There are two range improvement projects of record in the WSA: a 0.25-mile-long fence, which is 2.5 miles from the mouth of Negro Bill Canyon, and a small stock reservoir. There are no opportunities for

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land treatment. No rangeland improvements are currently proposed.

Predator control was not conducted during the 1986 to 1987 period in the grazing allotment that comprises the Negro Bill Canyon WSA (USDA, APHIS, 1988).

Wild horses or burros are not known to occupy the WSA.

## Visual Resources

The WSA was included in a visual study completed in 1980. The WSA contains 4,190 acres of Class A and 3,430 acres of Class C scenery. Both VRM Class II (4,190 acres) and Class IV (3,430 acres) areas were assigned to the WSA. Refer to Appendix 7 in Volume I for a description of BLM's VRM rating system.

The major landscape feature in the WSA is Negro Bill Canyon, with sheer canyon walls mixed with rock outcrops. Colors are deep rust-red sandstones to maroon reds, deep tans to light tans and grays, and gray-green outcrops.

Vegetation is a combination of riparian plant communities (i.e., tamarisk and willow) and upland trees (i.e., pinyon and juniper). Colors are dark green to light green and gray-greens.

Several types of modifications exist within the WSA boundaries, with each exerting varying degrees of visual contrast. These include one small stock pond, several seismograph lines and star patterns, a jeep trail, and a 0.25 mile long fence.

## Cultural Resources

Known historic and prehistoric remains contribute to scientific and recreation values of Negro Bill Canyon. Although no complete inventory exists, at least two historic and one prehistoric sites are reported. Known sites include a historic cowboy cave, a 1950's copper prospect and camp, and a prehistoric petroglyph panel of uncertain date. All are within Negro Bill Canyon. Numerous additional sites were found in nearby portions of Arches National Park. No sites listed in or nominated to the National Register of Historic Places are within the WSA, although known sites may have that potential. It is estimated that the WSA may have as many as 12 cultural sites, six of which could be National Register eligible.

Cultures represented in the region include the Paleo Indian, Desert Archaic, Fremont, Anasazi, Ute, and historic European.

European influence in the region dates from the Dominguez-Escalante Expedition of 1776, followed by Mexican traders of the Old Spanish Trail and French fur trappers in the 1810 to 1840 era. American explorers crossed the region just north and west of the WSA in the 1850s, about the time the first Anglo-American settlement was also attempted at Moab. Permanent American settlement occurred in the late 1870s and early 1880s with ranching spreading to the WSA at that time. Use of the WSA was made mostly from ranches in the Moab area. According to at least one account, the canyon was named after William Granstaff, a mulatto, who allegedly ran cattle there in the early 1880s.

## Recreation

There are no documented use statistics for the Negro Bill Canyon; however, the area is considered a popular local recreation spot, as well as a retreat for visitors. The area is comprised of a variety of landforms. Negro Bill Canyon itself is the principal scenic attraction. Here, a colorful sandstone canyon with a perennial stream provides hiking, backpacking, backcountry camping, and some hunting opportunities. Present annual use levels are on the increase. Hiking accounts for about 2,300 visitor days, horseback use accounts for 50 visitor days; mountain bike use accounts for 520 visitor days, and ORV use accounts for 500 visitor days.

The Navajo Sandstone provides spectacular cliffs, giant alcoves, domes, and fins. The canyon bottom with its perennial stream supports riparian vegetation. Beaver ponds support a variety of aquatic life and provide visitors the opportunity to cool off.

Sightseeing and photography are popular past times in the canyon. School groups frequently hike the canyon in connection with environmental studies. A commercial outfitter transports visitors on horseback through the scenic canyon to Morning Glory Natural Bridge on State land, adjacent to the WSA. Morning Glory Natural Bridge is the fifth widest natural span in the country and a frequent destination of hikers. A cattle trail also used by recreationists traverses part of the length of Negro Bill Canyon terminating at nearby Sand Flats Road.

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A mining road, which was extended 1.5 miles into Negro Bill Canyon in 1979, provides recreational four-wheel drive vehicle access into the lower canyon. Beaver activity has closed the last 0.5 to 0.75 mile of the route.

Above the canyon rim other recreational opportunities exist. Vehicle routes provide access along the perimeter of the WSA, and seismograph lines within the unit provide recreational vehicle (including mountain bikes) opportunities. The Porcupine Rim four-wheel drive route skirts the WSA and is used during the annual Moab Jeep Safari event. During the 1982 Jeep Safari, 44 vehicles registered for this trail. While opportunities for nonmotorized forms of recreation, such as hiking, hunting, etc., do exist above the rims of Negro Bill Canyon within the WSA, actual nonmotorized use is considered minimal.

Under the Grand RMP, the 1,375-acre portion of the WSA recommended for designation as an ONA would be closed to ORV use. Approximately 1 mile of the 1.5 miles of existing road at the mouth of Negro Bill Canyon would be closed. The closure would not apply to the 0.5-mile portion of the road which is cherry-stemmed.

## Land Use Plans

The WSA is BLM-administered public land. There are no State-owned lands in the WSA. However, the Utah State Legislature passed S.C.R. No. 1 in 1986 opposing any additional wilderness designation in Utah. There are no private lands in the WSA.

The WSA is managed by BLM under the Grand RMP. The RMP has been reviewed by the Governor of the State of Utah and is consistent with State land use plans and policies and wilderness designation is not addressed in the RMP. However, wilderness designation is part of the BLM multiple-use concept the BLM land use plan is linked to the Statewide Wilderness EIS through analysis of the present plan as the No Action/No Wilderness Alternative.

The WSA is entirely within southern Grand County. The current Grand County Master Plan (University of Utah, BCD, 1979) does not favor wilderness but does recognize the value of "areas of critical environmental concern," after an area has been tested for mineral potential. The plan generally emphasizes continuation of present uses and maximizing mineral development. The WSA is not specifically mentioned in the plan. However, the Grand County Commission is strongly

opposed to wilderness designation for Negro Bill Canyon and has endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah.

## Socioeconomics

### • Demographics

From 1970 to 1980, the population of Grand County grew from 6,600 to 8,250, an overall increase of about 23 percent. Table 8 presents the baseline and projected population data for Grand County. It is estimated that between 1980 and 1987, population decreased to about 7,250. Population projections for the county indicate that the number of people living in Grand County in the year 2010 will be about 8,700 for about a 5-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987). The majority of the county is unpopulated, with 97 percent of the settlement concentrated in the Moab area. About 65 percent of the county's population lives in Moab, which is approximately 4 road miles from the WSA.

Table 8  
Baseline and Projected Population and Employment Growth  
Grand County

	1980	1990	2000	2010
Population	8,250	7,000	7,000	8,700
Employment	3,702	2,900	3,000	3,900

Source: Utah Office of Planning and Budget, 1987.

About 80 percent of the County is owned by the Federal government, 15.5 percent by the State, and 4.5 percent by private landowners.

### • Employment

Table 8 shows the baseline and projected total employment for Grand County to the year 2010.

Grand County is part of the Southeast MCD. Table 9 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980, the leading employment sectors for the Southeast MCD were mining (28 percent), government (18 percent), trading (15 percent), and services (8 percent).

It is projected that by the year 2010, employment in the MCD will increase by 27 percent and that services will increase to 18 percent and trade to 17

# NEGRO BILL CANYON WSA

percent of the total, while government will decline to 15 percent and mining to less than 20 percent of the total MCD employment. Agriculture currently represents about 5 percent of all employment and is projected to be about 4 percent by the year 2010 (Utah Office of Planning and Budget, 1987).

Table 9  
Southeast Multi-County District  
Employment\*

	1980	1990	2000	2010
Agriculture	1,203	1,100	1,100	1,100
Mining	6,368	3,500	4,500	5,700
Construction	1,360	700	900	1,100
Manufacturing	551	600	700	800
Transportation, Utilities	1,563	1,800	2,000	2,200
Trade	3,289	3,600	4,000	4,800
Finance, Insurance, Real Estate	424	400	400	500
Services	2,067	3,200	4,000	5,300
Government	3,994	4,100	3,800	4,400
Nonfarm Proprietors	1,715	2,000	2,200	2,800
<b>Totals</b>	<b>22,534</b>	<b>21,000</b>	<b>23,600</b>	<b>28,700</b>

Source: Utah Office of Planning and Budget, 1987.

\*Includes Carbon, Emery, Grand, and San Juan Counties.

## • Sales and Revenues

Economic-related activities in the WSA include mineral exploration, livestock production, and recreation. Table 10 summarizes local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Table 10  
Local Sales and Federal Revenues

Source	Annual Local Sales*	Annual Federal Revenues
Oil and Gas Leases	\$ 0	\$ 736
Mining Claim Assessment	\$16,000	\$ 0
Livestock Grazing	\$ 4,000	\$ 308
Recreational Use	<u>\$13,817</u>	<u>\$ 100</u>
<b>Total</b>	<b>\$33,817</b>	<b>\$1,144</b>

Sources: USDI, BLM File Data; Volume I, Appendix 9.

\*Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

The WSA has 160 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy.

The geophysical exploration that has been conducted in the WSA has generated some temporary local em-

ployment and income. No oil and gas or mineral production has occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed significantly to local employment or income.

One livestock operator has a total grazing privilege of 200 AUMs within the WSA. If all this forage were utilized, it would account for \$4,000 of livestock sales and \$1,000 of ranchers' returns to labor and investment.

No woodland products have been harvested from the WSA.

The WSA's nonmotorized recreational use is moderate. The WSA's motorized recreational use is relatively low. Related local expenditures are well distributed and not significant to the local economy. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that the State-wide average local expenditures per noncommercial recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Negro Bill Canyon WSA is estimated as about 3,370 visitor days per year. In addition, the commercial operation would make approximately \$2,500 annually in sales.

The WSA generates Federal revenues from mineral leases, livestock, and recreation sources (refer to Table 10).

Oil and gas leases in the WSA cover approximately 368 acres. At \$2 per acre, lease rental fees generate up to \$736 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 200 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$308 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland improvements.

BLM collects about \$100 per year in commercial recreational fees from the WSA.

# NEGRO BILL CANYON WSA

## ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis assumptions and guidelines for all Alternatives are described in the Introduction to Volume V. The following analysis is also based on implementation of the Action Scenarios presented in the Description of the Alternatives.

### No Action/No Wilderness Alternative

#### • Impacts on Wilderness Values

Because the WSA would not be designated wilderness, the identified wilderness values would not receive the degree of protection afforded by application of the BLM Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities (i.e., VRM Class II management on 4,190 acres, management under oil and gas leasing Category 4 [closed to leasing] on 50 acres and oil and gas leasing Category 3 [no surface occupancy] on 1820 acres, and ORV closure on 1,375 acres).

In the foreseeable future, disturbance of approximately 40 acres from oil and gas exploration, mainly in the eastern half of the WSA, would result in a direct loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas, involving about 0.5 percent of the WSA's acreage. Some special features, including Class A scenery and wildlife associated with wilderness, would be disturbed. Appropriate measures would be taken to protect endangered and other special status species prior to any surface-disturbing activity, and no significant negative impact would occur to these species. Refer to the Vegetation and Wildlife Including Special Status Species sections for more information. The perennial stream would not be significantly disturbed.

During the period of activity, the visual and audible disturbance from energy exploration would reduce the quality of opportunities for solitude and primitive recreation not only on directly disturbed areas but also indirectly on adjacent portions of the WSA.

As much as 40 percent (3,050 acres) of the WSA could be indirectly affected in the foreseeable future because the disturbance would involve exploratory roads throughout the eastern portion of the WSA.

Another conflict with wilderness values in the foreseeable future is ORV activity. The continued and

increased use of 0.5 mile of road at the mouth of the canyon would continue to detract from opportunities for solitude and primitive recreation. Limited ORV activity is occurring in the flat portion of the WSA above the canyons. In the foreseeable future, new trails formed by ORV use and sights and sounds during the period of activity would directly or indirectly reduce naturalness and opportunities for solitude and primitive recreation in the accessible portions of the unit. As much as 10 percent (760 acres) of the WSA would be directly affected.

The increased visitor use that would occur would be expected to reduce the quality of wilderness values. Although the additional use would be largely primitive in nature, some use would be vehicular in nature, and the WSA is not large enough to incorporate the additional use without loss of solitude and naturalness. Visitor restrictions or other controls would probably eventually be necessary to avoid loss of wilderness values.

The extent that disturbance would occur over the long term and, therefore, the long-term loss of wilderness values that would occur is not accurately known. Loss would occur, however, as intrusions increase.

Conclusion: Wilderness values would not be protected by wilderness designation, and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on as much as 800 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to 3,050 additional acres. Some special features, including Class A scenery and wildlife associated with wilderness, would be disturbed.

#### • Impacts on Vegetation Including Special Status Species

The anticipated maximum of 40 acres disturbed would result in loss of about 0.5 percent of the area's sparse vegetation until required reclamation is completed. No major changes in any vegetation type would be expected. Reclamation efforts could possibly benefit vegetation growth in the long term.

Vegetation types would be protected through the closure of 1,375 acres in Negro Bill Canyon to ORVs and 1,840 acres of the WSA would either be closed to surface occupancy or closed to leasing for oil and gas resources. However, continued ORV use of the flat areas above the canyons could impact individual

# NEGRO BILL CANYON WSA

plants of the one threatened (*Cycladenia humilis* var. *jonesii*) and the one Category 2 candidate (*Lygodesmia entrada*) species that could inhabit the mixed desert shrub and pinyon-juniper woodlands of the WSA. This situation would continue to be a management concern and result in intensive monitoring efforts to determine if these plants do in fact exist in the WSA and what impacts vehicle use is having or could have in the future. BLM would implement measures to protect the species as necessary.

**Conclusion:** Vegetation types and special status plant species would not be significantly affected by implementation of the No Action/No Wilderness Alternative.

## • Impacts on Mineral and Energy Exploration and Production

### • Leasable Minerals

Oil and gas categories in the WSA would remain the same (5,340 acres open, 410 acres open with special stipulations, 1,820 acres open with no surface occupancy, and 50 acres of no leasing). Wilderness protection stipulations on post-FLPMA leases would be lifted, and there would be 6,930 currently unleased acres available for lease.

The WSA is estimated to have 10 to 50 million barrels of oil and 60 to 300 billion cubic feet of natural gas in-place. These oil and gas resources could be explored and developed without concern for wilderness values. Favorability for occurrence of oil and gas in the Mississippian Formations is moderate for the WSA; however, drilling that has taken place around the WSA does not support this occurrence. Therefore, it is projected that exploration would occur but actual development of oil and gas would not occur within the WSA following exploration.

The entire WSA would be closed to potash leasing and development as outlined in the Grand RMP. However, the potash-bearing zones under the WSA are estimated to be well below 7,000 feet. Although approximately 75,000 to 7.5 million tons of potash may be recoverable within the WSA, it is doubtful that potash at these depths in the Paradox Basin would ever be exploited, even by in-situ methods, considering that more favorable areas exist elsewhere in the basin.

### • Locatable Minerals

Locatable mineral development could occur within the WSA without concern for wilderness values. About 6,245 acres would remain open to mining claim location and 1,375 acres would be withdrawn from mineral entry. The potential deposit of less than 500 metric tons of uranium oxide and vanadium, less than 50,000 metric tons of copper, and less than 100,000 tons of manganese would remain open for development. Vanadium, copper, and manganese are all currently listed as strategic and critical minerals. However, the favorability and certainty of such mineral resources occurring in the WSA is low and development is not expected.

### • Salable Minerals

There are minor deposits of sand, gravel, and building stone within the WSA. The overall quality and quantity of these deposits is low and such deposits are more readily available from surrounding areas.

**Conclusion:** Implementation of the No Action/No Wilderness Alternative would not impact nor further restrict mineral and energy resource exploration and production in the Negro Bill Canyon WSA.

## • Impacts on Wildlife Habitat and Populations Including Special Status Species

About 1,375 acres within Negro Bill Canyon would be closed to mechanized vehicle use and 1,890 acres would be closed to surface occupancy or closed to oil and gas leasing. Thus, wildlife species occurring in these areas would be afforded protection. However, wildlife could be adversely affected by possible surface-disturbing activities (40 acres) and ORV use where allowed. Surface-disturbing activities could possibly occur within the 3,353 acres of deer winter range located in the WSA. Disturbance and habitat loss would be short term while work was ongoing, and habitat could be enhanced over the long term by reclamation and revegetation. Wildlife species would die or move out if winter range was disturbed and might or might not return after activities ceased. However, these projected activities would affect only a minor portion (0.5 percent) of the wildlife habitat and populations located in the WSA; therefore, significant impacts are not projected. No habitat improvement or wildlife transplants are planned for the area.

## NEGRO BILL CANYON WSA

No threatened or endangered species are known to be within the WSA. Still, potential habitat exists for bald eagles, American peregrine falcons, and black-footed ferrets (all endangered) and five other special status species. Also, the golden eagle (a BLM sensitive species) inhabits the area. Before authorizing surface-disturbing activities, BLM would require site-specific clearances of the potentially disturbed areas. If threatened or endangered species could be affected, BLM would initiate consultation with FWS under provisions of the Endangered Species Act as necessary (refer to Appendix 4 in Volume I). Appropriate mitigation measures, such as avoidance of sensitive areas, would be applied. Because necessary measures would be taken to protect these animals, the viability of populations of threatened, endangered, or other special status animal species would be preserved with the No Action/No Wilderness Alternative.

Conclusion: Only 0.5 percent (40 acres) of the wildlife habitat in the WSA would be disturbed and wildlife habitat and populations including special status species would not be significantly affected.

### • Impacts on Recreation

About 6,245 acres would remain open for vehicular use in accordance with the RMP, and about 1,375 acres would be closed to ORV use. This closure would not apply to 0.5 mile of road at the mouth of Negro Bill Canyon or to other ways and trails in the upper portions of the WSA. It would apply mainly to the Negro Bill Canyon drainage including 1.0 mile of the road.

Primitive recreation opportunities would be foregone in those areas where potential mineral and energy surface-disturbing activities could take place (40 acres) and where vehicular use occurs in the upper portions of the WSA (760 acres). The quality of the primitive recreation experience would also be reduced in areas surrounding the disturbance-involving as much as 3,050 additional areas.

Overall recreational use of the WSA could be expected to increase as the State population increases. The amount of future increase in recreational use of the WSA is unknown. However, based on a review of several projections (UDNRE, DPR, 1985; UDNRE, ORA, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; Cordell and Hendee, 1982; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 to 7 percent per year over the next 30 years. At this rate, overall recrea-

tional use is expected to increase from the 3,370 current visitor days per year to be between 6,350 and 29,380 visitor days per year at the end of 30 years.

Assuming that the 2 to 7 percent increase in 30 years would be uniform among all recreation uses in the WSA, primitive recreational use would increase from the estimated current use of 2,350 visitor days per year to be between 4,430 and 20,480 visitor days per year.

Likewise, recreational activities utilizing vehicular access (hunting, sightseeing, mountain biking, etc.) would increase from 1,020 visitor days per year to between 1,920 and 8,900 visitor days per year. However, both primitive and vehicular recreation may have to be curtailed to protect recreation and other resource values and use would probably not reach the maximum projected levels.

Conclusion: The quality of primitive recreation would be reduced on up to 3,850 acres of the WSA. Both primitive and motorized recreational use would increase.

### All Wilderness Alternative (Proposed Action) (7,620 Acres)

#### • Impacts on Wilderness Values

Designation and management of all 7,620 acres as wilderness would preserve the wilderness values in the Negro Bill Canyon WSA. The potential for surface-disturbing activities would be eliminated through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness would be preserved on approximately 7,020 acres that meet the standards for naturalness and 600 acres that do not. Solitude would be preserved on approximately 1,375 acres that meet and 6,245 acres that do not meet the standards for outstanding opportunities. Primitive and unconfined recreation would be preserved on approximately 2,300 acres that meet and 5,320 acres that do not meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA, including Class A scenery, endangered and special status species, wildlife associated with wilderness, and the perennial stream, would also be protected.



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With this alternative, wilderness values would be preserved in the foreseeable future and over the long term. No disturbance is anticipated.

Vehicular use of 1 mile of the 1.5 miles of road and other ORV activity would cease with the ORV closure, improving opportunities for solitude and primitive recreation. It would continue to be administratively difficult to totally eliminate ORV use from the area, even with signing and patrol because ORV use is occurring in and adjacent to the WSA, and because some of the terrain of the WSA is readily accessible by vehicles.

Increased visitor use that would occur with time would be primitive in nature and would be managed so as to not result in loss of wilderness values. Visitor restrictions or other controls might be necessary to protect wilderness values.

Conclusion: Wilderness designation would preserve the wilderness values in the WSA.

## • Impacts on Vegetation Including Special Status Species

This alternative would provide vegetation (including special status species) with added protection since the entire area would be closed to mineral location, mineral leasing, and ORV use. No surface disturbance is projected, therefore, no impacts to the vegetation resource would occur.

Conclusion: Vegetation types and special status plant species would be protected by the All Wilderness Alternative.

## • Impacts on Mineral and Energy Exploration and Production

### • Leasable Minerals

Approximately 368 acres are under oil and gas leases. No exploration or development of oil and gas is presently occurring within the WSA. Existing leases could be developed subject to the stipulations issued at the time of leasing. It is unlikely that existing leases would be developed or a showing of commercial quantities made prior to their expiration dates, and expired leases will not be reissued.

The WSA is believed to be geologically favorable for the moderate occurrence of oil and gas, that

could be foregone under this alternative. The opportunity to explore for oil and gas would be foregone with this alternative. Because development of oil and gas is not projected in the foreseeable future without wilderness designation, loss of development potential would not be significant.

With this alternative, the area could not be leased for potash. It is assumed that there are from 75 thousand to 7.5 million tons of recoverable potash that could be foregone. However, the potash-bearing zones under the WSA are estimated to be well below 7,000 feet and the area is presently closed to potash leasing. It is doubtful that the potash resource at these depths would be explored or developed even without wilderness designation.

### • Locatable Minerals

Approximately 3,200 acres are under mining claim within the WSA, principally for uranium. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines, with consideration given to protecting wilderness values. It is assumed that no such exploration and/or development would occur of vanadium, copper, manganese (currently listed as strategic and critical minerals), or other locatable minerals would occur even without wilderness designation because of low resource and development potential.

### • Salable Minerals

With this alternative, the opportunity to recover salable deposits of sand, gravel, and building stone would be foregone. However, it is unlikely that they would ever be produced commercially, even without wilderness designation because of the poor quality and quantity and the availability of better resources outside the WSA.

Conclusion: Wilderness designation would preclude potential exploration opportunities for oil and gas. Significant production of locatable, leasable, or salable minerals would not be foregone.

## • Impacts on Wildlife Habitat and Populations Including Special Status Species

Wildlife would benefit from the preservation of solitude, the elimination of surface-disturbing activities,

## NEGRO BILL CANYON WSA

and from the ORV closure. The threatened, endangered, and other special status animal species that may occur in the WSA would be provided with additional protection.

**Conclusion:** Wilderness designation would protect all wildlife species and provide additional solitude.

### • Impacts on Recreation

The WSA has outstanding primitive recreational values. If designated, those high-quality opportunities would be recognized, managed, and protected through ORV closure, mineral leasing and location closure, and through management under VRM Class I (which allows for natural ecological change only).

The entire 7,620 acres would be closed to recreational ORV use instead of 1,375 acres as identified in the Grand RMP and the No Action/No Wilderness Alternative. This closure would apply to 1 mile of the 1.5 miles of road at the mouth of Negro Bill Canyon (approximately 0.5 mile of the road up Negro Bill Canyon is cherry-stemmed and would remain open to vehicular access) and to trails in the upper portions of the WSA. These routes are used primarily for mining claims and recreational access, and use currently accounts for about 1,020 ORV-type visitor days per year. Because similar nearby areas would continue to be available to ORV-type recreation, ORV use would not decline regionally.

It is estimated that primitive recreation use could increase from the current estimated primitive use of 2,350 annual visitor days to between 4,430 and 20,480 visitor days per year. However, visitor use may have to be controlled to protect wilderness and other resource values and probably would not reach the maximum projected levels.

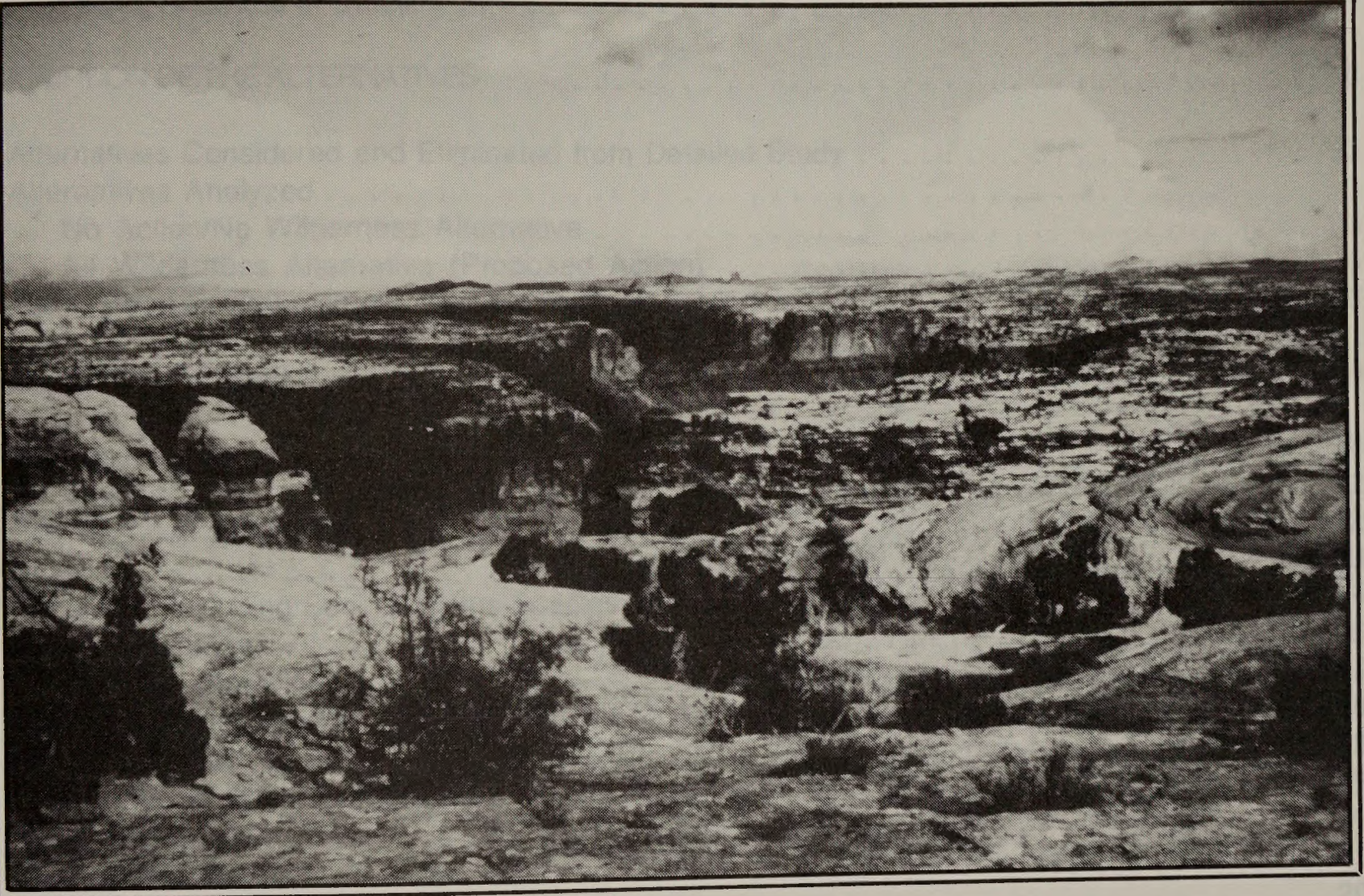
Although primitive use would increase, initially it would probably not fully offset the loss of ORV use within the WSA; therefore, overall recreation use in the WSA would likely be somewhat less than with the No Action/No Wilderness Alternative for several years following wilderness designation.

**Conclusion:** The All Wilderness Alternative would benefit primitive recreation by eliminating surface-disturbing activities and increasing management attention and recognition of primitive recreation values. Primitive use would increase. ORV use would be eliminated from the WSA but would not decline on a regional basis.

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## INTRODUCTION

### General Description of the Area

The Horseshoe Canyon (North) WSA is in the San Rafael Desert region of Emery and Wayne Counties, Utah. It is about 55 road miles from the Town of Hanksville, Utah and about 40 road miles from Green River, Utah. The WSA contains approximately 20,500 acres of BLM-administered land. Approximately 1,920 acres are in Wayne County and 18,580 acres are in Emery County. The WSA is comprised of three major drainages to the Green River-Labyrinth Canyon drainage. It is roughly 12 miles long, northeast to southwest, and 8 miles wide, east to west.

The WSA's topography can be divided into three categories: sandy flats in rolling sandstone terrain, deep cut drainages, and river canyon bottoms.

The sandy flats and rolling terrain are perched above the intricate canyon system and provide vantage points to view the unique character of the Utah canyonlands. Elevations in this portion of the WSA are 4,600 to 5,100 feet.

The canyons of Horseshoe, Two Mile, and Keg Spring Canyons are deeply entrenched into the rolling terrain. They vary in depth from 150 feet at their heads to 1,000 feet as they meet the cut of Labyrinth Canyon of the Green River. The canyons are accessible from the higher country in only a few spots. Elevation varies from 4,000 feet at the base of the canyons to 5,000 feet on their rims.

The river canyon bottom is thickly vegetated, while the dominant vegetation type over the rest of the WSA is the desert shrub-sagebrush type. Some side canyon bottoms contain small pour-offs and deep pools of water. Shade is offered by the tall-reaching walls of the drainages.

The area is an arid desert climate. Average annual precipitation is 6 to 8 inches, which occurs in the form of rain and snow. Temperatures range from 10 to 110 degrees Fahrenheit (F).

The WSA is located in the lower end of a canyon approximately 35 miles long, which is potential wilderness for its entire length. There are two management designations for the other portions of the can-

yon: the detached Horseshoe Canyon Unit of Canyonlands National Park and the Horseshoe Canyon (South) WSA (UT-050-237). The combined total acreage of the three contiguous areas is almost 62,000 acres.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume V, the following changes specific to the WSA have been made since publication of the Draft EIS.

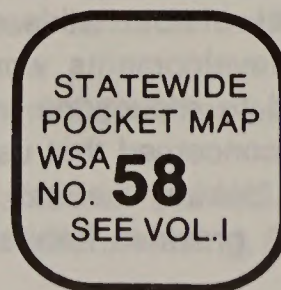
1. Portions of the southwest boundary of the WSA, as well as the boundary in T. 25 S., R. 17 E., secs. 6 and 7; and T. 26 S., R. 17 E., sec. 11, have been redrawn to correct errors in the Draft EIS maps. A 40-acre parcel of State owned land in T. 26 S., R. 17 E., sec. 16, has also been excluded from the WSA. These changes did not require acreage adjustments because acreage calculations were based on the boundaries as shown in the BLM inventory document and Final EIS. A cherry-stemmed road has been added to T. 26 S., R. 17 E., sec. 5.

2. The anticipated surface disturbance presented in the Draft EIS (5,225 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities projected to be feasible within the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of surface disturbance estimates from the 5,225 acres reported in the Draft EIS to 50 acres of surface disturbance for the Final EIS.

### Specific Issues Identified Through Scoping and Public Comment

- Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to



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Volume V (i.e., impacts on air quality, geology and topography, water rights, and land use plans and policies), the following issues or impacts specific to the Horseshoe Canyon (North) WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Vegetation Including Special Status Species: Estimates of surface disturbance or inundation of vegetation have been revised downward from the 5,225 acres analyzed in the Draft EIS to only 50 acres for the Final EIS. Thirty-five percent of the WSA is rock outcrop with little or no vegetation. The relict plant community in the Bowknot Bend area is in extremely rugged and isolated terrain, and the potential for disturbance in this area is remote. Therefore, the impacts of direct disturbance of vegetation would not be significant with either of the alternatives (approximately 0.2 percent of the WSA).

No threatened or endangered plant species are known to occur in the WSA, however one Category 2 candidate species may occur in the area. BLM would require appropriate clearances to be conducted prior to allowing surface disturbing activities. If necessary, consultation with FWS concerning impacts on threatened or endangered plant species would occur. Because of these actions no impacts to special status species are projected. Therefore, impacts on vegetation are not analyzed in detail for the Horseshoe Canyon (North) WSA.

2. Water Resources: The public is concerned that wilderness designation would interfere with development of water. Future developments could also increase sediment yield and affect water quality. There are two perennial streams in the WSA. Both originate from springs inside the WSA or on NPS lands immediately upstream of the WSA. Potential uses include livestock, recreation, and wildlife, and these uses would be compatible with wilderness management. The Green River forms the northeastern boundary of the WSA but is outside the potential wilderness area. Therefore, impacts on water uses and quality are not significant issues for the Horseshoe Canyon (North) WSA and are not discussed in detail in the Final EIS.

3. Wildlife Including Special Status Species: The public is concerned that without wilderness designation mineral and other developments would destroy wildlife habitat and lead to reductions in wildlife populations. They are also concerned that use of ORVs would disturb wildlife and destroy habitat. The Horseshoe Canyon (North) WSA provides habitat for a variety of

animal species, but populations are low and no one species can be described as abundant. With only 50 acres of surface disturbance projected, about 0.2 percent of the WSA would be affected and important wildlife habitat would not be lost. Because of rugged terrain, recreation use would remain primitive with or without wilderness designation. Endangered, threatened or other special status animal species would be further protected by BLM under provisions of the Endangered Species Act. Given these conditions, impacts on wildlife habitat and populations are not significant issues for the Final EIS.

4. Forest Resources: The only forest resources in the WSA are poor quality and low quantities of pinyon pine and juniper trees. Demand is low and there is limited access. For these reasons, impacts on forest resources are not significant issues for analysis in the Final EIS.

5. Livestock Management: The public is concerned that wilderness designation would interfere with livestock management by placing restrictions on access for maintenance of existing range improvements, moving of livestock, and by preventing future range improvements. Restrictions would be placed on predator control and livestock losses could increase in both the wilderness area and on adjacent lands. However, the Horseshoe Canyon (North) WSA comprises a portion of only one grazing allotment (34 percent of the total forage in the allotment), utilized by one permittee. There are only 1.25 miles of ways in the WSA and existing rangeland developments include only three springs and 1 mile of water pipeline. There are no proposed rangeland developments. Several methods of predator control would be allowed in designated wilderness and predators have not been controlled in the area for several years. For these reasons, impacts on livestock management for the Horseshoe Canyon (North) WSA are not significant issues for analysis in the Final EIS.

6. Visual Resources: As discussed above, 50 acres of surface disturbance are projected for the WSA in the Final EIS. This level of disturbance would include road construction to State lands. Because of economic constraints and projected locations of minerals, most road building would likely be in the more accessible areas on Keg Point and south of Horseshoe Canyon. Nevertheless, road cuts would be noticeable. Because impacts on visual resources would mainly affect the wilderness value of naturalness, the impacts on visual resources are not addressed in the Final EIS as a separate topic, but are addressed as part of the



# HORSESHOE CANYON (NORTH) WSA

analysis of naturalness and special features in the Wilderness Values sections.

7. **Recreation:** The public has expressed concern that wilderness designation would change recreational use from motorized to primitive or, conversely, that without wilderness designation motorized recreation will eliminate or reduce opportunities for primitive recreation. Recreational use of the WSA is estimated to be about 2,260 visitor days per year of which 10 visitor days are related to ORV use. Lack of ORV use results from the remote location of the WSA and the rugged terrain of the area. Therefore, recreation use would remain primarily primitive with or without wilderness designation. Any vehicular use would be confined to the areas outside the main canyons. Therefore, impacts on recreation use are not significant issues for the Horseshoe Canyon (North) WSA.

- Issues Analyzed in Detail

Significant issues for the Horseshoe Canyon (North) WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on soils including increases in soil erosion.
3. Impacts on oil, gas, and uranium exploration and production.
4. Impacts on cultural resources.
5. Impacts on local economic conditions.

Comments made during the public comment period for the Draft EIS center mainly on: Support for combining the Horseshoe Canyon (North) WSA with lands north and east of the WSA (east of the Green River) into a Labyrinth Canyon Wilderness, questions on exclusion of the Green River from the WSA and the use of the river as the WSA boundary; concerns about the effect of wilderness on PSD classification under the Clean Air Act; the effect of wilderness designation on water quality, rights, and uses; questions on BLM's assessment of mineral values; questions on the potential for oil and gas development; and statements on the multiple-use benefits of wilderness designation.

See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 58 for responses to spe-

cific comments about the Horseshoe Canyon (North) WSA.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated from Detailed Study

An alternative that would add Federal and State lands north of the WSA and combine lands east of the Green River to form a Labyrinth Canyon wilderness were suggested in the public comments. These alternatives would add between 21,500 and 62,900 acres making a total wilderness of 42,000 to 83,400 acres. They are not analyzed because the inclusion of State lands is not consistent with BLM's wilderness review guidelines (refer to Volume VII-B, General Comment Response 6.4) and because other public lands were dropped from study during the inventory phase (refer to Volume VII-B, General Comment Response 3.1).

### Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action/No Wilderness; (2) All Wilderness (Proposed Action) (20,500 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections for each alternative. These assumptions are indicated in each case. The assumed management actions presented in the Introduction to Volume V are also applicable.

- No Action/No Wilderness Alternative

With this alternative, none of the 20,500-acre Horseshoe Canyon (North) WSA would be designated by Congress as part of the NWPS. Although BLM's land use plans are regularly updated and the San Rafael RMP will replace the San Rafael MFP, it is assumed that the area would continue to be managed in accordance with the San Rafael MFP on 28,580 acres (USDI, BLM, 1979b), and the Henry Mountain MFP (USDI, BLM, 1982d) on 1,920 acres. The 760 acres of State land within the WSA (refer to Map 1) have not been identified in the MFP for special Federal acquisition through exchange or purchase. State lands are assumed to remain under State ownership. There are no private or split-estate lands in the WSA.

- Management Conditions and Constraints

All 20,500 acres of the WSA would remain open to mineral location, leasing, and sale.

# HORSESHOE CANYON (NORTH) WSA

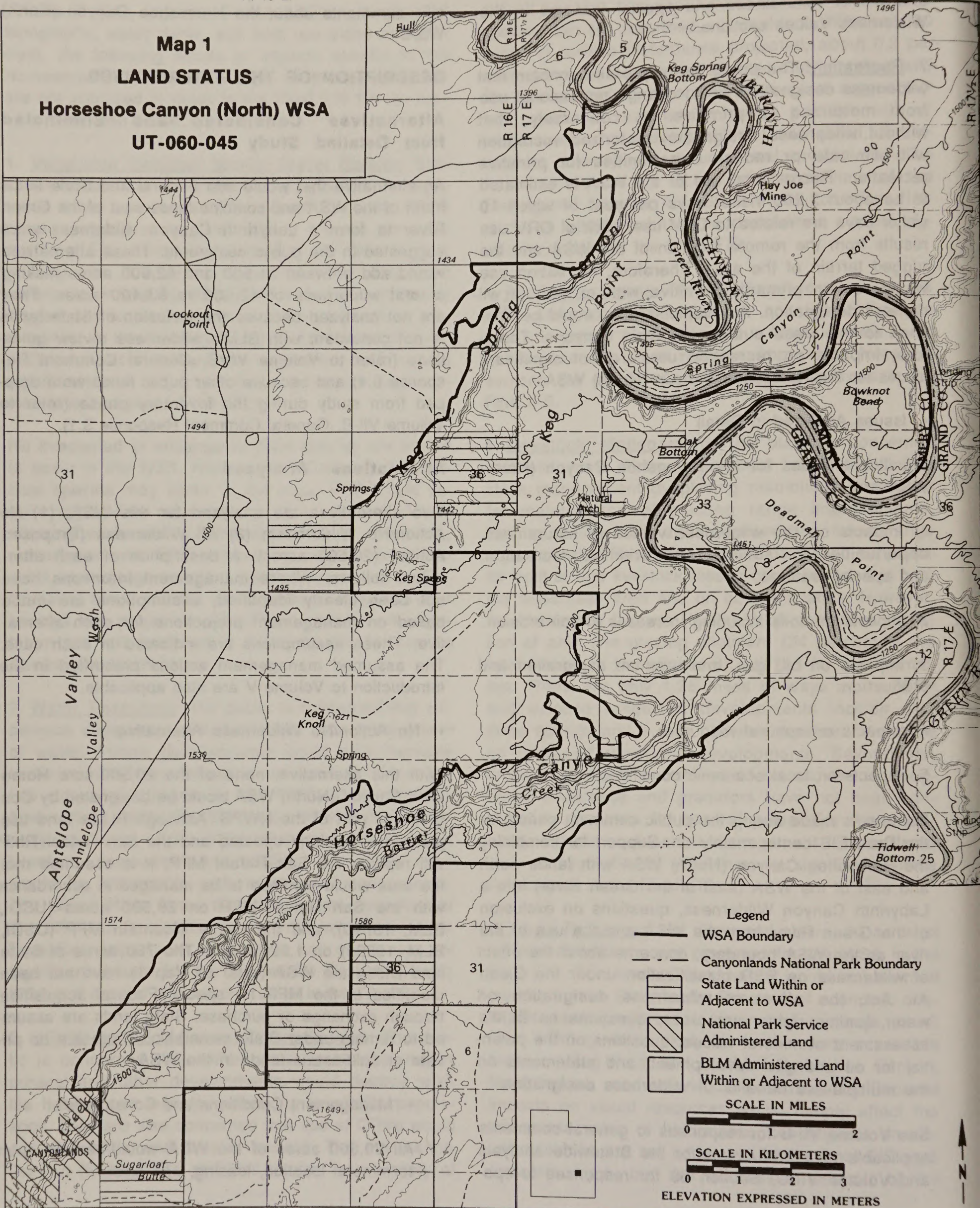
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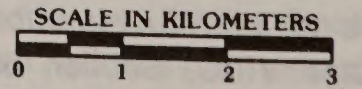
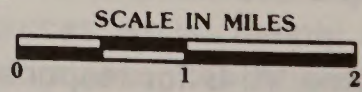
**Map 1**  
**LAND STATUS**  
**Horseshoe Canyon (North) WSA**  
**UT-060-045**

T. 25 S.

T. 26 S.



- Legend**
- WSA Boundary
  - - - Canyonlands National Park Boundary
  - ▨ State Land Within or Adjacent to WSA
  - ▧ National Park Service Administered Land
  - ▭ BLM Administered Land Within or Adjacent to WSA



ELEVATION EXPRESSED IN METERS

## HORSESHOE CANYON (NORTH) WSA

Approximately 313 acres would remain in public water reserves that are closed to location of non-metalliferous minerals. Development work, extraction, and patenting would be allowed on 94 existing mining claims (1,880 acres) and future mining claims. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809). There is one post-FLPMA oil and gas lease in the WSA (320 acres). Future leases could be developed under Category 1 (standard stipulations) on 14,860 acres and Category 3 (no surface occupancy) on 5,000 acres. No leasing would be allowed on 640 acres (Category 4).

Because there is moderate favorability and certainty of uranium deposits and the potential for structural traps for oil and gas, it is projected that the area would be explored for uranium and oil and gas in the foreseeable future. Uranium development would be likely following exploration, but development of oil and gas or other minerals is not expected because the level of known resources and the probability of their development are too low to support development assumptions. Refer to Appendix 6 in Volume I for an explanation of mineral and energy development projections.

The present domestic livestock grazing use would continue as authorized (721 AUMs). Use and maintenance of the three developed springs, one pipeline, and three livestock trails (less than 1 mile in total length) would continue without concern for wilderness values. No additional rangeland developments are planned.

Approximately 313 acres of the WSA would remain in a public water reserve and would be segregated from public land laws and location of non-metalliferous minerals. About 9,215 acres of the WSA would remain in a power site classification that would be segregated from public land laws but would remain open to location of mining claims if the claimant makes an application under the Mining Claim Restoration Act of 1955. Even though the power site classification would remain in effect, a reservoir for hydroelectric generation of electricity is not currently planned on the mainstream of the Green River in the vicinity of the WSA. Development of hydropower in this area is unlikely because the river is under study for wild and scenic river status, it is habitat for endangered and threatened fish species, and a reservoir would affect flows through Canyonlands

National Park. Reintroduction of peregrine falcons into the WSA is planned.

The entire WSA acreage would be open to vehicular use. The two ways (1.25 miles) located atop the mesa in the central portion of the WSA would remain open. Because of the remoteness of the area, lack of access, and rugged terrain, use of vehicles is not expected to increase significantly in the foreseeable future.

The entire 20,500-acre area would continue to be closed to woodland product harvest. There is no harvest of forest products at the present time, nor is any planned. Commercial harvest of pinyon-juniper woodland for firewood, fence posts, or Christmas trees currently is not allowed.

The entire area would continue to be managed under VRM Class II on 20,500 acres.

### • Action Scenario

It is projected that approximately 50 acres of surface disturbance including up to 10 miles of access roads, would occur in the WSA in the foreseeable future for uranium exploration and development and oil and gas exploration. The highest uranium potential is in the northeastern portion of the WSA. Road building in the rugged terrain, exploration drilling, and development of facilities to support underground mining in two locations will disturb up to 24 acres.

Twenty acres including up to 8 miles of access roads will be disturbed by oil and gas exploration in the WSA. Stratigraphic traps could occur anywhere in the WSA and two exploratory wells would be located by geophysical exploration. Once drill sites are located, up to 10 acres would be disturbed by drill pad and access road construction for each of the two sites.

It is also projected that 6 acres will be disturbed for construction of about 3 miles of access road to in-held parcels of State land for purposes of mineral exploration. The in-held parcels are presently under lease for oil, gas, and hydrocarbons.

Based on similar operations in the vicinity of the WSA, it is projected that uranium production in the WSA would require 20 to 40 employees at one time for the life of each of the projects which could range from 5 to 10 years depending on the

## HORSESHOE CANYON (NORTH) WSA

quantities of uranium discovered. Oil and gas exploration wells would employ an average of 10 employees at each of the well sites and each well would take from 3 to 6 months to complete.

All areas disturbed by mineral exploration and development activities would be rehabilitated. Successful reclamation and re-establishment of ground cover would require about 5 years and would likely require intensive reclamation efforts and measures.

No rangeland, watershed wildlife habitat improvement, or other projects are planned. It is assumed that the UDWR would transplant peregrine falcons in the major canyon systems in the foreseeable future.

Due to rugged terrain no disturbance from ORV activity is anticipated.

Recreation use is projected to increase over the current estimated use of 2,260 annual visitor days at a rate of 2 to 7 percent per year. Almost all of the use is attributed to primitive activities.

- All Wilderness Alternative (Proposed Action)

With this alternative, all 20,500 acres of the Horseshoe Canyon (North) WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character.

The policy of the State is to reserve its position regarding exchange of in-held lands within any particular WSA (see Chapter 1 in Volume I). Based on this policy regarding exchange of State lands, it is projected that State lands would remain under existing ownership. There are three parcels of State land in two sections in the WSA totaling 760 acres (refer to Map 1 and Appendix 3 in Volume I). There are no private or split-estate lands in the WSA. The figures and acreages given with this alternative are for Federal lands only.

- Management Conditions and Constraints

After wilderness designation, all 20,500 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approx-

imately 1,880 acres of 94 existing mining claims and any future claims filed prior to designation that may be determined valid. It is assumed that some of the existing or future claims would be valid and that limited uranium exploration and development would occur following designation. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) with wilderness as a consideration. It is projected that the 320 acres under lease for oil and gas would not be developed due to the anticipated marginal resource. New leasing would not be allowed prior to or following wilderness designation. Therefore exploration or development of leasable minerals would not occur with the All Wilderness Alternative.

Present domestic livestock grazing would be allowed to continue as authorized in the San Rafael MFP. The 721 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of three spring developments, one pipeline, and three livestock trails could continue in the same manner as in the past based on practical necessity and reasonableness. A small group of wild burros (probably less than 10 animals) that frequent the WSA would remain in the wilderness.

It is assumed that approximately 313 acres of the WSA would remain in a public water reserve that segregates the land from public land laws and location of nonmetalliferous minerals. It is assumed that the 9,215 acre power site classification that segregates the lands from public land laws would be eliminated from the wilderness area. Reintroduction of peregrine falcon by the UDWR is planned and would be allowed.

The entire 20,500-acre area would be closed to ORV use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR 8560 provisions; or (2) for occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. The approximately 1.25 miles of existing vehicular ways in the area would not be available for vehicular use except as indicated above. The BLM proposed action is a variation that would cherry-stem the way extending from the end of the Keg Knoll Road to the vicinity of Natural Arches in Township 25 South, Range 17 East. None of the WSA boundary follows existing gravel and dirt roads; however, four roads (jeep trails) dead-end

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R. 16 E.

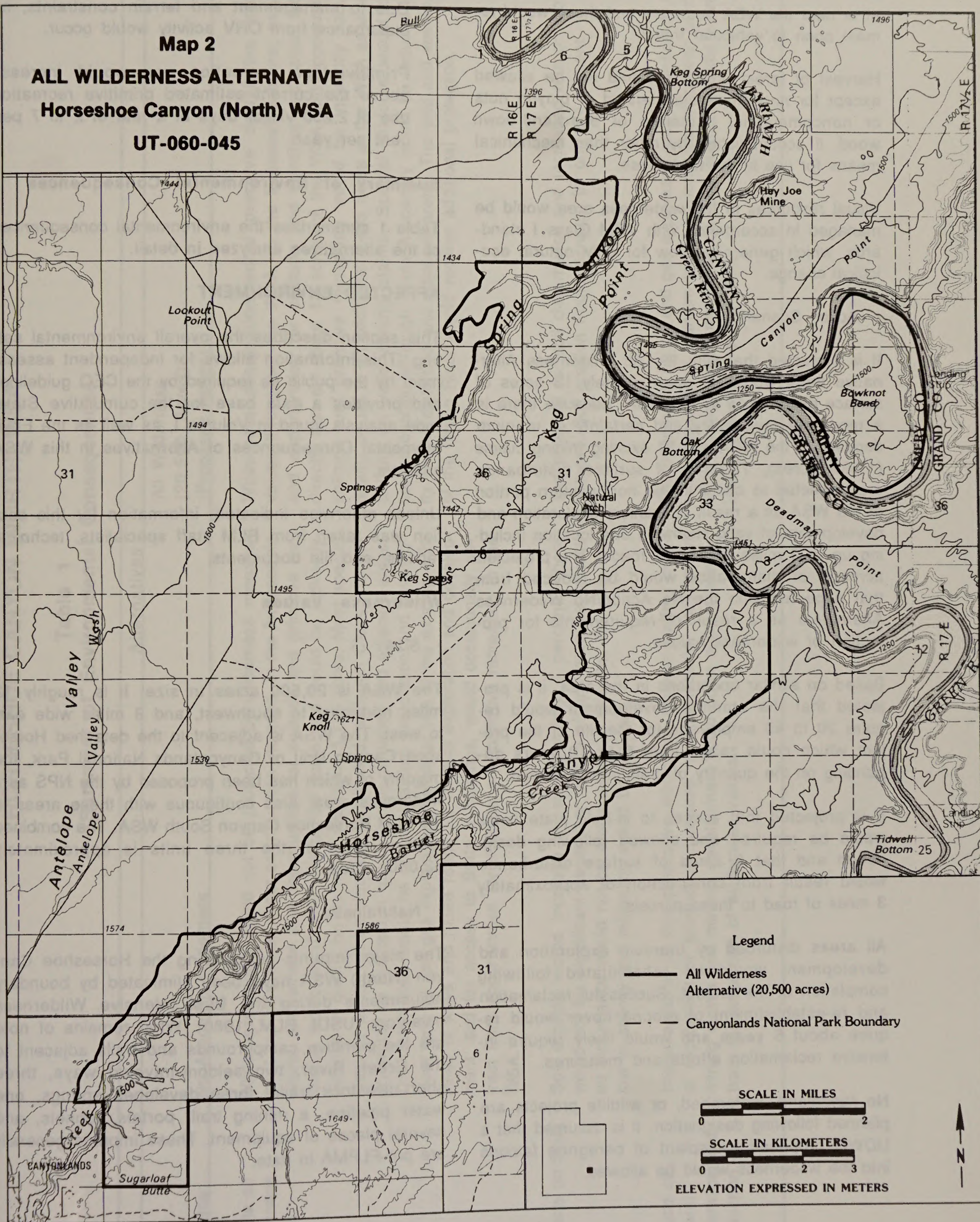
R. 17 E.

## Map 2

### ALL WILDERNESS ALTERNATIVE Horseshoe Canyon (North) WSA UT-060-045

T. 25 S.

T. 26 S.



## HORSESHOE CANYON (NORTH) WSA

at or near the WSA boundary and these would remain open to vehicular travel.

Harvest of forest products would not be allowed except for noncommercial harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means for use in the wilderness.

Visual resources in the wilderness area would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

- Action Scenario

It is projected that with the All Wilderness Alternative there would be approximately 13 acres of surface disturbance in the WSA. Because there is a moderate favorability and certainty of uranium deposits in the WSA and 94 existing mining claims (1,880 acres), 7 acres of surface disturbance are projected to occur in the northeastern portion of the WSA as a result of uranium exploration and development of valid claims in one location including up to 2 miles of access roads. The projected acreage of disturbance would be reduced from that expected with the No Action/No Wilderness Alternative as a result of requirements for protection of wilderness values.

Based on similar operations in the area, it is projected that the uranium development would require 20 to 40 employees for the life of the project which could range from 5 to 10 years depending on the quantity of uranium discovered.

It is projected that access to in-held state lands would be required and allowed following designation and that 6 acres of surface disturbance would result from construction of approximately 3 miles of road to these parcels.

All areas disturbed by uranium exploration and development would be rehabilitated following completion of the project. Successful reclamation and re-establishment of ground cover would require about 5 years and would likely require intensive reclamation efforts and measures.

No rangeland, watershed, or wildlife projects are planned following designation. It is assumed that a UDWR proposed transplant of peregrine falcons into the wilderness would be allowed.

Due to management and terrain constraints, no disturbance from ORV activity would occur.

Primitive-type recreation use would increase above the current estimated primitive recreation use of 2,250 visitor days at a rate of 2 to 7 percent per year.

### Summary of Environmental Consequences

Table 1 summarizes the environmental consequences of the alternatives analyzed in detail.

### AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

#### Wilderness Values

- Size

The WSA is 20,500 acres in size. It is roughly 12 miles northeast to southwest, and 8 miles wide east to west. The WSA is adjacent to the detached Horseshoe Canyon Unit of Canyonlands National Park, the majority of which has been proposed by the NPS as a wilderness area. Also contiguous with these areas is the BLM Horseshoe Canyon South WSA. The combined total acreage of the three units is approximately 62,000 acres.

- Naturalness

The major imprints surrounding the Horseshoe Canyon (North) WSA have been eliminated by boundary adjustments during the BLM Intensive Wilderness Inventory (USDI, BLM, 1980). What remains of note are the primitive campgrounds and trails adjacent to the Green River, two seldom-traveled ways, three short livestock trails, three developed springs, one water pipeline, a mining trail, portals, tunnels, and several pieces of equipment. These imprints generally are pre-FLPMA in date.

# HORSESHOE CANYON (NORTH) WSA

Table 1  
Summary of Environmental Consequences

Alternatives	
Resource	No Action/No Wilderness
Impacts on Wilderness Values	<p>Wilderness values would not be protected by wilderness management and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 50 acres and would be indirectly reduced in quality on up to an additional 5,125 acres. Most special features would not be significantly affected, although Class A scenery would be reduced in quality in the disturbed and development, and oil and gas exploration. Vehicular use of the existing 1.25 miles of ways and future roads for mineral exploration and development, and for access to State in-holdings, would occasionally detract from opportunities for solitude and primitive recreation in the WSA.</p>
Impacts on Soils	<p>Soil erosion would increase by approximately 1 percent. There would not be significant secondary off-site effects because projected disturbance would not be along perennial streams, the soils are low in salinity and mitigation would be required.</p>
Impacts on Mineral Exploration and Production	<p>Implementation of this alternative would not adversely affect mineral exploration or production because mineral leasing, location of mining claims and mineral development could occur without restrictions for protection of wilderness values.</p>
	<p>All Wilderness (20,500 Acres) (Proposed Action)</p> <p>Wilderness designation would preserve overall the wilderness values throughout the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on about 13 acres of the WSA and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 1,435 acres of the WSA as a result of activity on valid mining claims. Special features would be preserved overall, although Class A scenery would be reduced in quality on the disturbed and adjacent areas. The wild and scenic values of the Green River would receive additional protection.</p> <p>The potential for soil disturbance and increased erosion would be reduced. Soil erosion would increase by only 0.4 percent.</p> <p>The opportunity for oil and gas exploration and production of an unknown quantity of uranium would be foregone. A portion of the potential uranium resource would be recovered from valid claims following wilderness designation.</p>

# HORSESHOE CANYON (NORTH) WSA

Table 1 (Continued)  
Summary of Environmental Consequences

Alternatives	
Resource	No Action/No Wilderness
Impacts on Cultural Resources	<p>Surface disturbance due to mineral location and leasing may have some impact on cultural resources, but it is expected to be minimal because only 0.2 percent of the WSA would be disturbed as mitigation would be required. Continued vehicular access is expected to have only minor impacts on archaeological sites because vehicle use is restricted by rugged terrain. Cultural resource management could continue without regard to wilderness management.</p>
Impacts on Economic Conditions	<p>Local economic conditions and trends would not be affected. Uranium development would employ up to 80 people at one time in the foreseeable future. This would represent about an 8 percent increase in projected employment in Wayne County or 1 percent increase in projected employment in Emery County in the year 2010. Recreation-related expenditures could contribute up to \$71,540 annually to the local economy by the year 2020. Present and future oil and gas leases could contribute up to \$39,720 annually in Federal lease revenues.</p>
	<p>All Wilderness (20,500 Acres) (Proposed Action)</p>
	<p>Cultural resources including four known sites would be protected from most surface disturbance and all vehicular access. The benefits of protection would probably outweigh negative effects of increased vandalism due to increased future recreational use. Management may be restricted in scope and execution in order to protect other wilderness values.</p>
	<p>Existing economic conditions would not be affected. Potential local employment would be reduced by 20 to 40 jobs in the foreseeable future. Future local recreation-related expenditures could contribute up to \$71,540 annually to the local economy by the year 2020. Up to \$39,720 in annual Federal lease revenues would be foregone.</p>



## HORSESHOE CANYON (NORTH) WSA

The two ways are located in the central portion of the WSA, along the southwest border. The ways extend approximately 0.75 mile and 0.50 mile inside the WSA, along two mesa tops of slickrock and sandy flats. The ways were created by blading in the 1960s. Presently, they are being kept evident by periodic vehicular travel. In the summer of 1982, oil and gas exploration was conducted along the second way (0.50 mile) and reclaimed under Interim Management Policy (USDI, BLM, 1979a) constraints.

The three short livestock trails (each approximately 0.25 mile long) and a water pipeline are located in the southern portion of Keg Spring Canyon. The pipeline was used to transfer water from a spring to a water tank above the canyon. The tank and pipeline are no longer in use. The trails are used periodically by livestock. In September of 1983, a change in class of livestock was approved. This did not affect the naturalness of the WSA.

Along the eastern edge of Bowknot Bend is evidence of mining exploration of the 1950s. From the Green River bottom, an old road cut with steep switchbacks, several portals with tailing piles below, and some mining equipment are visible. An abandoned cable and ferry extend across the river on the north side of the bend and were once used as a means for access to the mining operation. Natural processes are slowly reclaiming the road cuts. These imprints are localized and do not detract from the WSA's natural character. Therefore, although these imprints combined cover approximately 410 acres of the WSA, the naturalness criterion is met for the entire 20,500-acre WSA. Approximately 2,400 acres could be considered untouched in character and include the relic plant communities occurring on isolated parcels within the WSA on the mesa tops at Bowknot Bend and Horseshoe Bend.

### • Solitude

The WSA offers outstanding opportunities for solitude. The three major canyon systems, plus the portion of Labyrinth Canyon within the WSA, offer opportunities for users to experience seclusion and isolation. The canyon's meanders, thick canyon bottom vegetation, and 150- to 1,000-foot cliffs effectively block lines of sight and suppress sounds for any substantial distance within these canyons. Off-site intrusions and influences are essentially nonexistent within the canyons.

The higher reaches of the WSA, above the canyon drainages, are open and provide great vantage points of the spectacular desert canyon system to the north-east, east, and southeast. Here the vegetation cover is limited and does not effectively screen visitors. The rolling terrain and topographic character of petrified dunes, however, do allow for intermittent separation and seclusion. With an expansive view of the natural surroundings, a user can experience a feeling of remoteness. This is intensified because the WSA is located in a remote portion of the State. Man-made intrusions and sounds are essentially unnoticeable in many locations in the region outside of the Horseshoe Canyon (North) WSA.

The entire WSA (20,500 acres) contains outstanding opportunities for solitude.

### • Primitive and Unconfined Recreation

The Green River corridor, Keg Spring Canyon, Two Mile Canyon, and Horseshoe Canyon are enjoyed by river floaters and hikers for the primitive recreation opportunities they provide. River users have established primitive hiking trails and camps within the WSA. Hikers from Canyonlands National Park explore Horseshoe Canyon and sometimes extend their trip into the WSA. Horseshoe Canyon and Keg Spring Canyon have intermittent running water, pools, pour-offs, and springs throughout their drainage, making them very attractive during the warmer months.

Hiking, backpacking, camping, and cultural exploration are outstanding recreational uses of these canyons. Dramatic sheer red-walled cliffs, pinnacles, knobs, isolated tracts of land, two arches, hanging gardens, and historic remnants within the WSA all contribute to a high quality recreational experience.

In addition to the outstanding activities already mentioned, the striking scenery makes for high quality sightseeing, photography, and artistic endeavors. The occasional observation of wildlife attracted to the water in the area also supplements the user's outdoor experience. These qualities combined allow the entire WSA (20,500 acres) to meet the outstanding primitive recreation criterion set for areas under wilderness review.

### • Special Features

During the BLM wilderness inventory, the Horseshoe Canyon (North) WSA was found to offer supplemental features of geologic, scenic, historic, wildlife, and

# HORSESHOE CANYON (NORTH) WSA

ecologic values. These features enhance the other opportunities available within the unit.

The canyons of this unit offer many exposed geologic strata and formations, including cliffs, knolls, alcoves, caves, and arches. The upper reaches provide dramatic views of the twisted and carved character of the area. Bowknot Bend is a perfect example of the present creation of a rincon. The Green River has carved a large deeply entrenched meander, leaving only a narrow neck to be eroded away before its course takes a shortcut. A completed rincon can be found nearby at the mouth of Horseshoe Canyon.

The WSA possesses a variety of historical interests. Adjacent to the southwestern border and an extension of the Horseshoe Canyon drainage, are notable pictographs in the detached Horseshoe Canyon Unit of Canyonlands National Park. Within the Labyrinth Canyon drainage and WSA along the Green River, is evidence of the early river explorers. A river register at Bowknot Bend records the passage of both famous and unknown river runners. Several other rock carvings can be found in the WSA along the river course, adding a distinctly historic flavor to any recreational trip.

Riparian vegetation along the Green River and within the major canyon drainages provides some diversity of habitat for many species of waterfowl, reptiles, and mammals. Habitat diversity and riparian vegetation of the WSA are emphasized by the arid character of the surrounding region. Several isolated tracts of land in the WSA provide a unique relic vegetation habitat. These areas are inaccessible and remain undisturbed by grazing or browsing animals.

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. There are six animal species (Colorado squawfish, humpback chub, bonytail chub, black-footed ferret, peregrine falcon, and bald eagle), listed as endangered which are within, or may be within, the WSA. There are seven animal species and one plant species that are considered sensitive which may occur within the WSA. Desert bighorn sheep, a wildlife species associated with wilderness, may frequent the WSA. Refer to the Vegetation and Wildlife Including Special Status Species sections for additional information. The entire WSA is rated Class A for scenic quality. It has approximately 20 miles of perennial streams, the majority of which is the Green River along the eastern boundary of the WSA. This portion of the Green River is included on the Nation-

wide Rivers Inventory list of rivers to be studied for wild and scenic river potential (USDI, NPS, 1982).

## • Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV types blackbrush and galleta-threawn shrub steppe. Refer to the Vegetation Including Special Status species section for more discussion on ecoregions and PNV types. The ecoregion and PNV types represented by this WSA are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

This WSA is within a 5-hour drive from two standard metropolitan statistical areas. These are Salt Lake City/Ogden, Utah, and Provo/Orem, Utah.

## Air Quality

The WSA is a PSD Class II area as per the 1977 Clean Air Act Amendments. The WSA is adjacent to the 3,000-acre detached Horseshoe Canyon Unit of Canyonlands National Park, a PSD Class I area.

Potential pollution sources include industrial and vehicular emissions originating from the Castle Valley, Green River, and Moab areas. The nearest large point sources are coal-fired powerplants (about 64 air miles to the west). Fugitive dust is an intermittent, localized concern as a result of construction, traffic on dirt roads, and wind patterns. Visibility from canyon rims in the WSA is good, ranging from 30 to 100 miles.

## Geology and Topography

The Horseshoe Canyon (North) WSA is in the Canyonlands Section of the Colorado Plateau Physiographic Province. It is located on the eastern edge of the San Rafael desert and along the deep-cut drainages of Labyrinth Canyon of the Green River.

The WSA is near the northwestern margin of the Paradox Basin. Geologic formations outcropping in the WSA consist of sedimentary rocks which range from the Triassic Moenkopi to the Jurassic Carmel.

The Moenkopi Formation, an outcrop found in the WSA along the Green River from Bowknot Bend to Horseshoe Canyon, consists of red and buff, cross-bedded medium-grained sandstone and mudstone, and green-gray and red shale conglomerate. Toward the base of

# HORSESHOE CANYON (NORTH) WSA

the formation is a white to gray limestone with sandstone known as the Sinbad Limestone Member. This formation is an oil and gas producer.

Also exposed along the Green River from Bowknot Bend to Horseshoe Canyon is the Chinle Formation. This formation consists of sandstone, variegated shale, and conglomerate, all of which are lenticular and intertonguing. The formation is a uranium producer and composed of four members: Temple Mountain, Monitor Butte, Mossback, and Church Rock.

The Wingate Formation lines the major deep canyons within the WSA. It consists of buff, orange, and brown, massive cross-bedded, medium-grained sandstone marked by vertical jointing. It also contains minor amounts of shale conglomerate and lenses of cherty limestone.

The Kayenta Formation is situated along the major drainages in the higher elevations of the WSA. It is composed of red, argillaceous sandstone, cross-bedded in part with red and green shale, and a siltstone-pebble conglomerate.

The Navajo Sandstone is a colorful formation found in the upper elevations of the WSA. The formation is a massive, medium-grained, cross-bedded sandstone. Tan, gray, orange, and yellow-colored caps appear as petrified dunes, circumscribed by fine pinkish sand lots. Lenses of limestone up to 5 feet thick occur in the upper half of the formation. Situated atop the deep canyon drainages and within this formation are several arches, caves, buttes, and knolls.

The Carmel Formation makes up only a small percentage of the WSA's surface. It consists of brown to gray sandy limestone, red thin-bedded sandstone, and red and green shale with beds of gypsum. It is Jurassic in age, and the limestone portion forms cliffs while the remainder forms a dip slope.

Only mild deformation has occurred in the study area. The main structural feature is the northwestern extension of the Cane Creek anticline, which has slightly upwarped the rock units at Bowknot Bend on the Green River.

Elevations range from about 3,950 feet along the Green River near the eastern boundary to about 5,440 feet in the southwestern part of the area.

## Soils

The WSA contains four general soil mapping units differentiated by river bottoms, canyons, mesas, and structural benches.

Both the wind and water actions could cause erosion problems in the WSA. Although there is a large proportion of the area in exposed bedrock, the rest of the ground is covered by sandy loam soils with sparse ground cover. Wind has the potential to be a major force in soil movement, especially if the surface is disturbed. Although rainfall is low, it tends to come in brief, intense thundershowers with flashflood runoff resulting in soil movement. Table 2 describes soil characteristics and land types and Table 3 describes erosion conditions.

Table 2  
Soil Characteristics and Land Types

Soil Characteristics and Land Type	Percent of the Area	Acres	Estimated Rate of Erosion (cubic yards/acre/year)	
			Present Condition	Bare Soil Surface
Rock Outcrop	35	7,175	0	0
Shallow loamy soils on sloping structural benches	40	8,200	1	5
Moderately deep to deep stony soils on steep canyon sides	15	3,075	1	10
Moderately deep to deep loamy and sandy soils on gently sloping valley floors and alluvial fans	10	2,050	0.1	1
Totals	100	20,500		

Source: Hansen, 1985.

Sediment production is moderate to moderately high.

Soil salinity class estimates indicate that 50 percent of the area is nonsaline and 50 percent is slightly saline. Overall, the estimated average salinity production is 34 lb of salt per acre per year.

The seeding potential is classed as unsuitable to seeding for the entire WSA due to steep slopes, rock outcrops, and sandy soils. Wind erosion is also a problem in this area.

Table 3

# HORSESHOE CANYON (NORTH) WSA

## Erosion Condition

Erosion Class	Erosion Rate cubic yards/ acre/year	Annual Soil Loss Under Present Conditions			Annual Soil Loss if Disturbed		
		Percent of Area	Acres	Cubic Yards	Percent of Area	Acres	Cubic Yards
Very High	20	-	-	-	-	-	-
High	10	-	-	-	15	3,075	30,750
Medium	5	-	-	-	40	8,200	41,000
Low	1	55	11,275	11,275	10	2,050	2,050
Very Low	0.1	10	2,050	205	-	-	-
None	0	35	7,175	-	35	7,175	-
Totals		100	20,500	11,480*	100	20,500	73,800*

Source: Hansen, 1985.

Average annual soil loss in cubic yards per acre: 0.56 under present conditions; 3.6 if disturbed.

## Vegetation Including Special Status Species

Four major vegetation types are located in the WSA as shown in Table 4. All four of the vegetation types, with the exception of the riparian type, are characterized by large areas of barren slickrock or sand. These are often cliff faces and rocky slopes. Juniper trees are also found in the different types, but do not exceed a total of 100 acres in the WSA. The most dominant vegetation type is desert shrub-sagebrush which includes Mormon tea, shadscale, rabbitbrush, snakeweed, blackbrush, fourwing saltbush, black sagebrush, big sagebrush, and wild buckwheat. Other sagebrush species occur in this type in lesser amounts and include bigelow, bud, pigmy, and fringed sagebrush. This vegetation type is most prominent on the flat lands above the Green River and Horseshoe Canyon.

Table 4  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Riparian	2,500	12
Grassland	1,100	6
Desert shrub-sagebrush	10,300	50
Desert shrub	6,600	32
Total	20,500	100

Source: USDI, BLM, 1985.

A desert shrub type is found along portions of the south and west boundary of the WSA and on Bowknot Bend which is considered a relic vegetation area. Dominant species in this type include Mormon tea, shadscale, rabbitbrush, snakeweed, blackbrush, fourwing saltbush, black sagebrush, and wild buckwheat.

The grassland vegetation type occurs in a few scattered, isolated areas near the Green River and in Horseshoe Canyon. This type is similar to the desert shrub-sagebrush and desert shrub vegetation types but is distinguished by a predominance of grasses over shrubs. The major grasses are curly grass, blue grama, Indian ricegrass, and sand dropseed. Other grasses include western wheatgrass, Fendler three-awn, needle-and-thread, and squirreltail.

The riparian vegetation type is located along the Green River and in Horseshoe Canyon. The Green River is a perennial water source for these stream-side plant communities. Runoff from heavy and isolated showers also provides a water source for riparian vegetation. The most common plants in this type are tamarisk, cottonwood, black greasewood, rabbitbrush, snakeweed, and alkali sacaton.

No threatened or endangered plant species are known to occur in the WSA. However, one Category 2 candidate species, *Lygodesmia entrada*, may occur in the WSA (see Appendix 4 in Volume I). If present, this species would grow in juniper and mixed desert shrub communities between the 4,400 and 4,800 foot elevations (Welch et al., 1987). The habitat of this species extends beyond the WSA boundary.

The Horseshoe Canyon (North) WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNV types of the WSA are listed on Table 5.

Table 5  
Potential Natural Vegetation Types

Percent

# HORSESHOE CANYON (NORTH) WSA

PNV Type	Acres	of WSA
Blackbrush	14,385	70
Galleta-threeawn shrub steppe	<u>6,115</u>	<u>30</u>
Total	20,500	100

Source: USDI, USGS, 1978.

## Water Resources

The Horseshoe Canyon WSA is a sub-watershed of the Green River drainage in the Upper Colorado River hydrologic subregion. Making up the eastern boundary of the WSA, the Green River is a major perennial water source. Barrier Creek in Horseshoe Canyon and the majority of the springs in Keg Spring Canyon are also perennial (approximately 20 miles total). Flow in Barrier Creek may be interrupted in late summer.

Water in the WSA is used primarily by wildlife and livestock, with recreational boaters in Labyrinth Canyon of the Green River being a major nonconsumptive use. Two potential dam sites for water resources development on the Green River have been identified (refer to discussion on hydroelectric power). One spring in Keg Springs Canyon has been developed for livestock use. A pipeline (1 mile) has been used to carry water pumped out of the spring onto the flat to the northwest. Two other springs, with private water rights, have also been developed.

The WSA is within Water Right Adjudication Area 93. The water within the area is not fully appropriated (UDNRE, DWR, 1988). Consideration may be given to isolated springs for appropriation but claims may not exceed 0.015 cfs. Temporary and fixed time applications on the Green River could be considered.

The water quality standards for Green River and tributaries, from confluence with Colorado River to state line are as follows: Class 1C (protected for domestic purposes with prior treatment by treatment processes as required by the Utah Department of Health); Class 2B (protected for boating, water skiing, and similar uses, excluding recreational bathing [swimming]); Class 3B (protected for warm water species of game fish and other warm water aquatic life); and Class 4 (protected for agricultural uses including irrigation of crops and stockwatering).

Water quality is adequate for all existing uses; however, treatment is advisable for human consumption. Spring water quality generally is better than that of the Green River, although quality data are not available.

## Mineral and Energy Resources

The energy and mineral resource summary for the Horseshoe Canyon (North) WSA is given in Table 6. Appendix 5 in Volume I explains the mineral and energy rating system.

Table 6  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f2	c2	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Potash	f3	c3	1 to 10 million metric tons
Hydropower	f4	c1	165 megawatts
Uranium/Vandium	f3	c3	500 to 1,000 metric tons of uranium oxide
Copper	f2	c1	Less than 50,000 metric tons
Manganese	f2	c1	2 metric tons

Source: SAI, 1982; USDI, BLM, 1987a.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

The WSA could contain deposits of vanadium, copper, and manganese that are currently listed as strategic and critical materials (USDoD, 1988). Although listed as strategic, copper is relatively common. Supplies currently exceed domestic demand.

### • Leasable Minerals

There are no known deposits of any leasable minerals in the WSA. Currently there are no active drilling, mining, or exploration activities for leasable minerals.

### • Oil and Gas

The WSA is on the northwestern edge of the Paradox Basin, a very thick accumulation of sediment. Within this portion of the basin, the facies change from basinal shale and anhydrite to a carbonate shelf. This facies change is favorable for stratigraphic trap formation within the sedimentary rocks of the basin. In addition, the carbonate shelf may have served as a platform for carbonate mound buildups which could have formed additional stratigraphic traps in the area. Production within the basin to the east in Grand County is from the Hermosa and Mississippian Forma-

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tions. Reservoir rocks include Mississippian carbonate rocks and clastic rocks in the Pennsylvanian Paradox Member of the Hermosa Formation. Source rocks are the black, organic-rich shales also found in the Paradox Member (USDI, USGS, 1988). Most production is from various structural traps, including folding, faulting and salt intrusions.

Across the Green River, 11 miles north of the WSA, is the Salt Wash field which produces oil and gas from a Mississippian Formation. The field is a combination trap due to faulting (structural) and blanket sands (stratigraphic) and is small in size.

Although no oil and gas wells have been drilled in the WSA, six have been drilled within 5 miles of the boundaries. All the wells have been plugged and abandoned, with two having oil or gas shows. The SAI favorability rating of (f2) indicates that a potential exists within the WSA for less than 10 million barrels of oil or less than 60 billion cubic-feet of natural gas. The certainty level of (c2) indicates that some positive data exist within the vicinity of the WSA or on-trend with the WSA (SAI, 1982). The extremely rugged surface in the majority of the WSA could make drilling uneconomical.

The WSA is included in the Price District Oil and Gas Categories Environmental Analysis Report (USDI, BLM, 1975a). The results established oil and gas categories, which are shown in Table 7. There is presently one post-FLPMA oil and gas lease in the WSA (320 acres).

Table 7  
Oil and Gas Leasing Categories

Category	Acres of WSA	Percent of WSA
1. Open	14,860	72
2. Open with special stipulations	0	0
3. Open with no surface occupancy		5,088
4. Suspended or no lease	640	3
Total	20,500	100

Source: USDI, BLM, 1975a; USDI, BLM 1979b.

### • Potash

Potash occurs within an evaporite sequence (Paradox Member) in the Hermosa Formation. The formation is several thousand feet thick in the vicinity of Moab, where there is commercial extraction. The Paradox underlies the study area at a

depth of approximately 5,000 to 6,500 feet (USDI, USBM, 1987b). The northern part of the WSA is within one of the major potash zones in the Paradox Member (USDI, USGS, 1961 and 1976). Geophysical data indicate a decrease in gravity at the northern end of the study area, which may be due to an increase in thickness of low-density evaporites or potash (USDI, USGS, 1988).

The SAI favorability rating of (f3) for potash indicates a potential for 1 to 10 million metric tons of potash within the WSA. The certainty level of (c3) indicates data showing a potash-bearing formation underlying the WSA. The SAI analysis also stated that the likelihood of this area being a target for exploration and possible development is very remote considering the thicker, richer potash deposits with less overburden occurring elsewhere in the Moab vicinity.

### • Hydropower

Hydropower within the WSA is related to potential sites along the Green River, on the eastern boundary of the WSA. In 1979, a potential dam site had been identified just east of the WSA. A more recent compilation (SAI, 1982) did not identify this site. Instead, it showed a potential site 20 miles downstream. Both of the sites could impound water into the WSA. The 1979 site bordering the WSA has a potential capacity of 165 megawatts. On this basis the WSA's hydropower was given a high rating of (f4). The low certainty level of (c1) reflects the obvious differences in locations among the various studies and indicates uncertainty that the resource would actually be developed at the site east of the WSA. No plans currently exist to construct hydroelectric projects at either of these sites.

### • Locatable Minerals

There are 94 post-FLPMA mining claims covering approximately 1,880 acres. Restrictions exist on the location of mining claims in the power site reserves along the Green River. These restrictions cover the WSA, with the exception of the western portion of Keg Springs and Horseshoe Canyons. This area is open for location, providing the claimant makes an application under the Mining Claim Restoration Act of 1955.

### • Uranium and Associated

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There is little recorded production of uranium from the WSA. Three mine locations exist along Bowknot Bend. Information on these operations is limited. Only one of the three mines, the Aileen, has record of production. Operation occurred some time in the 1950s, and less than 100 metric tons of uranium ore were recovered. Evidence of the operations include a cable and ore bucket that crosses the river and was used as a means of access to the mine site. Also, several portals and machinery are located along the old road cuts on the talus slope. Sandstone and mudstone beds of the Moss Back Member near Bowknot Bend contain carbonaceous material suggestive of possible uranium/vanadium mineralization. These beds tend to be lenticular and pinch out over short distances. Geochemical analyses of some gray sandstone samples taken within the WSA in the Bowknot Bend area revealed more than 100 ppm uranium, and stream-sediment samples from the northern half of the study area showed concentrations of 0.35-0.75 ppm uranium (USDI, USGS, 1988).

There are several uranium/vanadium bearing deposits in the vicinity of the WSA, including those across the Green River in Grand County. These deposits are generally small and scattered. They occur in the Temple Mountain, Monitor Butte, Mossback, and Church Rock members of the Chinle Formation. The deposits are found primarily in the Mossback Member where they occur as tabular deposits in channel sands or in the Monitor Butte Member as lenticular deposits.

Other minerals locally associated with uranium/vanadium may include copper, lead, zinc, cobalt, chromium, nickel, molybdenum, strontium, and silver. None of these minerals are predicted to occur in sufficient grades or quantities within the WSA to be minable.

The southern uranium belt, which extends through the WSA, is most favorable for the occurrence of uranium deposits. Moderate and large size deposits are found in the southern belt, which roughly parallels the Muddy and Dirty Devil Rivers (Hawley, et al., 1968). The Inter River Mining area within the greater Green River mining district is located to the east of the WSA. Some of the uranium deposits in this area are moderately large (between 100 and 1,000 metric tons of uranium oxide) and all occur in the Mossback Member of the Chinle Formation. The Mossback Member pinches out a short distance northeast of the WSA. Be-

cause the WSA is within the southern belt and near the Mossback deposition, the SAI rating for uranium was moderate (f3), and the WSA is assumed to contain 500 to 1,000 metric tons of uranium. Based on the numerous uranium occurrences near the WSA, it was given a moderate certainty rating of (c3) (SAI, 1982).

The Chinle Formation outcrops on the eastern side of the WSA and the overburden increases to the west. All surface deposits probably have been discovered. Further discovering of subsurface deposits would require drilling. With increasing thickness of overburden, recovery costs would rise. Access to the outcrops is easiest from across the Green River and any other routes would require road building in rugged terrain.

- Manganese

Manganese deposits near the WSA are chiefly small and low grade and occur in the Morrison and Summerville Formations. The nearest known deposit to the WSA occurs about 13 miles northwest. The chief host rocks for manganese have been eroded from the WSA. The less favorable Chinle Formation crops out within the WSA and, on this basis, the low SAI rating (f2) was assigned. Even though the (f2) rating indicates a deposit size to 100,000 metric-tons of 40 percent manganese, this particular WSA is favorable for only very small accumulations - an estimated two metric-tons at the most (SAI, 1982). The certainty rating that this deposit exists is low (c1).

- Copper

Copper in southeastern Utah usually is associated with uranium deposits, both in the San Rafael Swell and mines to the southeast. The rating for copper in the WSA is low (f2/c1). There is uncertainty (according to available data) whether copper deposits exist in the WSA (SAI, 1982). Deposits, however, would probably be small (less than 50,000 metric-tons). Any copper in the WSA might be found in association with uranium deposits, where it is often considered a waste product rather than part of the ore. It is unlikely any copper within the WSA would be developed, unless as a byproduct of uranium.

- Salable Minerals

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Salable minerals which occur within the WSA include sand, gravel, and building stone. The grade of these deposits is average and other deposits of this type occur closer to markets. The WSA has a very low potential for the production of these commodities.

### Wildlife Including Special Status Species

The Horseshoe Canyon (North) WSA provides habitat for a limited variety of wildlife species. The Green River provides an excellent permanent water source. The WSA also has a semi-permanent water source in Barrier Creek of Horseshoe Canyon and several springs in Keg Spring Canyon from which wildlife can obtain water. Vegetation (forage and cover) is a limiting factor due to low densities, limited species composition, and a high proportion of ground covered by slickrock.

The WSA provides habitat for a low density population of big game species. Some mule deer (approximately 15 animals) frequent the canyon and river bottoms. The entire WSA is encompassed by the UDWR Deer Herd Unit 29 and is in designated yearlong deer range. The closest major population of desert bighorn sheep is found in the Glen Canyon NRA and Canyonlands National Park region which is within 2 miles south of the WSA. Prior to domestic grazing in and around the WSA, it was thought that desert bighorn sheep occurred in larger numbers. The sheep have been seen across the Green River and may frequent the WSA. BLM and UDWR have not identified any crucial-critical habitat for desert bighorn sheep in the WSA. Pronghorn antelope are found northeast and within the WSA. The entire WSA is within UDWR Antelope Herd Unit 9 and is yearlong antelope range.

Beaver are found in the Green River and have used Barrier Creek and its cottonwood vegetation. The WSA also provides habitat for coyotes, bobcats, cottontail rabbits, blacktail jackrabbits, woodrats, ring-tails, badgers, Ord kangaroo rats, gray foxes, kit foxes, white-tail antelope, ground squirrels, chipmunks, rock squirrels, bats, raccoons, red foxes, weasels, striped skunks, mice, and voles.

Habitat for various small bird species is found within the WSA. The species diversity and populations are small due to the lack of diverse habitat. Both Keg Spring Canyon and Horseshoe Canyon provide nesting, roosting, and foraging opportunities for avian fauna. Few individual raptors are found in the WSA. Of those present, golden eagles, prairie falcons, American kestrels, red-tailed hawks, ferruginous hawks, and

roughlegged hawks are the most common. Waterfowl and shore birds would be found along the Green River and occasionally up Keg Spring and Horseshoe Canyons. Mourning doves frequent the WSA.

Several species of snakes and lizards could be found in the WSA. The side-blotched lizard, collared lizard, leopard lizard, short-horned lizard, sagebrush lizard, western fence lizard, and common tree lizard are the most dominant types. Great Basin gopher snakes, striped whipsnakes, and western rattlesnakes account for the most common snakes. Woodhouse's toad and Great Plains toad are representative of the amphibians.

The Green River, bordering the WSA, provides habitat for channel catfish, black bullhead, yellow bullhead, carp, speckled dace, flathead minnow, flannel-mouth sucker, bluehead or green sucker, humpback or razorback sucker, and red shiner. Tadpole shrimp may occur in annual ephemeral water pondings in the WSA, although this has not been verified. The WSA contains approximately 20 miles of fish habitat.

The Colorado squawfish is an endangered species identified by the UDWR and FWS as occurring in the Green River bordering the WSA. The bony-tail chub and humpback chub (also endangered species) may occur, but only as migrators (displaced).

Other endangered wildlife species possibly frequenting the WSA are the peregrine falcon and bald eagle. No sightings of these have been verified; however, the majority of the WSA (19,462 acres) is potential peregrine falcon habitat, and the Green River corridor of the WSA is bald eagle habitat (6,401 acres).

The WSA may be potential habitat for the endangered black-footed ferret. The golden eagle, a BLM special status species, is found in the WSA. Other special status species that could occur in the WSA are six Category 2 candidate species. These are the Great Basin Silverspot butterfly, ferruginous hawk, Tanner's black camel cricket, razorback sucker (also identified as a UDWR threatened species), southwestern otter, and white-faced ibis. Refer to Appendix 4 in Volume I for details.

There are no wildlife management facilities or proposed habitat treatment projects in the WSA.

### Forest Resources



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Pinyon pine and juniper trees are found in sparse quantity within the WSA (less than 100 acres). Opportunities for woodland harvest in the WSA are poor due to remoteness from populated areas, limited resources in the WSA, and availability of the products closer to population centers. BLM does not expect any demand for forest products in the WSA in the foreseeable future.

## Livestock and Wild Horses/Burros

The Horseshoe Canyon (North) WSA contains a portion of one grazing allotment. Livestock grazing use data are shown in Table 8.

Range development projects in the WSA are limited to three spring developments, 1 mile of pipeline, and three livestock trails. The water developments currently are not in use. The possibility of improving these developments and expanding water use exists. No vegetation treatment projects are proposed in the WSA and the area is considered unsuitable for seeding. The 1.25 miles of ways in the WSA are used for distribution and management of livestock.

Predator control was not conducted during the 1986 to 1987 period in the grazing allotment that comprises the Horseshoe Canyon (North) WSA (USDA, APHIS, 1988).

A small herd of wild burros, probably less than ten in number, is known to frequent the WSA.

## Visual Resources

The Horseshoe Canyon (North) WSA consists of several incised drainages and major canyons; gently rolling terrain; large rounded knobs of arch-forming sandstone; alcoves and caves; and intermixed pink, sandy flats.

Elevations range from a high of 5,000 feet at the top of Two Mile Canyon, just north of Horseshoe Canyon, to about 4,000 feet along the Green River bank at the southeastern corner of the WSA.

The western edge of the WSA consists of gently rolling terrain to large rounded knobs of arch-forming sandstone, intermixed with dunes of fine pinkish flats. From most viewpoints this landscape would be classified "panoramic" because there is little impression of visual boundaries and distant views are seldom blocked by objects or landforms in the foreground. From within the canyons, the landscape would be classified "enclosed" because visual boundaries and distant views are blocked by landforms in the foreground.

A visual resource inventory was completed in 1977 (refer to Appendix 7 in Volume I for a description of the BLM VRM rating system). The WSA is classified as having Class A scenery (20,500 acres), which is characteristic of the physiographic region. The sensitivity level has been rated high within the Green River corridor of the WSA. The high level is based on the potential of a Wild and Scenic River designation, high recreation use volume, association of visitor use with scenic values, and the trail and river use volume criteria. The remainder of the area is considered low in sensitivity due to fewer people using and viewing the area. Based on these factors, the entire WSA is within a VRM Class II management area.

## Cultural Resources

A total of four cultural resource sites have been recorded in the WSA (USDI, BLM, 1988). One of these is a prehistoric surface lithic scatter located in a deflated sand dune. Two other sites in the WSA have been attributed to Anasazi origin. One historic camp dating from 1880 to 1950 is present in the unit. No National Register sites, existing or proposed, are known to

Table 8  
Livestock Grazing Use Data

Allotments	Total Acres	Acres in ISA*	Total AUMs	Number of AUMs in ISA	Number and Kind of Livestock	Season of Use	Number of Permittees
Horseshoe Canyon (North)	60,930	20,500	2,145	721	390 Cattle	11/01-04/15	1

BLM File Data.

occur in the WSA. The WSA is adjacent to the detached Horseshoe Canyon Unit of Canyonlands National Park which encompasses the well known Barrier Can-

yon pictographs, a unique archaeological site. Because significant sites are located near the WSA, the po-

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tential for finding significant sites in the WSA is considered high.

Along the Green River and within the WSA, several signatures of early-day river users and trappers can be seen. Writings from these early-day river explorers can be found at the Post Office, a rock atop the saddle of Bowknot Bend, and on several other rock faces along the river.

### Recreation

The majority of recreational use occurs along the Labyrinth Canyon/Green River portion of the WSA, as well as the tributary canyons draining into Labyrinth Canyon.

The main recreational activities known to occur in the WSA are hiking, backpacking, camping, and cultural exploration. The Green River borders the WSA and provides several river activities, such as float boating and the Annual Friendship Cruise. These activities have a significant influence on the recreational use within the WSA. Many of the river floaters use the area for hiking and camping. It is estimated that the WSA receives about 1,500 visitor days of use by visitors on float trips through Labyrinth Canyon. This portion of the Green River is included on the final Nationwide Rivers Inventory list of rivers to be studied for wild and scenic river potential (USDI, NPS, 1982).

Since the Green River is an inventory-listed segment, BLM must, as part of its environmental review process, avoid or mitigate adverse impacts to the river and consult with NPS before taking any action that could foreclose wild, scenic, or recreational river status (CEQ, 1980).

Another source of recreational participation comes from those recreationists utilizing Canyonlands National Park. In 1987, NPS estimated 3,000 people visited the detached Horseshoe Canyon Unit of Canyonlands National Park. Of those, approximately 20 percent hiked or horsebacked to the northeastern section of the park and possibly into the WSA. It is estimated that the WSA receives about 600 visitor days of use by National Park recreationists and an additional 150 visitor days of use by other recreationists besides those that enter from the Green River. Large deep pools of water filled year-round enhance the hiking and camping in this area. The majority of the detached Horseshoe Canyon Unit of the park has been proposed by NPS as a wilderness area

and attracts recreational wilderness-type users to the WSA.

Limited ORV use occurs atop the mesa in the west-central portion of the WSA. Two ways (1.25 miles in length) traverse across the rolling sand and slickrock terrain and are kept evident only by occasional use. The area is remote and difficult to reach even with four-wheel drive vehicles. Use statistics are not available for this recreation activity; however, it is believed that less than 10 visitor days of use occur by ORV recreationists due to distance and difficulty in reaching the WSA. Other similar areas outside or adjacent to the WSA are available for this type of use. According to the San Rafael MFP, the ORV designation for the entire 20,500-acre WSA is currently open in accordance with 43 CFR 8560; however, the restrictive and rugged terrain generally makes ORV use impossible over most of the WSA.

No commercial recreational permits have been issued solely for the WSA. Visitor days related to commercial river outfitting solely for the WSA are not known but are expected to be low.

There are no recreational facilities within the unit. Several primitive camping areas exist in the WSA along the Green River and are used heavily by float boaters. Foot trails leading up tributary canyons and to sites of visitor interest also have been established, primarily by repeated use. Some wild game trails within the major drainages have been used by hikers.

The Horseshoe Canyon (North) WSA has a very high potential for various outstanding recreational opportunities. Green River float boating increased three-fold between 1980 and 1986 as more and more recreationists discovered the beauty and solitude of Labyrinth Canyon. The many side canyons of Labyrinth add to the adventure of the trip and are being explored by river recreationists. Hiking trails are becoming established along the river and extend into the major canyon drainages of the WSA.

Backpacking opportunities are excellent due to: (1) the large size of the WSA; (2) the presence of adjacent potential wilderness in the upper end of Horseshoe Canyon; (3) a variety of hiking routes (approximately 60 miles total) over terrain with various levels of difficulty; and (4) a variety of interesting special features to explore and discover. An extended hiking trip from Hans Flat down the canyon system to the Green River would cover over 35 miles

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plus side trips. Dayhiking opportunities are somewhat limited by restricted access. Two access points are reported to exist from the Mesa Top into the WSA near the junction of Horseshoe Canyon with the Green River.

Camping opportunities are excellent due to the presence of many suitable sites, particularly under large rock overhangs in the canyon walls and in the grassy parks between canyon drainages.

Opportunities for archaeological sightseeing are excellent due to the many sites in the area. The area is historically associated with Butch Cassidy and the Wild Bunch.

The various rock formations, erosional features, caves, vegetation, and narrow canyons all contribute to above-average opportunities for photography and geological and scenic sightseeing.

In summary, the total recreational use of the WSA currently is estimated at 2,260 visitor days annually. Approximately 99.6 percent (2,250 visitor days) of the use is attributed to primitive types of recreational activities. Approximately 0.4 percent (10 visitor days) is attributed to vehicular use.

### Land Use Plans

No rights-of-way or private lands are located within or adjacent to the WSA.

Physical and legal access to the WSA is provided by the Green River waterway, BLM-maintained roads to Keg Knoll and Keg Springs, as well as trails from Canyonlands National Park.

One State of Utah-owned section of land and two small segments in one other section (760 total acres) are located within the WSA. All are currently under lease for oil, gas, and hydrocarbons (UDNRE, DSLF, 1988). The current policy of the State is to maximize economic returns from State lands and to reserve its position regarding exchange of in-held lands (see Chapter 1 in Volume I). In 1986, the Utah State Legislature passed S.C.R. No.1 opposing any additional wilderness designation in Utah and urging that State lands not be exchanged out of wilderness areas.

The riverbed to high-water line marks the State of Utah ownership of the Green River. The eastern boundary of the WSA follows this State land in the eastern portion of the WSA for approximately 23 river miles. The UDWR responds to development pro-

posals on a case-by-case basis. No developments are currently proposed by either the State of Utah or private industry for this portion of the Green River.

The southwest boundary of the WSA borders the northeastern boundary of the detached Horseshoe Canyon Unit of Canyonlands National Park. This particular area, the majority of which is being considered for wilderness status, was added to the park on November 12, 1972, with PL 92-154 (USDI, NPS, 1974).

The WSA is identified for multiple-use management by BLM. The majority of the WSA is managed by the BLM San Rafael Resource Area under the San Rafael MFP (USDI, BLM, 1979b). The San Rafael RMP will replace the MFP. The BLM Henry Mountain Resource Area manages 1,920 acres of the WSA under the Henry Mountain MFP (USDI, BLM, 1982d). The Henry Mountain MFP has been reviewed by the Governor of Utah and found to be consistent with State plans.

Neither of the BLM MFPs address wilderness designation; however, wilderness designation is part of the BLM multiple-use concept. The BLM land use plans are linked to the Statewide Wilderness EIS through analysis of the present plans as the No Action/No Wilderness Alternative.

About 313 acres of the WSA are within BLM public water reserves (PWRs). These areas are segregated from public land laws and closed to location of non-metalliferous minerals.

There is a Bureau of Reclamation (BOR) power site reservation in a portion of the WSA along the Green River. This reservation encompasses 9,215 acres (45 percent) of the WSA. Although there are no plans to utilize this reservation in the foreseeable future, the potential does exist (refer to the discussions on hydroelectric power).

About 18,580 acres of the WSA are located in Emery County. The Zoning Resolution of Emery County (Emery County Board of Commissioners, 1984) classified the WSA as potential future mining and grazing land.

Some 1,920 acres of the WSA are located in Wayne County. The Final Report, Wayne County Master Planning Project does not identify recommendations at specific locations. The plan recognizes that ". . . outstanding natural landmarks should be preserved as much as possible" (Call Engineering, Inc., 1976). However, it also states that ". . . open spaces should

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be used for many purposes rather than strictly as a wilderness area." The County Commissions of both Emery and Wayne Counties have endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation for BLM lands in Utah.

## Socioeconomics

### • Demographics

Wilderness designation or nondesignation would affect both Wayne and Emery Counties. Green River, Utah (40 miles northwest) in Emery County and Hanksville, Utah (55 road miles southwest) in Wayne County are the two closest communities.

Table 9 shows the baseline and projected total population data for Emery and Wayne Counties.

Table 9  
Baseline and Projected Population and Employment Growth  
San Juan County

	1980	1990	2000	2010
<b>Emery County</b>				
Population	11,600	12,000	11,900	14,000
Employment	5,480	4,900	5,500	6,700
<b>Wayne County</b>				
Population	1,950	2,150	2,200	2,550
Employment	783	800	800	1,000

Source: Utah Office of Planning and Budget, 1987.

From 1970 to 1980, the population of Emery County grew from 5,140 to 11,600, an overall increase of about 126 percent. Most of the increase was related to construction of coal-fired powerplants in the western portion of the county. It is estimated that between 1980 and 1987, population increased to about 11,800. Population projections for the county indicate that the number of people living in Emery County in the year 2010 will be approximately 14,000 for about a 21 percent increase over 1980 levels (Utah Office of Planning and Budget, 1987). Most of the Emery County population is concentrated in a series of small communities in Castle Valley, which extends through the northwestern part of the county. There are two service centers in the northwestern part of Emery County: Castle Dale, the county seat (1980 population of 1,910) and Huntington (1980 population of 2,316) (USDC, Bureau of the Census, 1981). The town of Green River is located in the eastern part of the county and had a 1980 population of 1,282. Green

River is isolated from the western part of Emery County by the San Rafael Swell.

Wayne County is one of Utah's least populated and most rural counties. From 1970 to 1980, the population of Wayne County grew from 1,483 to 1,950, an overall increase of about 31 percent. It is estimated that between 1980 and 1987, population increased to about 2,090. Population projection for Wayne County indicates that the number of people living in the county in the year 2010 will be about 2,550 for about a 31 percent increase over 1980 levels (Utah Office of Planning and Budget, 1987). Hanksville and the surrounding area had a 1980 population of 351 and is the only community located in northeastern Wayne County. Although it is relatively close to the WSA, no ready access is available. Hanksville has services that include several gas stations, a general store, a motel, and a restaurant.

### • Employment

Table 10 shows the baseline and projected total employment for Emery and Wayne Counties to the year 2010.

Table 10  
Southeast Multi-County District  
Employment <sup>a</sup>

	1980	1990	2000	2010
Agriculture	1,203	1,100	1,100	1,100
Mining	6,368	3,500	4,500	5,700
Construction	1,360	700	900	1,100
Manufacturing	551	600	700	800
Transportation, Utilities	1,563	1,800	2,000	2,200
Trade	3,289	3,600	4,000	4,800
Finance, Insurance, Real Estate	424	400	400	500
Services	2,067	3,200	4,000	5,300
Government	3,994	4,100	3,800	4,400
Nonfarm Proprietors	1,715	2,000	2,200	2,800
Totals	22,534	21,000	23,600	28,700

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>includes Carbon, Emery, Grand, and San Juan Counties.

Coal mining and operation of Utah Power and Light Company's Huntington and Hunter powerplants are Emery County's most important sources of employment. The local economy is most affected by changes in the coal market and had periods of boom and bust. Green River has not grown in the past 30 years. Major employment for Green River includes mining, government, agriculture, and tourism.

# HORSESHOE CANYON (NORTH) WSA

Emery County is part of the Southeast MCD. Table 10 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980 the leading employment sectors for the Southeast MCD were mining (28 percent), government (18 percent) and trade (15 percent). It is projected that by the year 2010 employment in the MCD will increase by about 27 percent and that services will increase to 18 percent, trade to 17 percent, and government to 15 percent of the total, while the mining, agriculture, and construction sectors will decline (Utah Office of Planning and Budget, 1987).

Wayne County is part of the Central MCD. Table 11 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980 the leading employment sectors for the Central MCD were government (21 percent), agriculture (20 percent), and trade (14 percent). Mining provided approximately 4 percent of the direct employment in the district.

Table 11  
Central Multi-County District  
Employment<sup>a</sup>

	1980	1990	2000	2010
Agriculture	3,649	3,500	3,600	3,800
Mining	706	700	800	900
Construction	822	1,400	2,200	2,200
Manufacturing	2,047	1,900	2,200	2,600
Transportation, Utilities	589	1,300	1,400	1,500
Trade	2,604	3,400	4,000	4,900
Finance, Insurance, Real Estate	347	400	500	600
Services	1,439	2,300	2,900	3,500
Government	3,919	4,100	4,100	4,900
Nonfarm Proprietors	2,278	2,800	3,300	4,100
<b>Totals</b>	<b>18,400</b>	<b>21,800</b>	<b>24,600</b>	<b>29,000</b>

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Juab, Millard, Plute, Sanpete, Sevier, and Wayne Counties.

It is projected that by the year 2010, employment in the MCD will increase by 51 percent, trade will increase to 17 percent, and nonfarm proprietors will increase to 14 percent of the total, while agriculture will decline to 13 percent and government will decline to 17 percent of the total. Mining will decline one percentage point to 3 percent of the total MCD employment.

## • Sales and Revenues

Past activities in the WSA that could be of any local economic consequence include mineral activities, livestock production, and dispersed nonmotorized recreation.

No oil and gas or mineral production occurs in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income. Table 12 summarizes local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Table 12  
Local Sales and Federal Revenues

Source	Annual Local Sales <sup>a</sup>	Annual Federal Revenues
Oil and Gas Leases	None	\$ 640
Mining Claim Assessment	\$ 9,400	None
Livestock Grazing	\$ 14,420	\$ 1,110
Recreational Use	\$ 9,266	\$ 0
<b>Total</b>	<b>\$33,086</b>	<b>\$1,750</b>

Sources: USDI, BLM, 1974; Volume I, Appendix 9.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

One livestock operator has grazing privileges in the WSA. Based on the consumption of 721 AUMs of forage by cattle, it is estimated that the WSA accounts for \$14,420 of livestock sales, including \$3,605 of ranchers' returns to labor and investment.

The WSA supports significant private and regular commercial recreation use. Recreation-related expenditures are well distributed among most businesses in the area and would only be significant to commercial outfitters who use the WSA or rent out equipment for the boating use associated with the Green River bordering the WSA. Income to the commercial users is not directly attributable solely to the WSA because the WSA is only one of many features along the river; therefore, this income is not listed here.

The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that the State-wide average local expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for the

# HORSESHOE CANYON (NORTH) WSA

WSA is estimated at about 2,260 visitor days per year.

The WSA presently generates revenues to the Federal Treasury from livestock grazing fees and one oil and gas lease (320 acres). At \$2 per acre, lease rental fees generate up to \$640 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds the majority, of which, are related to energy development and mitigation of local impacts of energy and mineral development. Based on 721 AUMs of forage consumed by livestock in the WSA and a grazing fee of \$1.54, the WSA annually accounts for \$1,110 of grazing fee revenues to the Treasury. One-half of this is allocated back to the local BLM District for range improvement projects.

## ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. The analysis is also based on the BLM management actions and anticipated activities presented in the Introduction to Volume V and the Description of the Alternatives for the Horseshoe Canyon (North) WSA.

### No Action/No Wilderness Alternative

#### • Impacts on Wilderness Values

Because the WSA would not be designated wilderness with this alternative, the identified wilderness values would not receive the degree of protection afforded by the application of the BLM Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities (i.e., VRM Class II management on all 20,500 acres, and management under oil and gas leasing Category 4 (closed to leasing) on 640 acres and Category 3 (no surface occupancy) on 5,000 acres.

In the foreseeable future, disturbance of approximately 50 acres from uranium exploration and development, mainly in the northeastern portion of the WSA, and oil and gas exploration throughout the WSA, would result in direct loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas. Six of the acres of disturbance would be for access to in-held State sections. Most special features including historical features, geological features, wildlife (including wildlife asso-

ciated with wilderness), endangered and other special status species and perennial streams, would not be significantly affected because the direct disturbance would involve only 0.2 percent of the WSA. In addition, appropriate measures would be taken to protect endangered and other special status species and cultural values prior to any surface-disturbing activities. Class A scenery would be reduced in quality in the disturbed and surrounding areas.

During the period of activity, the visual and audible disturbance from mineral exploration and development, including development of access to State in-holdings would reduce the qualities of opportunities for solitude and primitive recreation and scenic values not only on directly disturbed areas but also on adjacent portions of the WSA. As much as 25 percent (5,125 acres) of the WSA could be so affected in the foreseeable future.

Because future vehicular use would generally be limited by terrain to existing vehicular ways, no additional disturbance from ORV activity is anticipated in the future. The continued and increased vehicular use of the existing 1.25 miles of ways, and the future use of mineral exploration and development roads, would occasionally detract from opportunities for solitude and primitive recreation.

Increased visitor use in the WSA that would occur over time would not be expected to significantly reduce the quality of wilderness values because the additional use would be primitive in nature and largely water-oriented. Visitor restrictions or other management of the Green River Corridor may be necessary to maintain quality of the recreation experience.

The extent that disturbance would occur over the long term and, therefore, the long term loss of wilderness values that would occur is not accurately known. Loss would occur, however, as intrusions increase.

Conclusion: Wilderness values would not be protected by wilderness designation, and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost 50 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 5,125 acres. Most special features would not be significantly affected. Class A scenery would be reduced in quality in the disturbed and surrounding areas.

## HORSESHOE CANYON (NORTH) WSA

### • Impacts on Soils

It is estimated that up to 50 acres of soil could be disturbed by mineral exploration and development. Assuming that all disturbance would occur in areas with moderate erosion class and that erosion condition would increase one class, soil loss on the 50 acres would increase by 152 cubic yards from 28 to 180 cubic yards per year. Soil loss would decrease as reclamation occurs. The time required for complete reclamation could be very long (5 years or more) in the dry mesa and bench areas. With this alternative, it is projected maximum annual soil loss in the WSA would increase by approximately 152 cubic yards (1 percent) over the current annual soil loss of 11,480 to approximately 11,632 cubic yards per year. Because the projected activities would not be along perennial streams, and the soils in the WSA are non-saline or only slightly saline, there would not be secondary impacts on water quality.

Conclusion: Soil erosion would increase by approximately 1 percent. There would not be significant secondary off-site effects.

### • Impacts on Mineral and Energy Exploration and Production

The WSA would remain open to exploration and development of mineral and energy resources without consideration of wilderness values. Therefore, mineral and energy resources would not be affected by the No Action/No Wilderness Alternative.

Conclusion: Implementation of the No Action/No Wilderness Alternative would not adversely affect mineral exploration or production.

### • Impacts on Cultural Resources

In the foreseeable future, 50 acres of surface disturbance due to mineral exploration and leasing and road construction is expected. The entire WSA would remain open to location and leasing and some development may occur in the future, but the degree and potential impacts to cultural resources are unknown. All sites in the unit would continue to receive protection under existing Federal and State antiquities laws and appropriate inventory and mitigation procedures would precede any surface development. Some inadvertent damage to archaeological sites may occur, but it is expected to be minimal. Increased human presence in the WSA would provide opportunities for artifact collection and illegal excavation (Nickens, et

al., 1981). The entire unit would remain open to vehicular access. The WSA currently experiences minimal ORV use which is expected to increase only slightly in future because of the rugged terrain.

Continued vehicular access is expected to have minimal impact on cultural resources under this alternative.

Vandalism is not a problem but could increase in the future with the general population increase.

Cultural resource management would continue without regard to wilderness management under this alternative (Neumann and Reinburg, 1988). Stabilization, interpretation, and excavation could proceed without regard to maintenance of wilderness values.

Conclusion: Surface disturbance due to mineral location and leasing would have only minor inadvertent impacts on cultural resources. Vehicular access is not expected to increase significantly and would have little impact on archaeological sites. Cultural resource management could continue without regard to wilderness management.

### • Impacts on Local Economic Conditions

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. Assuming employment of 20 to 40 persons at each two uranium developments, there could be a significant increase in local employment in Wayne County where the employment of 80 persons would represent a 10 percent increase in present local employment and 8 percent of the projected employment by the year 2010. However, because Green River is close to the area and offers more services than Hanksville, it is most likely that the majority of the employees would reside in Emery County where employment of 80 persons would represent only a 2 percent increase in present county employment and would be only 1 percent of the projected employment for 2010.

A portion of the \$100 per year assessment fee required for each mining claim would reach the local economy. Development of two oil and gas exploratory wells would result in employment of up to 10 employees for each well for a period of 3 to 6 months. This would not significantly affect local economic conditions.

## HORSESHOE CANYON (NORTH) WSA

There would not be livestock-related economic losses because the existing grazing use (721 AUMs) would remain as at present.

Recreational use in Utah and; therefore, recreation-related local expenditures, could increase at a rate of 2 to 7 percent per year over the foreseeable future (see Recreation section in Volume I). Because by the year 2020, primitive recreational use in the area could increase to be as much as 17,540 visitor days per year and because overall recreation-related expenditures average \$4.10 per visitor day, recreation-related local expenditures could increase to be \$71,540 annually. These expenditures would be widely distributed in the region and would probably not be significant to the overall economy of Emery and Wayne Counties.

Federal and State revenues would not be reduced by this alternative. There are 19,540 acres in the WSA open to oil and gas leases that are currently not leased. If leased they would bring up to \$39,080 additional Federal lease fee revenues per year in addition to new royalties from lease production and bonus bids from new leases in known geologic structures (KGSs). Half of these monies would be allocated to the State, a portion of which could reach the local economy. However, development of oil and gas is not expected. Collection of livestock grazing fees (\$1,110 per year) would continue. Lease and grazing fees from the WSA would not be significant to the overall economy of Wayne or Emery County.

Conclusion: Local economic conditions and trends would not be affected. Uranium development could employ up to 80 people at one time in the long term foreseeable future.

### **All Wilderness Alternative (Proposed Action) (20,500 Acres)**

#### **• Impacts on Wilderness Values**

Designation and management of all 20,500 acres as wilderness would contribute to the preservation of the wilderness values in the Horseshoe Canyon (North) WSA. The potential for surface-disturbing activities would be reduced through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness and outstanding opportunities for solitude and primitive, unconfined recreation would be protected on all 20,500 acres. Resources that

could be considered as special features in the WSA, including Class A scenery, geologic features, historical features, wildlife associated with wilderness, endangered and other special status species, and perennial streams (including the wild and scenic values of the Green River), would receive additional protection with wilderness designation.

Although protected, complete preservation of wilderness values would not be assured because of the existence of valid existing rights. In the foreseeable future, direct disturbance of up to 13 acres is anticipated from exploration and development of valid uranium mining claims and from providing access to State in-holdings. Wilderness values of naturalness and opportunities for solitude and primitive recreation would be lost on the disturbed areas. Opportunities for solitude and primitive recreation would also be indirectly reduced in quality on adjacent portions of the WSA. As much as 7 percent (1,435 acres) of the WSA would be indirectly affected. Most special features would not be significantly affected because the direct disturbance would be minor, involving only 0.06 percent of the WSA. In addition, appropriate measures would be taken to protect endangered and other special status species and cultural values prior to any surface-disturbing activity. Some Class A scenery would be reduced in quality in disturbed and surrounding areas. Mitigation to protect wilderness values would be applied, but loss of wilderness values would be allowed if development involving valid existing rights could not be otherwise achieved. All in all, the disturbance would not be substantially noticeable in the area as a whole.

Vehicular use of the existing 1.25 miles of ways would cease with ORV closure, improving opportunities for solitude and primitive recreation.

Over the long term, there would be no potential for loss of wilderness values due to development of new leases and mining claims. The potential for other long-term development is not accurately known, but would be less with this alternative than with No Action/No Wilderness Alternative due to application of mitigation that would protect wilderness values subject to valid existing rights.

Increased visitor use that would occur with time would be primitive in nature and would be managed so as to not result in loss of wilderness values. Visitor restrictions or other management controls may be necessary to adequately protect wilderness values and uses.



## HORSESHOE CANYON (NORTH) WSA

Conclusion: Wilderness designation would preserve overall the wilderness values in the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 13 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to 1,435 acres. Special features would be preserved except that some Class A scenery would be reduced in quality in disturbed and surrounding areas. The wild and scenic values of the Green River would receive additional protection.

- Impacts on Soils

Soil resources would benefit from the All Wilderness Alternative because projected surface disturbance would be reduced from 50 to 13 acres. Assuming that all disturbance would occur in areas with moderate erosion class and that erosion condition would increase one class, soil loss on 13 acres would increase from 7 cubic-yards per year to 47 cubic-yards per year. This would be only a 0.4-percent increase in soil loss, and soil loss would decrease as reclamation occurs over 5 to 10 years.

Conclusion: The potential for soil disturbance and increased erosion would be reduced. Soil erosion on the WSA would increase by about 0.4 percent.

- Impacts on Mineral and Energy Exploration and Production

- Leasable Minerals

There is one oil and gas lease in the WSA (320 acres). Due to the nature of the resource, it is projected that this lease will not be developed. Once expired, it will not be renewed. New leasing would not be allowed in the wilderness. Therefore, exploration for potential resource of up to 10 million barrels of in-place oil and up to 60 billion cubic-feet of in-place natural gas could be foregone with this alternative. Because the potential of the area is considered low with only small occurrences, and terrain is restrictive and limits access for development, it is not expected that wilderness designation of the Horseshoe Canyon (North) WSA would significantly reduce future oil and gas production in the region.

The potash-bearing rocks in the WSA are expected to be low grade, thin, and discontinuous. It is estimated that there are 750,000 to 7.5 million tons of recoverable potash that could be foregone

because the area could not be leased for potash. However, the likelihood of the area being explored or developed is remote due to thicker, richer, and more accessible deposits outside the WSA east of the Colorado River.

Due to the presence of the Green River, the WSA was evaluated for hydroelectric power. The two possible project sites would remain partially within the designated wilderness area; however, no current plans to use these sites for power generation have been identified. Potential for future power generation of up to 165 megawatts (73 percent of current hydroelectric output in Utah) would be foregone. This probably would not be significant in the foreseeable future because the probability of development is low. The significance in the long term future would be dependent on the availability of alternative power production opportunities and considerations (including costs and environmental tradeoffs such as endangered and threatened fish species in the Green River, wild and scenic river values and altered flows through Canyonlands National Park).

- Locatable Minerals

There are 94 mining claims covering 1,880 acres (9 percent) of the WSA. Claims located prior to wilderness designation could continue to be worked in accordance with valid rights existing at the time of wilderness designation, but operations could not cause unnecessary or undue degradation of wilderness values. If locatable minerals are not within mining claims filed prior to designation, the opportunity for exploration and production would be foregone. It is projected that a portion of the uranium resources in the WSA would be in existing mining claims and would be developed following wilderness designation. Production of an unknown portion of the uranium in the WSA would be foregone. Loss of potential exploration and production of other locatable minerals would not be significant because they likely would not be developed even if the area is not designated wilderness.

- Salable Minerals

There are no known salable mineral values in the WSA. Therefore, exploration or production of salable minerals would not be affected.

# HORSESHOE CANYON (NORTH) WSA

Conclusion: The opportunity for oil and gas exploration and production of an unknown quantity of uranium would be foregone. A portion of the potential uranium resource would be recovered following wilderness designation.

## • Impacts on Cultural Resources

Only 13 acres of surface disturbance is expected with this alternative, and vehicular access would be completely eliminated within the boundaries of the WSA. Very few intentional or unintentional impacts to cultural resources due to these agents would occur under this alternative.

As recreational use of the unit increases in the future, site vandalism and collection of small transportable objects may increase. However, due to the lack of vehicular access, collection of large artifacts and illegal excavation of sites may decrease. If sites containing valuable artifacts or specific features are present in the WSA, the increased inaccessibility of wilderness designation may encourage large scale commercial looting. The Anasazi sites in the WSA may meet these requirements (Wylie, 1988). The protection of cultural resources from all ORV activity, vehicular access, and surface development would, however, probably outweigh any increases in vandalism due to increased recreational use.

All cultural resource management procedures would be subject to the restrictions of wilderness designation (Neumann and Reinburg, 1988). Access to sites for stabilization, interpretation, or excavation may be limited or denied.

Conclusion: Cultural resources including four known sites, would be protected from most surface disturbance and all vehicular access. The benefits of protection would probably outweigh adverse effects from increased vandalism due to increased future recreational use. Management may be restricted in scope and execution due to wilderness designation.

## • Impacts on Local Economic Conditions

Overall, there would not be significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation, there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer

to Table 11), as well as loss of potential increases in income and Federal revenues that otherwise could occur with the No Action/No Wilderness Alternative. The only potential locatable mineral development that would be foregone in the foreseeable future is uranium production (see the discussion of impacts on mineral production). It is projected that one of two anticipated uranium developments would not occur. There would be a loss of potential employment for 20 to 40 persons. This loss would represent about 5 percent of the present workforce in Wayne County or less than 1 percent of present workforce in Emery County. It would represent about 4 percent of the projected Wayne County employment and 0.5 percent of the projected Emery County employment in the year 2010.

Potential oil and gas exploration would also be foregone. The two exploratory wells projected for the No Action/No Wilderness Alternative would not occur with this alternative. Up to 20 jobs for a 3 to 6 month period would be foregone.

Loss of potential hydropower production would not significantly affect local and regional economic conditions in the foreseeable future.

Present grazing levels would be allowed (estimated 72 AUMs), with continued livestock sales of \$14,420, including \$3,605 of ranchers' return from labor and investment.

The publicity that would follow wilderness designation and increases in primitive recreational use could lead to demand for commercial outfitter services, and possibly the demand for rentals of boating equipment. Related local expenditures would be small (average of \$4.10 per visitor day) and would only be significant to the commercial outfitters. Increased primitive use could result in up to \$71,540 in increased local expenditures as described for the No Action/No Wilderness Alternative. This would be well distributed to local businesses.

Motorized recreational use of the WSA is very light, with about 10 visitor days per year. The effect of no longer allowing this use on local expenditures would be very small and insignificant to both the local economy and individual businesses.

The loss of leasable acreage would cause a loss of Federal and State revenues. The loss of 19,540 acres potentially available for lease would cause a potential loss of \$39,080 per year to the Federal Treasury. In each case, the State would have received half of

## HORSESHOE CANYON (NORTH) WSA

these revenues. However, it is unlikely that large acreages would continue to be leased even with the No Action/No Wilderness Alternative because of the low probability of oil and gas production.

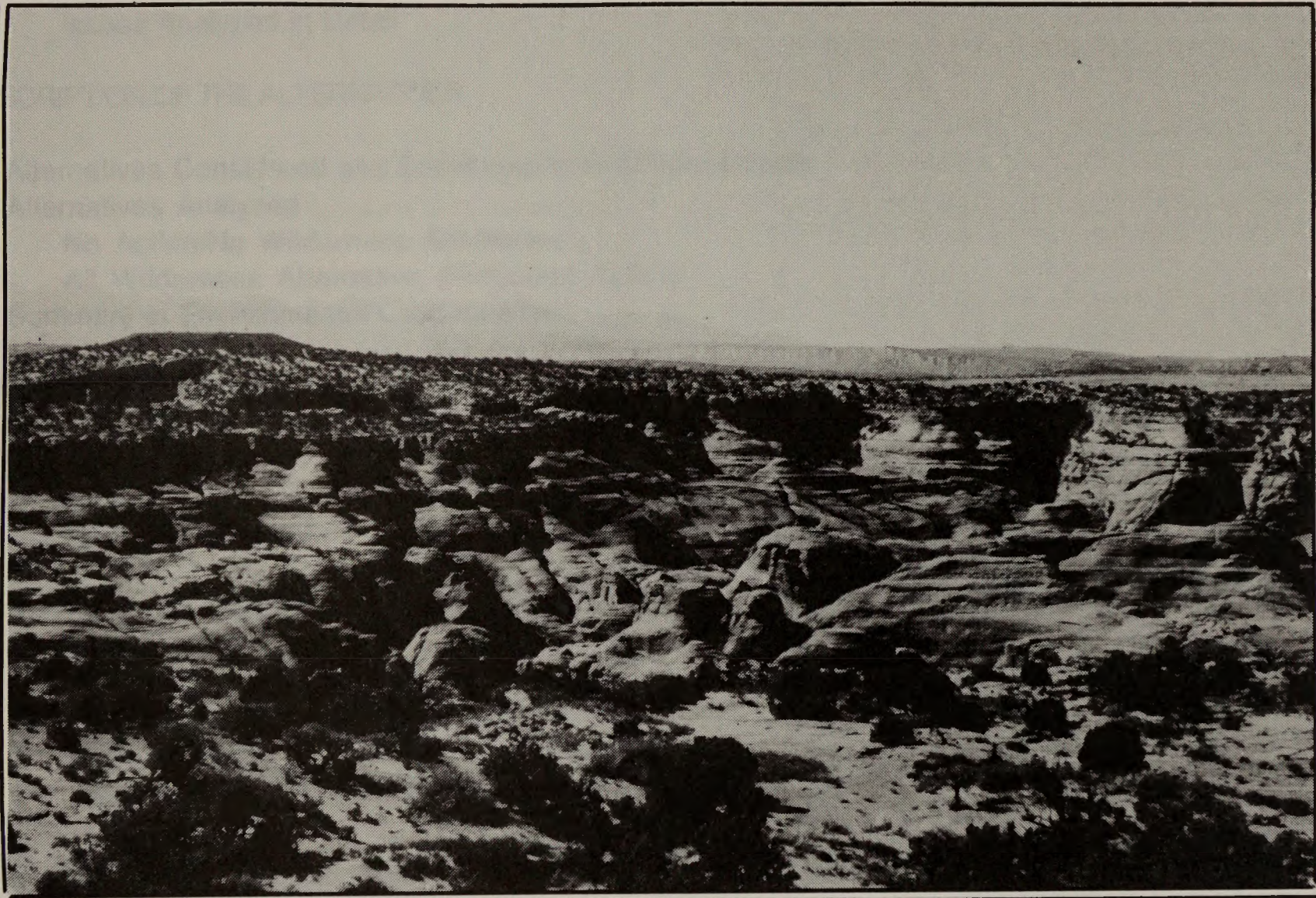
Conclusion: Existing economic trends would not be significantly affected. Potential local employment would be reduced by 40 to 60 jobs in the foreseeable future.



INTRODUCTION

General Description of the Area  
Climate and Soil  
Special Values and Threats

# Lost Spring Canyon WSA



Land Use Plan  
Bibliography

ENVIRONMENTAL CONCEPTS

No Action/No Watershed Management  
All Watershed Alternatives



# LOST SPRING CANYON WSA

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# LOST SPRING CANYON WSA

(UT-060-131B)

## INTRODUCTION

### General Description of the Area

The Lost Spring Canyon WSA is entirely within Grand County, approximately 10 air miles north of Moab, Utah. The 3,880-acre area is bordered on the south and west by Arches National Park. The topography of the unit consists of two main canyons: Salt Wash running north to south through the southern part of the unit, and Lost Spring Canyon running northeast to southwest into Salt Wash. Elevation ranges from 4,400 feet along the canyon bottoms to 5,142 feet on the mesa top.

The WSA has a semiarid climate characterized by very hot summers and moderately cold winters. Annual temperatures range from 120 degrees Fahrenheit (F) to 10 degrees F. Average annual precipitation ranges from approximately 5 to 9 inches; approximately 4 inches or less of that falls during the growing season (May to September). Average annual snowfall is 20 inches or less.

This WSA was dropped from wilderness study status by the Secretary of the Interior on December 30, 1982, due to its small size. As a result of the WSA's potential wilderness value, it is included in the EIS for analysis. This is in line with general land use planning provisions of Section 202 of the FLPMA and in accordance with BLM guidance that allows for wilderness consideration of areas of less than 5,000 acres if they are adjacent to land with wilderness potential administered by other Federal agencies.

There are no private, State, or split-estate lands located within the WSA.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume V, the following change specific to the WSA has been made since publication of the Draft EIS.

The anticipated surface disturbance presented in the Draft EIS (750 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance esti-

mates have been revised to focus on activities projected to be feasible within the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of surface disturbance estimates from the 750 acres reported in the Draft EIS to 40 acres of surface disturbance for the Final EIS.

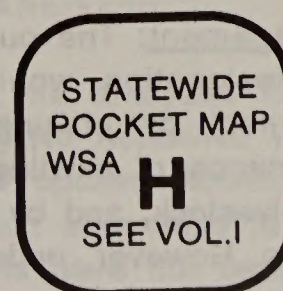
### Specific Issues Identified Through Scoping and Public Comment

#### • Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume V (i.e., impacts on air quality, geology and topography, water rights, and land use plans and policies), the following issues or impacts specific to the Lost Spring Canyon WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Soils: Soil disturbance estimates have been revised downward from 186 acres analyzed in the Draft EIS to 40 acres in the Final EIS. Given this new scenario, the impacts of direct disturbance of soil would affect only about 1 percent of the WSA. Therefore, impacts on soils are not significant issues for analysis in the Final EIS.

2. Vegetation Including Special Status Species: Estimates of surface disturbance without wilderness designation have been revised downward from the 186 acres reported in the Draft EIS to 40 acres of surface disturbance in the Final EIS. Given this new scenario, the impacts of direct disturbance of vegetation would be reduced and would not be significant with any of the alternatives (about 1 percent of the WSA). Four Category 2 candidate species Lygodesmia entrada, Lomatium latilobum, Astragalus sabulosus, and Aesclepius cutleri and one sensitive species (Zigadenus vaginatus) may occur in the WSA. BLM would conduct site-specific clearances of potentially disturbed areas and consult with the FWS concerning impacts on



## LOST SPRING CANYON WSA

these and other special status species. ORV use is usually restricted to wash bottoms and trails by rugged terrain. Therefore, impacts on vegetation are not analyzed in detail for the Lost Spring Canyon WSA.

3. Water Resources: The public is concerned that wilderness designation would interfere with development of water. Future developments could also increase sediment yield and affect water quality. Salt Wash and Lost Spring Canyon are the major drainages in the WSA. Potential uses include livestock and wildlife, and these uses would be compatible with wilderness management. Surface disturbance would be minor (1 percent of the WSA) and erosion would not significantly increase. Therefore, impacts on water uses and quality are not significant issues for the Lost Spring Canyon WSA.

4. Wildlife Including Special Status Species: The public is concerned that without wilderness designation, mineral and other developments would destroy wildlife habitat and lead to reductions in wildlife populations. They are also concerned that use of ORVs would disturb wildlife and destroy habitat. The Lost Spring Canyon WSA provides habitat for a variety of animal species, but populations are generally low and no one species can be described as abundant. The riparian areas, however, do provide a higher concentration of some species during the year. Two endangered and Three Category 2 candidate species may be found in the WSA.

Since only 40 acres of surface disturbance are expected in the WSA in the foreseeable future, wildlife habitats would not be significantly affected and no reductions in populations are projected. Recreation use is mainly primitive and these are no crucial or critical habitats in the area. Given these conditions, impacts on wildlife habitat and populations are not significant issues for the Final EIS.

5. Forest Resources: The only forest resources in the WSA are 200 acres of scattered Utah Juniper trees. There is no firewood cutting in the area because of the sparseness of the trees and low wood production. For these reasons, impacts on forest resources are not significant issues for analysis in the Final EIS.

6. Livestock Management: The public is concerned that wilderness designation would interfere with livestock management by placing restrictions on access for maintenance of existing range improvements, moving of livestock, and by preventing future range improvements. However, under the Wilderness

Management Policy (BLM Manual 8560) there will be no curtailments in grazing simply because an area is wilderness. Several methods of predator control would be allowed in designated wilderness and predator control has not been required in the area for several years. There are no proposed rangeland improvements in the WSA. For these reasons, impacts on livestock management are not significant issues for the Lost Spring Canyon WSA.

7. Visual Resources: As discussed above, only 40 acres of surface disturbance are projected for the WSA in the Final EIS. Therefore, visual resources would not be significantly affected. Visual resources are not addressed in the Final EIS as a separate topic, but are addressed in relation to naturalness and special features in the Wilderness Values sections.

8. Cultural Resources: Cultural resources could be destroyed by surface-disturbing projects, use of vehicles, or vandalism. However, no cultural resource sites have been recorded in the Lost Spring Canyon WSA. Relatively little mineral-related surface disturbance is projected. Recreational use is mainly primitive. Terrain and surface features limit vehicle use inside the WSA. Additionally, inventories for the purpose of site recordation and mitigation of impacts would take place prior to any surface disturbance in the future. Given these conditions, impacts on cultural resources are not significant issues for the Lost Spring Canyon WSA and are not analyzed in the Final EIS.

9. Recreation: Recreational use of the WSA is low to moderate (about 750 visitor days per year). About 27 percent of the recreational use is motorized. Although recreational use would increase over the long term, vehicular recreational use would continue to be generally confined to the canyon bottoms and washes if the WSA is not designated wilderness. Because the WSA is small, There would be reduction in the quality of primitive recreation if ORV use increases. This impact is analyzed in the analysis of impacts on primitive recreation in the Wilderness Values Section but is not addressed as a specific topic. If the WSA is designated wilderness, the loss of motorized recreational use would not be significant because there are alternate riding areas near by.

10. Impacts on Economic Conditions: Some, including State and local government, are concerned that wilderness designation would preclude mineral or other economic developments and adversely affect local economic conditions. Others believe that primitive

# LOST SPRING CANYON WSA

recreation use would increase following wilderness designation and would contribute to the local economy.

There are no existing or anticipated mineral developments or proposals for lands or realty activities which would be impaired with or without wilderness designation. Projected oil and gas exploration would provide only temporary (3 to 6 months) employment for 10 to 40 people and production of oil or gas is not expected following exploration. Because economic developments are not expected, and because recreational use is only 750 visitor days per year and would increase at a rate of 2 to 7 percent with or without wilderness designation, impacts on local economic conditions are not significant issues for the Lost Spring Canyon WSA.

## • Issues Analyzed in Detail

The significant issues for the Lost Spring Canyon WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on mineral exploration and production.

Comments made during the public comment period for the Draft EIS centered mainly on the inventory phase of the wilderness review, BLM's assessment of the value of wilderness vs. other resource values, and relationship to NPS management. See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section H for responses to specific comments about the Lost Spring Canyon WSA.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated from Detailed Study

Transfer of several WSAs, including the Lost Spring Canyon WSA, to NPS administration in adjacent NPS units has been proposed (Ninety-Eighth Congress of the US, 1983). Such a transfer could occur in the future regardless of wilderness status.

Because of the possibility of management transfer from BLM to the NPS, the EIS could include analysis of both BLM and NPS management with and without wilderness designation of the WSA. However, because

BLM could continue to manage the WSA without wilderness designation or could manage the WSA as wilderness in conjunction with a contiguous NPS-administered wilderness and because the outcome of the NPS wilderness proposals and H.R. 1214 are uncertain actions independent of the BLM wilderness review, alternatives for transfer of jurisdiction from BLM to NPS are not analyzed in this EIS. The EIS addresses the basic question of wilderness designation of BLM-administered lands and the resultant environmental impacts. Transfer of jurisdiction is to be a separate matter that would be evaluated on its own merits and could be implemented with or without wilderness designation.

It is noted that in cases where lands contiguous to a BLM WSA are proposed as wilderness by another Federal agency, the BLM Wilderness Study Policy requires the BLM in its Wilderness Study Report to determine: (1) whether the WSA would be a viable independent candidate for designation as wilderness if Congress does not designate the contiguous land; and (2) if the WSA were designated as wilderness, whether the BLM portion could be more effectively managed by the agency administering the contiguous wilderness area (USDI, BLM, 1982a).

BLM has determined that the Lost Spring Canyon WSA would not be a viable independent wilderness if adjacent NPS land is not also designated as wilderness. The question of which agency should manage the WSA to achieve overall management effectiveness will be addressed in the Wilderness Study Report. This decision will be based primarily on factors affecting both BLM and NPS jurisdictions (i.e., relative amounts of the total wilderness area administered by each agency, principal public ingress and exit points, agency staffing and workload in the region, and similar non-environmental items). Environmental differences, if any, would be due to variations in BLM and NPS mandates and policy (e.g., national parks are closed to hunting while public lands are not) rather than from wilderness designation. These differences would exist with or without wilderness designation and; therefore, are not relevant to the analyses of the impacts from wilderness designation.

### Alternatives Analyzed

Two alternatives are analyzed for the Lost Spring Canyon WSA: (1) No Action/No Wilderness; and (2) All Wilderness (Proposed Action) (3,880 acres). A description of each alternative follows. Where management intentions have not been clearly identified,

## LOST SPRING CANYON WSA

assumptions are made based on management projections under each alternative. These assumptions are indicated in each case. The analysis assumptions discussed in the Introduction to Volume V are also applicable.

- No Action/No Wilderness Alternative

With this alternative, none of the 3,880-acre Lost Spring Canyon WSA would be designated by Congress as part of the NWPS. Although BLM's land use plans are regularly updated, it is assumed that the WSA would continue to be managed in accordance with the BLM Grand RMP (USDI, BLM, 1983). No State, private, or split-estate lands are located in the WSA (refer to Map 1). The figures and acreages are for Federal lands only.

- Management Conditions and Constraints

All 3,880 acres would remain open to mineral location and sale. Although there are no mining claims in the WSA, development work, extraction, and patenting would be allowed on any future mining claims. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) without concern for wilderness values. No oil and gas leases exist in the WSA. Future mineral leasing would be allowed under Category 1 (standard stipulations).

Although minerals would be managed as described above, only limited exploration for oil and gas is projected. Development of oil and gas or other minerals is not projected following exploration because the level of known resources and the probability of their development are too low to support that assumption (see Appendix 6 in Volume I).

The present domestic livestock grazing use in the WSA would continue as authorized in the RMP (419 AUMs). Use of the existing range trend monitoring transect, including vehicular access, would continue. Use and maintenance of the existing 0.25 mile of pinyon pine fence could also continue; however, at present, there is no wire on the fence posts and the fence is not maintained. There are no other existing or proposed rangeland developments.

The entire 3,880 acres would be open to ORV use. The 0.25 mile of ways could be utilized for vehicular access.

The entire area would continue to be managed under VRM Class II.

- Action Scenario

BLM projects that implementation of the No Action/No Wilderness Alternative would result in approximately 40 acres of surface disturbance in the foreseeable future for oil and gas exploration.

It is anticipated that four wells would be drilled in the future to determine the potential of oil and gas structures that lie beneath the WSA. Up to 10 acres would be disturbed for each drill pad and access road. It is projected that individual access roads to the drill sites would not exceed 3 miles in length. Geophysical operations would be conducted to determine the location of oil and gas exploratory wells. An average of 10 employees would operate each well for a period of 3 to 6 months. Each location would be reclaimed following abandonment. It is projected that 3 to 5 years would be necessary to determine successful reclamation.

No disturbance is projected from ORV use due to rough terrain. Most of the use would occur in washes or on 0.25 mile of existing way.

Recreation use is projected to increase over the current estimated use of 750 annual visitor days at a rate of 2 to 7 percent per year. About 27 percent would continue to be related to vehicular use in the washes and on the 0.25 mile of way. The remainder of the use would be primitive.

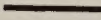




- All Wilderness Alternative (Proposed Action)

With the All Wilderness Alternative, all 3,880 acres of the Lost Spring Canyon WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). Because this WSA lacks the necessary size to constitute a wilderness area by itself, it can only be managed in part with the NPS-proposed wilderness. As a result, the Lost Spring Canyon WSA could be retained by BLM or transferred to the NPS (refer to Map 1), who would then assume management responsibilities. For the purposes of this analysis, it is assumed that BLM would retain management of the WSA following designation. It would be managed in part with the contiguous NPS-proposed wilderness in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character. No State lands are located in the WSA. One

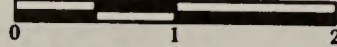
# LOST SPRING CANYON WSA

## Map 1 LAND STATUS Lost Spring Canyon WSA UT-060-131B

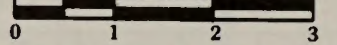
### Legend

-  WSA Boundary
-  Arches National Park Boundary
-  State Land Within or Adjacent to WSA
-  National Park Service Administered Land
-  BLM Administered Land Within or Adjacent to WSA

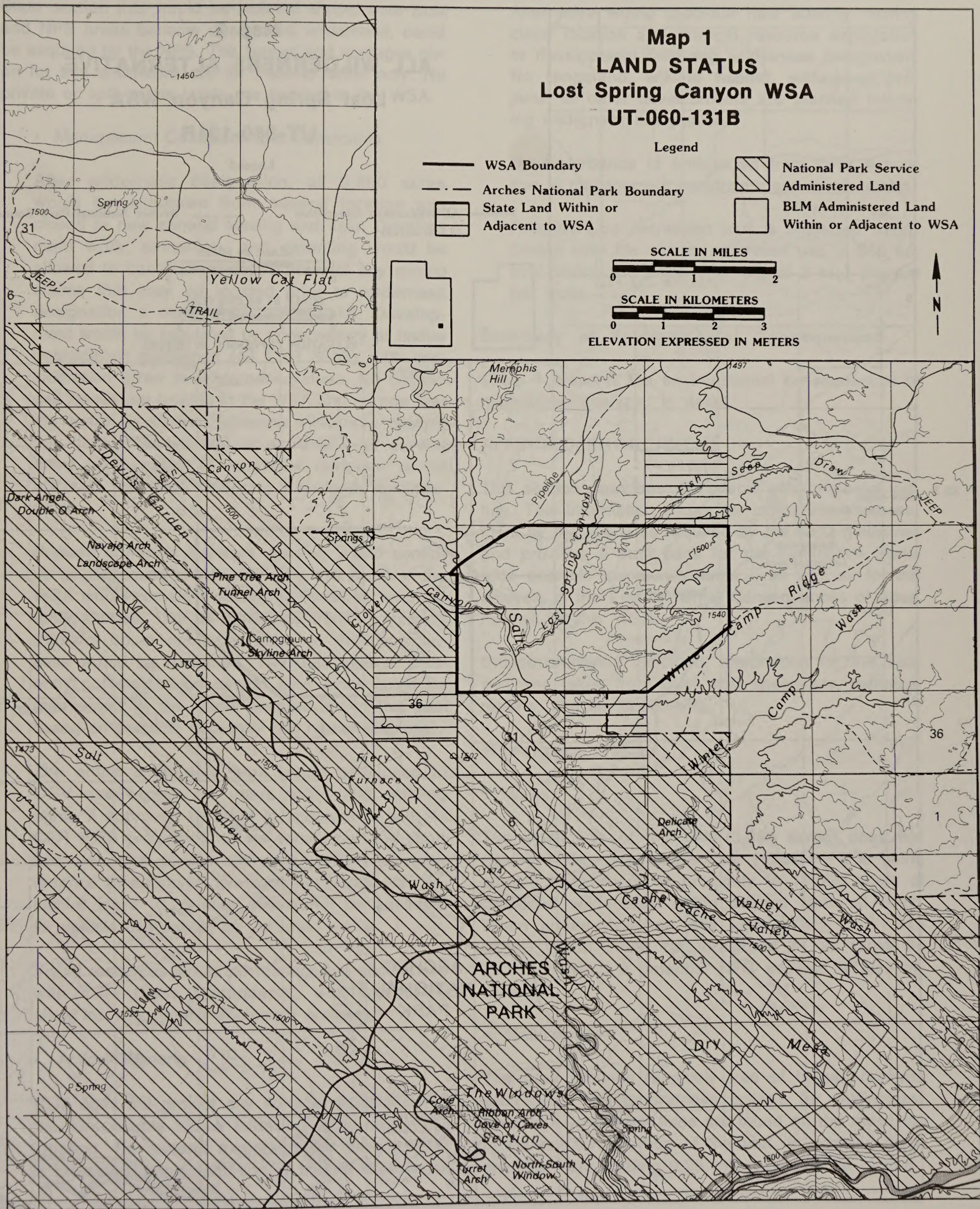
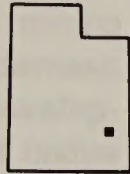
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



R. 21 E.

5

R. 22 E.

# LOST SPRING CANYON WSA

Map 2

## ALL WILDERNESS ALTERNATIVE

### Lost Spring Canyon WSA

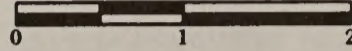
UT-060-131B

Legend

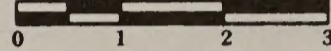
— All Wilderness Alternative  
(3,880 acres)

- - - Arches National Park Boundary

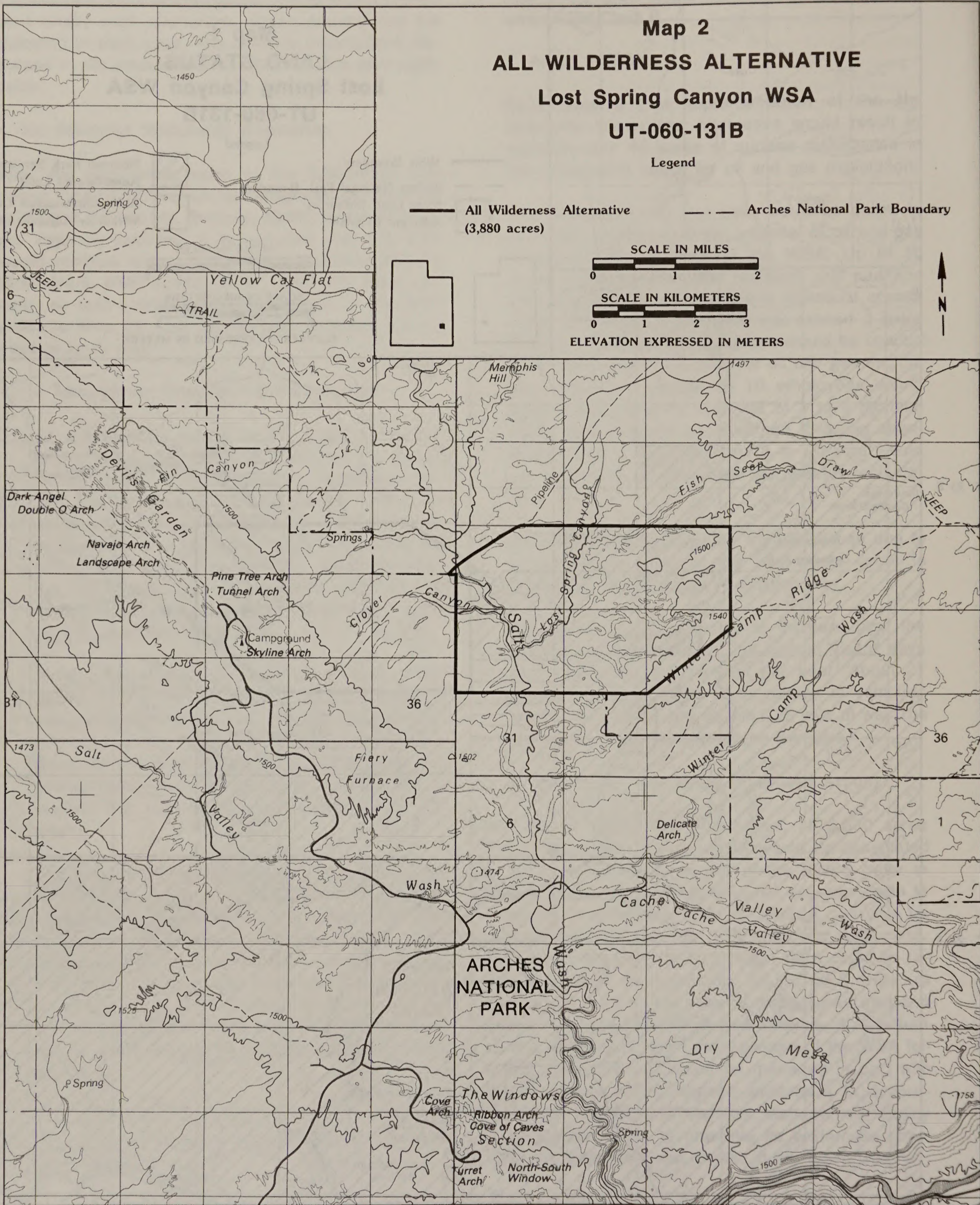
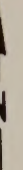
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



R. 21 E.

R. 22 E.

# LOST SPRING CANYON WSA

State section that would be isolated should both BLM and NPS areas become designated wilderness, could be acquired by the NPS. The figures and acreages given for this alternative are for Federal lands only. No private or split-estate lands are located in the WSA.

- **Management Conditions and Constraints**

After wilderness designation, all 3,880 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of any mining claims that may be located prior to wilderness designation if determined to be valid. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809), with consideration given to wilderness values. No oil and gas leases are located in the WSA and no new leasing would be allowed following wilderness designation. It is projected that no exploration or development of leasable or locatable minerals would occur in the WSA following wilderness designation.

Present domestic livestock grazing would continue as authorized in the RMP. The 419 AUMs in the WSA would remain available to livestock as presently allotted. Use of the range trend monitoring transect could continue, although vehicular access would be restricted. The 0.25 mile of presently not maintained pinyon pine fence could be maintained in the same manner as in the past based on practical necessity and reasonableness.

The entire 3,880-acre area would be closed to ORV use except for users with valid existing rights if approved by BLM in accordance with 43 CFR 8560 provisions; or for occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. Vehicular ways (0.25 mile) would not be available for vehicle use except as indicated above.

Visual resources would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

- **Action Scenario**

BLM does not project any surface disturbance in the foreseeable future following wilderness designation. No mineral exploration or development is projected. Implementation of the All Wilderness

Alternative would preclude new leasing, mining claim location and mineral resource exploration or development following wilderness designation. No rangeland, wildlife habitat, watershed projects, or other developments are planned following wilderness designation.

No disturbance is anticipated from ORV activity due to management constraints and rough terrain.

Primitive-type recreation use is projected to increase over the current estimated use of 550 annual visitor use days at a rate of 2 to 7 percent per year.

## **Summary of Environmental Consequences**

Table 1 presents the environmental consequences of alternatives analyzed in detail.

## **AFFECTED ENVIRONMENT**

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as for the analysis of the Environmental Consequences of Alternatives for this WSA.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

### **Wilderness Values**

- **Size**

The small size of this unit (3,880 acres) does not qualify it for wilderness status. However, it is being studied because of its proximity to 18,069 acres of proposed wilderness within Arches National Park. When added together they form a unit of 21,949 acres, which could be increased to as large as 23,520 acres if a potential NPS addition is also included.

- **Naturalness**

The area remains relatively free of human imprints and meets the naturalness criteria for wilderness. Several seismograph lines are found on the mesa top in the northern portion of the unit. In addition there are two ways totaling 0.25 mile, a 0.25-mile pinyon

# LOST SPRING CANYON WSA

Table 1  
Summary of Environmental Consequences

Resource	No Action/No Wilderness	Alternatives	All Wilderness (3,880 Acres) (Proposed Action)
Impacts on Wilderness Values	Wilderness values would not be protected by wilderness designation and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 40 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality throughout the WSA. Because of oil and gas exploration, vehicular use of ways, washes, and future energy-exploration roads would also detract from opportunities for solitude and primitive recreation throughout the WSA. Some special features including endangered and sensitive species and wildlife associated with wilderness would not be significantly affected. Special features that would be disturbed include Class A scenery and cultural values. This alternative would not enhance and complement wilderness values, uses and management of the contiguous NPS lands, which are proposed for wilderness designation by NPS.	Wilderness designation would preserve the WSA's wilderness values including naturalness, outstanding opportunities for solitude and primitive recreation, and special features including Class A scenery, archaeological sites, endangered and sensitive species, and wildlife associated with wilderness. This alternative would enhance and complement wilderness values, uses and management of the contiguous NPS lands, which are proposed for wilderness designation by NPS.	
Impacts on Mineral and Energy Exploration and Production	Oil and gas or other mineral exploration of development would not be affected because mineral leasing, location of mining claims and development would not be restricted for protection of wilderness values.	The opportunity for leasable and locatable minerals exploration would be foregone. However, the loss of development potential would not be significant because there is only low certainty that economically recoverable minerals are in the WSA and the probability of development is low even if the WSA is not designated wilderness.	



# LOST SPRING CANYON WSA

pine fence, ORV tracks in wash bottoms and cattle paths. All are substantially unnoticeable in the area as a whole.

- Solitude

Topographic screening is the strongest single factor influencing solitude in the area. Numerous side drainages to Lost Spring Canyon and Salt Wash have highly eroded relief and block out the sights and sounds of nearby users. Opportunities for solitude within these side drainages are outstanding. Solitude found in the main canyons and mesa flatlands is of lesser quality.

Most vegetation within the WSA is low-growing and does not contribute to a feeling of solitude. Some vegetation screening does exist at the higher elevations and in some wash bottoms due to riparian vegetation.

The WSA is affected somewhat by outside influences, but not to a great degree. At times vehicle traffic within Arches National Park can be heard in the unit. Maintenance activities along the natural gas pipeline, which borders the unit on the north, will occasionally be noticeable from within the WSA.

Opportunities for seclusion are many and varied, particularly within the many erosional features and side drainages of Lost Spring Canyon. Opportunities are present to a lesser degree within Salt Wash. Opportunities are generally absent on the flat mesa tops.

The WSA has outstanding opportunities for solitude on 2,910 acres (75 percent of the WSA). It does not meet the criterion for outstanding opportunities on the remaining 970 acres.

- Primitive and Unconfined Recreation

Approximately 2,910 acres (75 percent) of the WSA has outstanding opportunities for primitive and unconfined recreation. The WSA provides opportunities for hiking, horse travel, backpacking, and photography. The area offers a diversity of routes that can be taken wholly within the unit and in combination with trips that include use of the park. Scenic values contribute greatly to these opportunities. Opportunities for rock climbing and boulder climbing are also present.

- Special Features

The most outstanding special feature of this unit is its erosional diversity. Colorful rock formations, which

include several natural arches, as well as fins and domes, provide excellent scenery. Some cultural resource values are also present.

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. There are two animal species (peregrine falcon and black-footed ferret) listed as endangered which may occur within the WSA. There are four animal species and five plant species that are considered sensitive which may occur within the WSA. Cougar, a wildlife species associated with wilderness, may occasionally visit the WSA. Refer to the Affected Environment and Vegetation and Wildlife Including Special Status Species sections for additional information. The entire WSA is rated Class A for scenic quality.

- Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV type of juniper-pinyon woodland. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. The ecoregion and PNV types represented by this WSA are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

This WSA is within a 5-hour drive from two standard metropolitan statistical areas. These are Salt Lake City-Ogden, Utah and Provo-Orem, Utah.

## Air Quality

The WSA has a PSD Class II Air Quality Classification as per the 1977 Clean Air Act Amendments. Arches and Canyonlands National Parks are nearby Class I areas. Arches National Park is contiguous with to the WSA. Prevailing winds are from the west-southwest. The air quality generally meets Class II standards.

Visibility, both within and from the WSA, is an important value. Portions of the WSA can be seen from many high-use areas including the LaSal Mountains, the Colorado river, and Arches National Park. Visual range in this portion of Utah averages between 100 and 132 miles during the summer (Aerocomp, Inc., 1984).

## Geology and Topography

The Lost Spring Canyon WSA is within the Canyonlands Section of the Colorado Plateau Physiographic

# LOST SPRING CANYON WSA

Province, which can be characterized as a series of plateaus and canyons.

Exposed geologic formations include the Summerville, Entrada, and the top portion of the Navajo. Below the surface sedimentary deposits extend to a depth of approximately 22,000 feet where the Pre-cambrian mass of schist, gneiss, and quartz monozonite are encountered. Some of the sedimentary units are favorable formations for uranium or oil and gas deposits.

The WSA is within the northwest-trending paradox fold and fault belt. Rocks at the surface consist almost exclusively of flat-lying beds of the Summerville Formation and Entrada Sandstone of Jurassic age. The axis of the Salt Valley-Cache Creek anticline trends west-northwest a few miles south of the tract, whereas the Yellow Cat dome lies a few miles northeast of the tract. Three northwest-trending normal faults with minor displacements can be traced along the surface for about 5 miles a short distance north of the tract.

The topography of the WSA consists of two main canyons; Salt Wash running north to south through the southern part of the unit, and Lost Spring Canyon running northeast to southwest into Salt Wash. The northern-most portion of the WSA consists of sparsely vegetated flats. Elevation ranges from 4,400 feet along the canyon bottoms to 5,142 feet on a small mesa top.

The canyon system contains several 300 to 400 foot deep canyons and side drainages with steep walls of Entrada sandstone. The canyons are highly eroded

with many interesting visual features including at least one natural arch.

## Soils

Soils in the Lost Spring Canyon WSA consist of about 30 percent deep stony soils on steep canyon sides, 20 percent shallow to very deep sandy and loamy soils on mesas, and 15 percent very deep loamy and silty soils on the nearly level canyon floors. Approximately 35 percent of the area contains rock outcrop occurring as slick rock on the edges of mesas and as cliffs and ledges in the canyons.

Table 2 describes soil characteristics and land types and Table 3 describes erosion conditions.

Table 2  
Soil Characteristics and Land Types

Soil Characteristics and Land Type	Percent of the Area	Acres	Estimated Rate of Erosion (cubic yards/acre/year)	
			Present Condition	Bare Soil Surface
Rock Outcrop	35	1,358	0	0
Deep stony soils on steep canyon sides	30	1,164	1	10
Shallow to very deep sandy and loamy soils on sloping mesas	20	776	1	5
Very deep loamy and silty soils on the nearly level canyon floors	15	582	0.1	1
Totals	100	3,880		

Source: Hansen, 1985.

Table 3  
Erosion Condition

Erosion Class	Erosion Rate cubic yards/acre/year	Annual Soil Loss Under Present Conditions			Annual Soil Loss if Disturbed		
		Percent of Area	Acres	Cubic Yards	Percent of Area	Acres	Cubic Yards
Very High	20	-	-	-	-	-	-
High	10	-	-	-	30	1,164	11,640
Medium	5	-	-	-	20	776	3,880
Low	1	50	1,940	1,940	15	582	582
Very Low	0.1	15	582	58	-	-	-
None	0	35	1,358	-	35	1,358	-
Totals		100	3,880	1,998 <sup>a</sup>	100	1,880	16,102 <sup>a</sup>

Source: Hansen, 1985.

Average annual soil loss in cubic yards per acre: 0.51 under present conditions; 4.15 if disturbed.

# LOST SPRING CANYON WSA

The soils of the WSA are strongly saline with an average annual salt production of 66 lb per acre. Reseeding potential is fair in loamy and sandy areas in flatter areas in valley bottoms which comprise approximately 15 percent of the WSA. About 85 percent of the WSA is unsuitable for seeding because of rock outcrop, steep slopes and shallow soils.

## Vegetation Including Special Status Species

Major vegetation types in the WSA include desert shrub-sagebrush, juniper woodland, riparian, and greasewood (Table 4). The shrub-sagebrush type is made up of Great Basin sagebrush and blackbrush. About 3.5 miles of riparian vegetation (200 acres) is in Lost Spring Canyon and Salt Wash. Adjacent to the riparian areas are about 200 acres of saltbush-greasewood.

Table 4  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Desert shrub-sagebrush	1,920	50
Juniper woodland	200	5
Riparian	200	5
Saltbush-greasewood	200	5
Riparian	<u>1,360</u>	<u>35</u>
Total	3,880	100

Source: USDI, BLM, 1983.

The juniper woodland is found primarily in the eastern portion of the unit at higher elevations. Density is sparse with tree heights being in the 8 to 12 foot range. The balance of the unit is barren and is composed of outcroppings of slickrock sandstone supporting only limited pockets of vegetation.

Unique ecological communities have not been identified in the unit to date. No threatened or endangered plant species are known to occur in the WSA. However, the WSA may contain four Category 2 candidate species (Lomatium latilobum, Astragalus sabulosus, Asclepias cutleri, and Lygodesmia entrada) and one sensitive species (Zigadenus vaginatus) (see Appendix 4 in Volume I).

The Lost Spring Canyon WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNV type of the WSA is juniper-pinyon woodland.

## Water Resources

The Lost Spring Canyon WSA is located in the Salt Wash subbasin of the Upper Colorado River Basin hydrologic subregion.

There are no water wells or developed springs in the WSA. There are several seeps.

Salt Wash and Lost Spring Canyons are the major drainages in the Lost Spring Canyon WSA. There is an intermittent stream fed by seeps in the lower reaches of Salt Wash below Lost Spring Canyon. Other seep-fed intermittent streams occur in portions of Lost Spring Canyon and Fish Seep Draw near Lost Spring Canyon. The drainages in the WSA are tributary to Salt Wash which extends into Arches National Park.

The State has declared the WSA water right status (area 01) as not fully appropriated (UDNRE, DWR, 1988). There is very little development in this area because of its remoteness. It is basically a grazing area, with some exploration for oil and gas. This area is limited to applications for 0.015 cfs, but temporary and fixed-time applications may exceed this limit.

The water quality standards for the Colorado River and tributaries, from Lake Powell to state line are as follows: Class 1C (protected for domestic purposes with prior treatment by treatment processes as required by the Utah Department of Health); Class 2B (protected for boating, water skiing, and similar uses, excluding recreational bathing [swimming]), Class 3B (protected for warm water species of game fish and other warm water aquatic life), and Class 4 (protected for agricultural uses including irrigation of crops and stockwatering).

## Mineral and Energy Resources

The energy and mineral resource rating summary for the Lost Spring Canyon WSA is given in Table 5. Appendix 5 in Volume I explains the mineral and energy resource rating system.

The WSA could contain deposits of vanadium and copper which are currently listed as strategic and critical minerals (USDoD, 1988). Although listed as strategic, copper is relatively common. Supplies currently exceed domestic demand.

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Table 5  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f 3	c 2	10 to 50 million barrels of oil; 60 to 300 billion cubic feet of gas
Potash	f 3	c 3	1 to 10 million metric tons
Uranium	f 2	c 2	less than 500 metric tons of uranium oxide
Copper and Manganese	f 2	c 2	Less than 50,000 metric tons of copper; less than 100,000 metric tons of manganese

Source: SAI, 1982; USDI, BLM, 1987a.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

## • Leasable Minerals

There are no known deposits of any leasable minerals in the WSA. There are no active drilling, mining, or exploration activities for leasable minerals.

### • Oil and Gas

The favorability rating of (f3) indicates that potential exists within the tract for 10 to 50 million barrels of oil and 60 to 300 billion cubic-feet of gas (SAI, 1982).

The level of certainty of oil and gas occurrence within the WSA is low (c2) because there is no direct evidence from within the tract (SAI, 1982). However, wells surrounding the WSA, particularly to the north and northwest reported shows in both Pennsylvanian and Mississippian age strata, and subsurface geologic conditions could be considered favorable for oil and gas traps.

The USGS estimates that the Paradox Basin in southeastern Utah and western Colorado contains 1.2 million barrels of undiscovered recoverable oil and 3.8 trillion cubic feet of undiscovered recoverable natural gas (SAI, 1982). The majority of this will be found in Mississippian and Pennsylvanian age rocks, which to date have accounted for nearly 90 percent of the oil and 85 percent of natural gas produced in southeastern Utah.

Oil and gas production in the vicinity of the WSA comes from Cretaceous, Pennsylvanian, and Mis-

Mississippian age pools. The Cretaceous fields are located 10 to 25 miles north and northeast of the WSA. However, Cretaceous strata has been removed by erosion from the WSA.

Pennsylvanian production comes from structural traps in the Ten Mile field 26 miles west of the WSA, the Long Canyon, Shafer Canyon, and Bartlett Flat fields 15 to 25 miles to the southwest, the Lion Mesa field 24 miles to the south, and the Wilson Canyon and Pine Ridge field 35 to 40 miles to the southeast. The Shafer Canyon and Bartlett Flat fields have been abandoned, the Ten Mile and Lion Mesa fields are shut-in, and the remainder are currently producing. Combined cumulative production of these Pennsylvanian fields has been approximately 1.1 million barrels of oil and 1.4 billion cubic-feet of natural gas. Eighty-one percent of this oil and 68 percent of this gas have come from the Long Canyon field. The remaining fields have produced from a few thousand barrels of oil and no gas (Ten Mile, Pine Ridge, and Lion Mesa) to 38 to 74 thousand barrels of oil and 21 to 117 million cubic-feet of gas (Shafer Canyon, Bartlett Flat, and Wilson Canyon).

Mississippian production from nearby fields has come from the Salt Wash field 27 miles west of the WSA, Big Flat 20 miles to the southwest, and the Lisbon, Big Indian, and Little Valley fields 35 to 40 miles to the southeast. The Big Flat field has been abandoned and the remaining fields are currently productive. Combined cumulative production from these fields has been approximately 48.7 million barrels of oil and 495 billion cubic-feet of natural gas. Of this total, 96 percent of the oil and 91 percent of the gas has come from the Lisbon Valley field. The Salt Wash field has produced 1.5 million barrels of oil and 11.6 billion cubic-feet of gas. The remaining fields (Big Flat, Big Indian, and Little Valley) have produced from 92 to 208 thousand barrels of oil and 50 million to 19 billion cubic-feet of natural gas.

Potential for future discoveries within the WSA are; therefore, associated with Mississippian and Pennsylvanian age rocks. The potential associated with the Mississippian section is masked in this portion of the Paradox Basin due to the large variations in the Paradox Formation salt sequence which overlies it. Sub-salt structure favorable for Mississippian traps may not be reflected in the surface structure and may even be the reverse; the bounding synclines and flanks of the

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salt anticlines, at the surface, concealing large anticlines at depth. Generally the deep anticlines are associated with ancient fault blocks. When these fault blocks lifted Mississippian carbonates to near sea level, prior to deposition of the salt during the Pennsylvanian age, porosity was developed in the carbonates by a variety of geologic processes. Subsequent movement of the fault blocks, combined with the southwest sub-surface salt flowage after Mississippian and Pennsylvanian times, often resulted in organic-rich black shales, interlayered with the Paradox Formation salt, being faulted next to these older Mississippian reservoir rocks. Studies of Paradox Formation shales in cores from the Gibson Dome area, indicate that Paradox shales in that area have the potential to provide 4,970 barrels of oil per acre of shale to any favorable reservoir rock around it with sufficient trapping mechanisms (Hite, et al., 1984).

The Pennsylvanian potential is more closely associated with the salt structures themselves. As a result of the salt flowage that formed the anticlines, the blackshales were fractured forming potential reservoir rock with overlying salt acting as the reservoir seal. This fracturing was generally more enhanced near the anticlines. Reservoirs in the Paradox Formation often present difficult problems when completing wells for production. The salt flowage has overpressurized some areas and the corrosive, plastic nature of the salt occasionally results in collapse of production casing. Techniques have recently been developed to overcome these problems and interest in Pennsylvanian pools in the area was picking up rapidly prior to the worldwide collapse of oil prices in 1986. However, since these techniques present increased costs, exploration for such pools will be slowed in the foreseeable future, as long as oil prices remain low.

The entire WSA (3,880 acres) is open to oil and gas leasing (Category 1, standard stipulations) under the BLM category system (USDI, BLM, 1975 and 1983). There are no mineral leases within or adjacent to the WSA.

- Potash

Bedded potash is found within the Paradox Formation underlying the Paradox Basin. The size and quality of these deposits put them in a category of "world class" potash deposits. Sylvite, the miner-

al contained in the potash, is currently being mined by a solution process from a depth of approximately 2,800 feet, in an area about 15 to 20 miles southwest of the WSA. This mine has produced roughly 3.5 million tons since 1965, and is an economically important facet of the Moab Community.

The favorability rating for potash (f3) indicates a potential for 1 to 10 million metric-tons of potash underlying the WSA, with 750,000 to 7.5 million metric-tons considered recoverable (SAI, 1982). As a result of surrounding drill data and the bedded nature of these deposits, there is a moderate (c3) certainty that the resource exists (SAI, 1982). There are currently no potash leases within or immediately adjacent to the WSA.

The potash market is currently depressed, partly because foreign supplies are more economic to develop and are in some cases government subsidized. In addition to these poor market conditions, potash beds underlying the WSA have been adversely affected by folding and faulting that resulted from the salt flowage during Permian and Triassic time. This cause marked variation in the thickness of the potash-bearing salt beds, typically being very thick at the cores of the salt anticlines, and thinning in the areas between them. It is believed that potash beds underlying the WSA would be thinning to the northeast and could be discontinuous in nature. Combined with a projected depth of 7,000 to 8,000 feet, making solution mining the only method of development, it is doubtful that new potash development would occur within the WSA in the foreseeable future.

- Locatable Minerals

There are no known deposits of locatable minerals in the WSA, and there are presently no mining claims.

- Uranium and Vanadium

The Colorado Plateau section of southeastern Utah and western Colorado contains some of the largest uranium/vanadium deposits in the United States. It is estimated that 50 percent of the nation's total uranium reserves and 36 percent of the potential uranium resources are contained in the Colorado Plateau (SAI, 1982).

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Principal uranium/vanadium bearing strata in the region are the Jurassic Morrison Formation, the Triassic Chinle Formation, and the Permian Cutler Formation. The Morrison Formation has been removed by erosion from the WSA. The Chinle and Cutler are present at a depth of 2,550 to 3,500 feet. The Chinle is favorable over large areas of the Colorado Plateau, particularly where there was an abundance of stream channels flowing during deposition of the Chinle. The stream channel deposits form good host rocks for the uranium/vanadium, and organic material present in the channel systems provided a chemical reduction process which precipitated the uranium and vanadium from solutions. Available data from drill holes and regionally outcrop analysis of channel deposits indicate the WSA is in an unfavorable location for the occurrence of channel deposits. Stream channels in the Cutler Formation are favorable for the same reasons, but again, available data indicate the WSA is unfavorable for the same reasons, but again, available data indicate the WSA is an unfavorable location for occurrence of large channel systems.

The WSA has a favorability rating of (f2), as a result of conditions noted above. However, since the Chinle and Cutler are present at depth and do not lend themselves to outcrop examination, they are considered marginally favorable. This favorability rating would indicate potential for less than 500 metric-tons of uranium and/or vanadium. The certainty of occurrence is rated low (c2) because of the lack of direct data from within the WSA, but is also based on relative abundance of uranium/vanadium in these lithologic units in nearby areas (SAI, 1982).

### • Copper and Manganese

The Colorado Plateau in eastern Utah has produced only small amounts of copper. The copper is associated with uranium/vanadium deposits and is sometimes extracted as a by-product. The manganese is found in the Morrison and Summerville Formations (stripped by erosion from the WSA) and to a much lesser extent in the Chinle Formation. The nearest manganese occurrence is approximately 1 mile northeast of the WSA (USDI, USBM, 1987c). Overall, the WSA is believed to be unfavorable for large deposits of either mineral, but since their occurrence would be a depth and unavailable for confirmation, the favorability rating for each is (f2) and their certainty of occurrence

for each is low (c2). This would indicate a potential for less than 50,000 metric tons of copper and less than 100,000 metric tons of manganese, relatively small amounts when compared to production from areas containing these deposits (SAI, 1982; USDI, BLM, 1987a).

### • Salable Minerals

Salable minerals in the form of sand and gravel are present within the WSA, but are of low value due to small amounts and the inferior nature of sandstone derived gravels. In addition, distance to markets is prohibitive and the potential for use in the future is minimal.

### Wildlife Including Special Status Species

The area provides habitat for a variety of wildlife species. Mule deer, coyotes, bobcats, cottontail rabbits, and a variety of reptiles and rodents may be found throughout the WSA. Several species of raptors and songbirds also inhabit the area. Cougar may rarely visit the area. Bobcats, great horned owls, and Cooper's hawks hunt in or inhabit the WSA.

Due to the lack of precipitation, the nature of the soils, redrock cliffs, and extremely hot summer temperatures, this area is not capable of supporting a diversity of vegetation sufficient to accommodate large populations of big game animals. The most common big game present are mule deer, which are found in relatively small numbers. The WSA is located in the UDWR Deer Management Herd No. 31A. During the heat of the summer, many of the deer may leave this area to migrate to the higher elevations of the Dome Plateau. Those that remain through the summer are along the Salt Wash and Lost Spring Canyon drainage where water and cover are more available.

Mourning dove are common in the area during the early spring to early fall period. Desert cottontail rabbit are common unit wide. Waterfowl are not common in the WSA.

It is possible for the Salt Wash and Lost Spring Canyon streams below the WSA to support limited populations of a variety of nongame fish species such as dace, shiners, and killfish.

Several species of amphibians, snakes, and lizards are present. The most common are horned lizard, leopard lizard, Great Basin sagebrush lizard, whiptail lizard, collared lizard, gopher snake, striped

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whipsnake, midget faded rattlesnake, red-spotted toad, canyon tree frog, and Utah tiger salamander.

The most common birds in the WSA are canyon wrens, rock wrens, kestrels, ravens, redtailed hawks, great-horned owls, prairie falcons, and golden eagles. The golden eagle is a BLM sensitive species. Great horned owl and cooper hawk nests have been observed in the WSA.

The American peregrine falcon and the black-footed ferret are two endangered species that may occasionally visit the area, although none have been sighted. The golden eagle (a BLM sensitive species) also appears in the area. Other special status species that could occur in the WSA are three FWS Category 2 candidate species. These are Great Basin Silverspot butterfly, ferruginous hawk, and southern spotted owl. Refer to Appendix 4 in Volume I for details.

There are no existing or potential vegetation treatments for improvement of wildlife habitat. No wildlife transplants are proposed; however, a newly established population of Desert bighorn sheep in Arches National Park will likely expand to the WSA.

There are no crucial or critical habitats in the WSA.

## **Forest Resources**

Forest resources are limited to approximately 200 acres of Utah juniper woodland. The juniper trees are scattered over the sandstone benches, with a low density of approximately 16 trees per acre and a height of 8 to 12 feet. No forest products have been harvested from the WSA and no harvest is expected in the foreseeable future because of the sparseness of the trees and low wood production.

## **Livestock and Wild Horses/Burros**

The entire Lost Spring Canyon WSA is within the Lost Spring pasture of the Taylor Allotment. This is a winter-spring cattle area. Grazing in the entire pasture is normally 350 cattle from November 5 to March 30. The rancher usually makes use of the WSA by putting 50 to 100 head of cattle in the area for approximately 1 month (during the coldest part of the grazing season). The entire allotment contains 8,372 AUMs of livestock range; the WSA is 5 percent of the total allotment and contains approximately 419 AUMs.

There is a range-trend monitoring transect and 0.25 mile of not maintained pinyon pine fence within the WSA. There are no other range projects existing or planned within the WSA.

Wild horses or burros are not known to occupy the WSA.

## **Visual Resources**

The area is characterized by deeply eroded side canyons with single vertical spires, fins, rounded domes, and several arches. Colors include the reds, salmons, and buffs of sandstone, and the varying greens of vegetation. Identified modifications within the WSA's boundary include a 0.25-mile pinyon pine fence, ORV tracks, seismographic lines, cattle paths, and two ways totaling 0.25 mile. All modifications are linear in nature and create low contrasts to the color and line elements of the characteristic landscape.

The entire WSA is located in an area that has been evaluated as Class A scenery. This area scored the fourth highest of 10 units evaluated in the Big Flat-Squaw Park East Planning Unit.

The entire WSA is located in a high sensitivity area and is a VRM Class II area. Refer to Appendix 7 in Volume I for a description of the BLM VRM rating system. Much of the WSA is visible from Devils Garden, a high use area in Arches National Park. It is an important viewshed to tourists within the park.

## **Cultural Resources**

Known historic and prehistoric remains represent a portion of the scientific and recreation values of Lost Spring Canyon. Although no complete inventory exists, at least two historic and three prehistoric sites are reported (USDI, BLM, 1988). Known sites include a historic signature and ranching corral, two prehistoric lithic scatters, and a campsite. Lost Spring, just outside the WSA's northern boundary, has historical interest including an old cabin, hollow log water troughs, and log corrals. Numerous additional sites are found in nearby portions of Arches National Park. No sites listed in or nominated to the National Register of Historic Places are within the WSA, although known sites may have that potential. It is estimated that the WSA may have as many as 12 cultural sites, seven of which could be National Register eligible.

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Cultures represented in the region include the Paleo Indian, Desert Archaic, Fremont, Anasazi, Ute, and historic European.

European influence in the region dates from the Dominguez-Escalante Expedition of 1776, followed by Mexican traders of the Old Spanish Trail and French fur trappers in the 1810 to 1840 era. American explorers crossed the region just north and west of the WSA in the 1850s about the time the first Anglo-American settlement was also attempted at Moab. Permanent American settlement occurred in the late 1870s and early 1880s with ranching spreading to the WSA at that time.

### Recreation

There are no documented use statistics for Lost Spring Canyon WSA. Lost Spring Canyon provides recreational opportunities for hiking, horse travel, backpacking, photography, sightseeing, ORV use, and some rock climbing. The area offers a diversity of trail opportunities entirely within the WSA and in conjunction with the Arches National Park trail system. There is a growing usage of dirt bikes in the canyon and wash bottoms. Although the area is adjacent to Arches National Park, actual recreation use is low (approximately 750 annual visitor days) at this time. Most of the current visitor use (hiking and backpacking) is done in conjunction with use of Arches National Park. Most of the use is primitive in nature. Of the total use, approximately 200 visitor days are attributed to ORV use. Under the RMP, the area is open to ORV use. Access to the area from I-70 is not difficult; however, the maze of roads in the Yellow Cat Mining area creates some directional confusion en-route to the unit.

The area has high quality historic and scenic sightseeing values. Historical sites include Lost Spring, just outside the unit's northern boundary. This area includes an old cabin, hollow log water troughs, and log corrals. One access into the Lost Spring drainage is past this historic camp. Scenic views of the WSA from a plateau above the confluence of Lost Spring Canyon and Salt Wash are impressive. The salmon-colored slickrock walls are deeply undercut. Several arches are found within this WSA. Many of the unique geologic features within Arches National Park are also visible in the distance from this viewpoint. Conversely, much of the WSA is visible from Devil's Garden, a high-use area in Arches National Park. It is possible to hike into the Salt Wash drainage from the confluence viewpoint. The WSA is a frequent destination

for backpackers who begin at Wolfe Ranch in Arches National Park.

### Land Use Plans

Access to the WSA is by way of a county road that connects with I-70 east of the community of Thompson.

There are no State or private in-holdings within the WSA. Three State sections (1,760 acres) border the unit on the north, west, and south. Two of the sections (1,120 acres) are within the boundary of Arches National Park. The State Land Board manages the State sections for economic return to the State school system. In 1986, the Utah State Legislature passed S.C.R. No. 1 opposing any additional wilderness designation for BLM lands in Utah.

The Lost Spring Canyon WSA is contiguous with 18,069 acres in Arches National Park recommended for wilderness by the NPS and an additional 1,571 acres being considered for addition to the NPS's wilderness proposal.

In response to H.R. 1214 (Ninety-Eighth Congress of the US, 1983), the NPS assessed the WSA to determine its value for potential addition to the adjacent NPS unit and found that a portion of the WSA contains values that would supplement those in the National Park (USDI, NPS, 1984). A portion of the Lost Spring Canyon WSA was recommended as suitable for inclusion into the adjacent unit of the National Park system (U.S. Secretary of the Interior, 1985). No Congressional action has been taken on that recommendation.

The WSA is managed by BLM with the Grand RMP (USDI, BLM, 1983). The Grand RMP has been reviewed by the Governor of the State of Utah and is consistent with State plans and policies. The Grand RMP does not address potential wilderness designation for the WSA; however, the Grand RMP is linked to the Statewide Wilderness EIS as uses permitted in the RMP are analyzed under the No Action/No Wilderness Alternative. A natural gas pipeline right-of-way currently forms the northern boundary of the WSA.

The WSA lies entirely within Grand County. The Grand County Master Plan does not favor wilderness but does recognize the value of "areas of critical environmental concern," after an area has been tested for mineral potential (University of Utah, BCD, 1979). The plan generally emphasizes continuation of present



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uses and maximizing mineral development. The WSA is not specifically mentioned in the plan. The Grand County Commission generally opposes designation of wilderness in the county. The Commission has endorsed the Consolidated Local Government Response to Wilderness that opposes wilderness designation of BLM lands in Utah (Utah Counties, 1986).

## Socioeconomics

### • Demographics

The Lost Spring Canyon WSA is in Grand County, Utah. From 1970 to 1980, the population of Grand County grew from 6,688 to 8,250, an overall increase of about 23 percent. Table 6 presents the baseline and projected population data for Grand County. It is estimated that between 1980 and 1987, the population increased to about 7,250. Population projections indicate that the number of people living in Grand County in the year 2010 will be about 8,700 for about a 5-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 6  
Baseline and Projected Population and Employment Growth  
Grand County

	1980	1990	2000	2010
Population	8,250	7,000	7,000	8,700
Employment	3,702	2,900	3,100	3,900

Source: Utah Office of Planning and Budget, 1987.

### • Employment

Table 6 shows the baseline and projected total employment of Grand County to the year 2010.

Grand County is part of the Southeast MCD. Table 7 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980 the leading employment sectors for the Southeast MCD were mining (28 percent), government (18 percent), trade (15 percent), and services (8 percent).

It is projected that by the year 2010, employment in the district will increase by 27 percent. Services will increase to 18 percent and trade to 17 percent of the total. Government will decline to 15 percent and mining to 20 percent of the total MCD employment. Agriculture currently represents about 5 percent of all employment and is projected to be about 4 percent in the year 2010.

Table 7  
Southeast Multi-County District  
Employment<sup>a</sup>

	1980	1990	2000	2010
Agriculture	1,203	1,100	1,100	1,100
Mining	6,368	3,500	4,500	5,700
Construction	1,360	700	900	1,100
Manufacturing	551	600	700	800
Transportation, Utilities	1,563	1,800	2,000	2,200
Trade	3,289	3,600	4,000	4,800
Finance, Insurance, Real Estate	424	400	400	500
Services	2,067	3,200	4,000	5,300
Government	3,994	4,100	3,800	4,400
Nonfarm Proprietors	1,715	2,000	2,200	2,800
Totals	22,534	21,000	23,600	28,700

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Carbon, Emery, Grand, and San Juan Counties.

### • Sales and Revenues

Economic-related activities in the WSA include mineral exploration, livestock production, and recreation. Table 8 summarizes local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Table 8  
Local Sales and Federal Revenues

Source	Annual Local Sales <sup>a</sup>	Annual Federal Revenues
Livestock Grazing	\$ 8,380	\$645
Recreational Use	\$ 3,075	\$ 0
Total	\$11,455	\$645

Sources: USDI, BLM, 1974; Volume I, Appendix 9.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

The WSA has no mining claims or mineral leases. No oil and gas or mineral production has occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Livestock operators have a total grazing privilege of 419 AUMs within the WSA. If all this forage were utilized, it would account for \$8,380 of livestock sales and \$2,095 of ranchers' returns to labor and investment.

The WSA's non-motorized recreational use and related local expenditures are low, well distributed, and insignificant to the local economy. The WSA's

## LOST SPRING CANYON WSA

motorized recreational use and related local expenditures are low and insignificant. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that Statewide average local expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Lost Spring Canyon WSA is estimated as about 750 visitor days per year.

The WSA does not generate Federal revenues from leasable mineral at the present time. Livestock permittees in the WSA can use up to 419 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$645 of grazing-fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of range-land improvements.

### ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. The analysis is based on the BLM management actions and anticipated activities presented in the Introduction to Volume V and the Description of the Alternatives for the Lost Spring Canyon WSA.

#### No Action/No Wilderness Alternative

- Impacts on Wilderness Values

Because the WSA would not be designated wilderness, the identified wilderness values would not receive the degree of protection afforded by application of the BLM Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities (i.e., VRM Class II management on all 3,880 acres).

In the foreseeable future, disturbance of approximately 40 acres from oil and gas exploration throughout the WSA would result in a direct loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas. Most special features, including endangered and other special status species and wildlife associated with wilderness, would not be significantly affected because the direct disturbance would involve only about 1 percent of the WSA. In addition, appropriate measures would be taken to protect endangered and other special status spe-

cies and cultural resources prior to any surface-disturbing activity. Class A scenery would be reduced in quality in the disturbed areas, and because disturbance would be spread throughout the WSA, Class A scenery would be reduced throughout the WSA. Cultural resources could be exploited because of new access provided by energy exploration roads.

During the period of activity, the visual and audible disturbance from mineral exploration would indirectly reduce opportunities for solitude and primitive recreation not only on directly disturbed areas but also on adjacent portions of the WSA. The entire WSA could be so affected in the foreseeable future.

The continued and increased vehicular use of washes, existing ways, and future energy-exploration roads would detract from opportunities for solitude and primitive recreation.

The increased visitor use that would occur over time would be expected to reduce wilderness values because at least a third of the additional use would be vehicular in nature, and the WSA is not large enough to incorporate vehicular use without reduction in quality of opportunities for solitude and primitive recreation.

The extent that disturbance would occur on Federal lands over the long term and; therefore, the long-term loss of wilderness values that would occur is not accurately known. Loss would occur, however, as intrusions increase.

This alternative would not complement or enhance wilderness uses, values, and management of contiguous NPS-lands proposed by NPS for wilderness designation.

Conclusion: In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 40 acres, and opportunities for solitude and primitive recreation would be indirectly reduced in quality throughout the WSA. Special features that would be disturbed include Class A scenery and cultural values.

- Impacts on Mineral and Energy Exploration and Production

- Leasable Minerals

The entire WSA would remain open for leasing under leasing category 1 (standard stipulations).

# LOST SPRING CANYON WSA

Oil and gas resources could be explored and developed without concern for wilderness values. However, the major drainages, and their riparian-associated vegetation, would be protected by the no surface occupancy stipulation. Favorability for the occurrence of oil and gas in Pennsylvanian and Mississippian formations is moderate for the WSA; however, because of the small size of the WSA and the low certainty that the resource actually exists is projected that in the area, oil and gas exploration would occur but the likelihood of production is low.

The entire WSA would remain open to potash leasing. The potash-bearing zones under the WSA are estimated to be well below 7,000 feet. The likelihood of the WSA being explored or developed for potash at these depths in the Paradox Basin is remote considering that more favorable areas exist elsewhere in the basin. Consequently, no potash exploration or development are anticipated.

## • Locatable Minerals

Locatable mineral development could occur within the WSA. The entire 3,880 acres would remain open to mining claim location. Deposits of locatable minerals are determined to be small and have a low to very low certainty of occurrence. However, due to the erosion and/or depth of favorable host rocks, the unfavorable stream orientation, the long distance from known production, and the lack of drill hole and outcrop data, it is believed that the exploration or development of locatable mineral would not occur in the foreseeable future.

Conclusion: Oil and gas or other mineral exploration would not be affected by the No Action/No Wilderness Alternative.

## **All Wilderness Alternative (Proposed Action) (3,880 Acres)**

### • Impacts on Wilderness Values

Designation and management of all 3,880 acres as wilderness would preserve the wilderness values in the Lost Spring Canyon WSA. The potential for surface-disturbing activities would be reduced through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness would be preserved

on all 3,880 acres. Opportunities for solitude and primitive recreation would be preserved on approximately 2,910 acres that meet and 970 acres that do not meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA including Class A scenery, endangered and other special status species, cultural resources, and wildlife associated with wilderness would be preserved.

Vehicular use of existing ways and washes would cease with ORV closure, improving opportunities for naturalness, solitude, and primitive recreation.

Increased visitor use that would occur with time would be primitive in nature and would be managed so as to not result in loss of wilderness values.

This alternative would enhance and complement wilderness values, uses and management of the contiguous NPS-lands, which are proposed by the NPS for wilderness designation.

Conclusion: Wilderness designation would preserve the wilderness values in the WSA.

### • Impacts on Mineral and Energy Exploration and Production

#### • Leasable Minerals

Exploration for up to 10 to 50 million barrels of recoverable oil or 60 to 300 billion cubic feet of recoverable natural gas would be foregone under this alternative.

None of the WSA is presently leased for oil and gas and new leases would not be issued. Therefore, the opportunity for oil and gas exploration would be foregone. Because development is not projected in the foreseeable future without wilderness designation, loss of development potential would not be significant.

The area could not be leased for potash. However, the potash-bearing zones under the WSA are estimated to be well below 7,000 feet. The likelihood of the area being explored is remote due to more favorable areas elsewhere.

#### • Locatable Minerals

There are no mining claims within the WSA. Development work, extraction, and patenting

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would be allowed to continue on future valid claims after wilderness designation under unnecessary or undue degradation guidelines. After wilderness designation, the WSA would be closed to location of mining claims.

However, because of the reasons cited in the analysis of the No Action/No Wilderness Alternative, it is unlikely that exploration or development would occur, even without wilderness designation. Therefore, this alternative would not result in a significant loss of recoverable uranium and associated mineral resources.

**Conclusion:** The opportunity for oil and gas and other leasable and locatable minerals exploration would be foregone. The loss of development potential would not be significant.

INTRODUCTION

# South Needles WSA

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# SOUTH NEEDLES WSA

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# SOUTH NEEDLES WSA

UT-060-169A

## INTRODUCTION

### General Description of the Area

The South Needles WSA is a small parcel (Lots 1 and 2, S1/2, NE1/4, Sec. 2, T. 32 S., R. 19 E.) of BLM administered land containing approximately 160 acres. It is contiguous on two sides with Canyonlands National Park and its 61,182-acre proposed Needles Wilderness Area. The other two sides are contiguous to 480 acres of State owned land which separates this WSA from BLM's 24,190-acre Butler Wash WSA.

During BLM's Wilderness Inventory this parcel was thought to be State land and was not included with the Butler Wash WSA. The error was not discovered in time to include the WSA with a full analysis in the Draft EIS. The parcel was formally designated as a separate WSA through a Federal Register Notice dated January 21, 1986. This process is in accordance with the general land use planning provisions of Section 202 of the FLPMA and in accordance with BLM guidance that allows for wilderness consideration of areas of less than 5,000 acres if they are adjacent to land with wilderness potential administered by other Federal agencies.

The WSA is located in northwestern San Juan County, about 10 air miles northwest of Monticello. It is remote, and several miles of non-motorized travel are required to reach the unit.

The area consists of sloping slickrock with pinyon-juniper woodland covered benches with elevations ranging from about 6,240 feet in the southwest corner down to 5,640 feet in the northeast where the drainages flow into Canyonlands National Park.

Information on the climate of South Needles is based on data obtained from the nearest weather station at Canyonlands National Park about eight air miles north of the WSA.

The average annual temperature at Canyonlands is 53 degrees Fahrenheit (F), with an average low of 38 degrees F, and an average high of 69 degrees F. The record low is -11 degrees F, and the record high is 105 degrees F. Annual precipitation ranges from eight to twelve inches over South Needles. January, March, and August are the driest months. June,

September, and October are the wettest months. Annual total snowfall ranges from 20 to 30 inches.

There are no private, State or split-estate lands within the WSA.

As discussed above, this WSA was not identified in time to receive a separate analysis for the Draft EIS. It was described as an addendum to the Butler Wash WSA but is treated as an individual WSA for the Final EIS.

BLM's proposed action for the WSA is the All Wilderness Alternative.

### Changes for the Final EIS

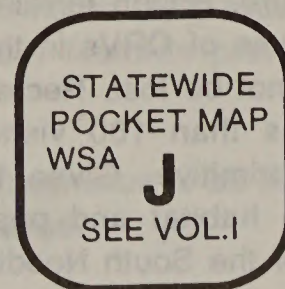
In the Draft EIS this WSA was mentioned in conjunction with the Butler Wash WSA. It is analyzed as a separate WSA in the Final EIS.

### Specific Issues Identified through Scoping and Public Comment

- Issues Considered but not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume V (i.e., impacts on air quality, geology and topography, water rights, and land use plans and policies), the following issues or impacts specific to the South Needles WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Soils: The public is concerned that without wilderness designation future activities in the WSA would result in soil disturbance and increases in soil erosion and loss of soil fertility. Because surface disturbance is not anticipated and the area is not accessible to ORVs, impacts on soils are not analyzed in detail.



## SOUTH NEEDLES WSA

2. Vegetation Including Special Status Species: As discussed above, no surface disturbance is anticipated with or without wilderness designation for the WSA and the area is inaccessible to motor vehicles. Neither the vegetation types or the one Category 2 candidate species (Erigeron kachinensis) would be affected. Therefore, impacts on vegetation are not analyzed in detail for the Final EIS.

3. Water Resources: The public is concerned that wilderness designation would interfere with development of water. Future developments could also increase sediment yield and affect water quality. There are no perennial streams and only one spring in the South Needles WSA. Therefore, impacts on water uses and quality are not analyzed in detail.

4. Mineral Resources: The public has expressed concern that wilderness designation would interfere with or prevent mineral exploration, development, and production.

There are no oil and gas leases within the WSA. Potential oil and gas deposits are small with a very low certainty that they exist.

There are no mining claims in the WSA and projected uranium and other locatable mineral deposits are small and/or could not be economically developed in the foreseeable future (See Appendix 6 in Volume I). More accessible deposits of salable minerals exist outside the WSA. For these reasons it is determined that mineral exploration or development would not occur in the foreseeable future with or without wilderness designation. Therefore, impacts on mineral and energy exploration and production are not analyzed in detail in the Final EIS.

5. Wildlife including Special Status Species: The South Needles WSA provides habitat for a variety of animal species, but populations are low and not one species can be described as abundant. One endangered and six other special status species may be found in the WSA.

Because no developments are expected in the WSA in the foreseeable future. Rough terrain and surface features preclude the use of ORVs in the WSA and wildlife habitats would not be lost. Recreation use is very low (estimated less than 100 visitor days use per year), and is all primitive. Given these conditions, impacts on wildlife habitat and populations are not significant issues for the South Needles WSA.

6. Forest Resources: The only forest resources in the WSA are 160 acres of scattered pinyon pine and juniper trees. Demand is low and there is no access. For these reasons, impacts on forest resources are not significant issues for analysis in the Final EIS.

7. Livestock Management: The public is concerned that wilderness designation would interfere with livestock management by placing restriction on access for maintenance of existing range improvements, moving of livestock, and by preventing future range improvements, and placing restrictions on predator control. The area is part of the Indian Creek Allotment but is not grazed and does not have grazing capacities assigned to it. There are no rangeland developments, none are proposed and vehicle access is not possible. For these reasons, impacts on livestock management are not significant issues for the South Needles WSA.

8. Visual Resources: As discussed above for soils and vegetation, no surface disturbance is projected for the WSA in the Final EIS. Therefore visual resources would not be affected. Visual resources are not addressed in the Final EIS as a separate topic, but are addressed in relation to naturalness in the Wilderness Values sections.

9. Cultural Resources: Cultural resources could be destroyed by surface disturbing projects, use of vehicles or vandalism. However, only two cultural resource sites have been noted in the South Needles WSA. No mineral related surface disturbance is projected. Visitation is light (less than 100 visitor days per year) and all primitive. Rough terrain and surface features preclude vehicle use inside the WSA. Given these conditions, impacts on cultural resources are not significant issues for the South Needles WSA.

10. Recreation: The public has expressed concern that the wilderness designation would change recreational use from motorized to primitive or conversely that without wilderness designation motorized recreation will eliminate or reduce opportunities for primitive recreation. Recreational use of the South Needles WSA is light (estimated less than 100 visitor days per year), and would remain primitive with or without wilderness designation due to the rough terrain of the WSA and lack of access. Therefore, impacts on recreation use is not significant issues for the South Needles WSA.

11. Economic Conditions: A portion of the public, including State and local government, is concerned

# SOUTH NEEDLES WSA

that wilderness designation would preclude mineral or other economic developments and adversely affect local economic conditions. Others believe that primitive recreation use would increase following wilderness designation and would contribute to the local economy. There are no existing or anticipated mineral developments or proposals for lands or realty activities which would be impaired with or without wilderness designation. Because no economic developments are expected, and because recreational use is less than 100 visitor days per year, impacts on economic conditions are not significant issues for the South Needles WSA.

## • Issues Analyzed in Detail

The only significant issue for the South Needles WSA is impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.

Only two comments were made during the public comment period for the Draft EIS. The first questioned the acreage within the WSA and the second suggested a land exchange with the State of Utah to eliminate a 480 acre non-Federal in-holding between the proposed NPS wilderness and a potential BLM wilderness area.

See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section J, for responses to specific comments about the South Needles WSA.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated from Detailed Study

No alternatives were identified for this WSA other than those analyzed.

### Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action/No Wilderness; and (2) All Wilderness (Proposed Action) (160 acres). A description of BLM's management policies with each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections with each alternative. These assumptions are indicated in each case. The assumed management actions presented in the Introduction to Volume V are also applicable.

## • No Action/No Wilderness Alternative

With this alternative, none of the 160-acre South Needles WSA would be designated by Congress as part of the NWPS (Refer to Map 1).

Although BLM's land use plans are regularly updated and the Beef Basin MFP (USDI, BLM, 1973) will be replaced by the San Juan RMP, it is assumed that the area would continue to be managed in accordance with the MFP. The 480-acre tract of State lands which join the WSA on the west and south has not been identified in the MFP for special acquisition through exchange or purchase. No private, State or split-estate lands are located within the WSA.

## • Management Conditions and Constraints

All 160 acres would remain open to mineral location and sale. There are no mining claims within the WSA. Development work, extraction, and patenting would be allowed on any future mining claims. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809).

Oil and gas leases have been phased out of the WSA and no leases currently exist. The 160-acre WSA would remain closed to oil and gas leasing (Category 4).

Although locatable mineral resources would be managed as described above. No locatable mineral exploration or development is projected for the WSA because the level of known resources and the probability of their development are too low to support that assumption. Appendix 6 in Volume I explains the mineral and energy development projections.

The area would continue to be an unallocated portion of the Indian Creek Allotment. There are no existing or proposed rangeland developments.

The WSA would be open to vehicle access even though there is no existing access, and rough terrain and surface features prevent vehicle use in the WSA.

The area would continue to be managed under VRM Class I, 160 acres.

# SOUTH NEEDLES WSA



**Map 1**  
**LAND STATUS**  
**South Needles WSA**  
**UT-060 169A**

**Legend**

- WSA Boundary
- · - Canyonlands National Park Boundary
- ▨ State Land Within or Adjacent to WSA
- ▩ National Park Service Administered Land
- BLM Administered Land Within or Adjacent to WSA

SCALE IN MILES: 0, 1, 2

SCALE IN KILOMETERS: 0, 1, 2, 3

ELEVATION EXPRESSED IN METERS

North Arrow: N

## SOUTH NEEDLES WSA

The area would be open to woodland product harvest, but no harvest is anticipated because of the remoteness of the area and lack of access.

A public water reserve withdrawal on the current 160-acre WSA would continue in effect. The withdrawal segregates the lands from all public land laws and non-metalliferous mineral location.

- Action Scenario

BLM projects that implementation of the No Action/No Wilderness Alternative would not result in any surface disturbing activities in the foreseeable future. No locatable or leasable mineral resource exploration or development is anticipated. No rangeland, wildlife habitat, watershed projects or other developments are planned.

No disturbance is projected from ORV activity due to rough terrain.

Recreation use is primitive in nature and projected to increase over the current estimated use of less than 100 annual visitor days at a rate of 2 to 7 percent per year.

- All Wilderness Alternative (Proposed Action)

With this alternative, all 160 acres of the South Needles WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). This WSA is adjacent to Canyonlands National Park and is contiguous with a 61,182-acre NPS-proposed wilderness (USDI, NPS, 1974). Because this WSA lacks the necessary size to constitute a wilderness area by itself, it would be managed in part with the NPS-proposed wilderness. As a result, the South Needles WSA could be retained by BLM or transferred to the NPS, who would then assume management responsibilities. For the purposes of this analysis, it is projected that BLM would retain management of the South Needles WSA, and would manage it in part with the contiguous NPS-proposed wilderness in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character. No State lands are located in the WSA (refer to Map 1) (USDI, BLM, 1981). One State tract is adjacent to the WSA; however, it would likely not be exchanged following wilderness designation (refer to Map 1). The figures and acreages given for this alternative are for Federal lands only. No private or split-estate lands are located in the WSA.

- Management Conditions and Constraints

After wilderness designation, all 160 acres would be withdrawn from mineral location, and continue to be closed to new mineral leasing and sale. Oil and gas leases have been phased out of the WSA and no new leases would be issued.

The area would continue to be an unallocated portion of the Indian Creek Allotment. There are no existing or proposed rangeland developments.

The entire 160-acre area would be closed to ORV use.

All 160 acres would continue to be managed under VRM Class I.

The 160 acres would be closed to woodland product harvest.

A public water reserve withdrawal on the entire 160-acre WSA would continue in effect. The withdrawal segregates the lands from all public land laws and nonmetalliferous mineral location.

- Action Scenario

BLM does not project any surface disturbance in the foreseeable future. Implementation of the All Wilderness Alternative would preclude mining claim location. The area is now and would continue to be closed to mineral leasing. Therefore, no locatable or leasable mineral resource exploration or development would occur following wilderness designation. No rangeland, wildlife habitat, watershed projects or other developments are planned following wilderness designation.

No disturbance from ORV use is projected due to management and terrain constraints.

Recreation use which is primitive in nature is projected to increase over the current estimated use of less than 100 annual visitor days at a rate of 2 to 7 percent per year.

### Summary of Environmental Consequences

Table 1 presents the environmental consequences of alternatives analyzed in detail.

# SOUTH NEEDLES WSA



**Map 2**  
**ALL**  
**WILDERNESS**  
**ALTERNATIVE**  
**South Needles WSA**  
**UT-060-169A**

Legend

- All Wilderness Alternative (160 acres)
- - - Canyonlands National Park Boundary

SCALE IN MILES

SCALE IN KILOMETERS

ELEVATION EXPRESSED IN METERS

N

# SOUTH NEEDLES WSA

**Table 1  
Summary of Environmental Consequences**

Alternatives	
Resource	No Action/No Wilderness
Impacts on Wilderness Values	<p>All Wilderness (160 Acres) (Proposed Action)</p> <p>Wilderness values would not be protected by wilderness designation. No disturbance that would affect wilderness values is anticipated in the foreseeable future. This alternative would, however, not complement and enhance wilderness values, uses, and management of the contiguous portion of Canyonlands National Park.</p> <p>Wilderness designation would preserve the wilderness values in the WSA. This alternative would complement and enhance wilderness values, uses, and management of the contiguous portion of Canyonlands National Park.</p>

# SOUTH NEEDLES WSA

## AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as for analysis of the Environmental Consequences of Alternatives for this WSA.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

### Wilderness Values

- Size

The South Needles WSA is 0.50 mile square and encompasses about 160 acres. The WSA is not a viable independent candidate for wilderness designation if Congress does not designate the contiguous NPS proposed wilderness area in Canyonlands National Park. If managed as part of the contiguous NPS unit, the WSA would be a viable wilderness area.

- Naturalness

The WSA is in a natural condition with no known intrusions. No surface disturbing activities have occurred since the wilderness inventory.

- Solitude

The unit contains a rugged broken terrain with pinyon pine, juniper trees, and oak vegetation providing screening for users. It is remote. Several miles of nonmotorized travel is required to reach the unit. The WSA is surrounded by about 85,000 acres of land being considered for wilderness designation. Because of these factors, the entire WSA provides outstanding opportunities for solitude.

- Primitive and Unconfined Recreation

The South Needles WSA offers outstanding opportunities for hiking and backpacking in conjunction with Canyonlands National Park. Other existing and potential uses include: hunting, sightseeing, nature, and archaeological study. These opportunities, when taken together, contribute to a diverse, high quality recreation experience. The entire WSA thus provides outstanding opportunities for primitive and unconfined recreation.

- Special Features

Although the unit is small, it contains several features that are of supplementary interest. The scenic value of the unit is high. Red and buff sandstone spires, knobs and buttes contrast with the green vegetation and blue sky. The highly eroded sandstone features, including numerous pinnacles and the Vanhert arch, provide for geologic study and viewing. The entire 160 acres is rated Class A for scenic quality.

Two archaeological sites were located during field work and the potential for finding additional sites is high. A spring exists on the north edge of the unit which produces about 1/2 cfs and supports a small riparian area of cottonwoods, oak, and reeds.

Other resource values that could be considered special features include one animal species (peregrine falcon) listed as endangered that may use the WSA. There are six animal species and one plant species that are considered sensitive that may occur in the WSA. Cougar, which is a wildlife species associated with wilderness, may be found in the WSA. Refer to the Vegetation and Wildlife Including Special Status Species sections for additional information.

- Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV type of juniper-pinyon woodland. Refer to the Vegetation Including Special Status Species section for more discussion of ecoregions and PNV types. The ecoregion and PNV types represented by this WSA are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values Section of Volume I.

This WSA is not within a 5-hour drive from any standard metropolitan statistical areas.

### Air Quality

The Utah Division of Health has a network of air monitoring stations throughout the State. The closest monitoring station to South Needles is 70 miles south at Bullfrog Marina. Only particulate and sulfur dioxide concentrations are measured at Bullfrog Marina.

Only the short-term (24-hour) particulate standard has been exceeded at the Bullfrog station. The 24-hour violations were probably associated with conditions of high winds and blowing dust (resulting from



## SOUTH NEEDLES WSA

the scarce vegetation and large areas of exposed sand). While only 1976 data are available, sulfur dioxide concentrations measured at Bullfrog Marina are low and well under the applicable ambient standards.

Generally the air quality is very good over the WSA, allowing for long vistas where topography and vegetation allow. Visual range in the general vicinity averages between 100 to 132 miles during the summer (Aerocomp, Inc., 1984). Generally, the average visibility is greater in the winter than in the summer. The WSA has a PSD Class II air quality classification as per the 1977 Clean Air Act Amendments. Canyonlands National Park, which forms the north and east boundaries of the WSA, is the nearest PSD Class I area.

### Geology and Topography

South Needles WSA is within the Canyonlands Section of the Colorado Plateau Physiographic Province. This section is characterized by bare rock surfaces, plateaus, and steep-walled canyons.

The surface geology of the South Needles WSA consists almost entirely of flat-lying sedimentary rocks of the Cedar Mesa Sandstone Member of the Permian Cutler Formation. Deep canyons have cut into the area exposing the underlying Pennsylvanian Rico Formation.

The Cedar Mesa Sandstone Member is generally white, fine-grained, calcareous, and cross-bedded. It is a near-shore shallow-water marine deposit that was transported into the area by a long-shore current from the northwest. The Cedar Mesa Sandstone interfingers eastward with the Cutler Formation.

The Rico Formation underlying most of the area is a transitional unit composed of alternating marine and continental sediments 300 to 400 feet thick. It is a red and gray, thick- and thin-bedded unit of calcareous sandstone, sandy shale, resistant gray limestone, and sporadic purple arkose. The Rico Formation in this vicinity may represent the upper half of the Elephant Canyon Formation up to the base of the Cedar Mesa Sandstone.

The South Needles WSA is slightly west of the area of the Monument Upwarp, a broad-trending structural division of the Colorado Plateau which extends 75 miles south to the Arizona border and plunges gently northward in Butler Wash. The upwarp is asymmetri-

cal. The western margin is structurally indistinct. The regional dip is gently inclined to the west and northwest.

The unit consists of 160 acres of the upper reaches of a side drainage to the west fork of Salt Creek. The major landform is sloping slickrock with pinyon-juniper woodland covered benches. Numerous sandstone pinnacles line the edge of the drainage. The unit contains one sandstone arch. Elevations within the WSA range from about 6,240 feet in the southwest corner down to 5,640 feet in the northeast where the drainages flow into Canyonlands National Park.

### Soils

The soils in this WSA have been mapped and described in the Canyonlands Soil Survey (USDA, SCS, 1978). The majority of this WSA consists of rock outcrop with some shallow loamy soils. There are some areas of moderately deep loamy and sandy soils along the lower drainage areas and on concave slope positions.

Under present conditions, average soil loss from erosion is estimated to be about 0.25 cubic yards per acre per year. Total annual soil loss for the entire WSA is approximately 42 cubic yards.

Soil salinity class estimates indicate that the area is non-saline with an estimated average salinity production of 33 lb of salt per year.

Seeding potential is unsuitable in the WSA due to steep slopes, rock outcrops, sandy (droughty) and shallow soils.

### Vegetation Including Special Status Species

The major vegetation type in the WSA is pinyon-juniper woodland with a small riparian zone in the drainage area in the northern portion of the unit. Additional land is classified as barren without substantial vegetation.

The pinyon-juniper woodland type is basically mature trees with a moderate understory species density. Understory species include sagebrush, fourwing saltbush, bottlebrush, squirrel tail, and Sandberg bluegrass.

The riparian vegetation (less than two acres) in the northern drainage area consists of cottonwoods, oak, rabbitbrush, saltbush, skunkbrush, reeds and sedges.

## SOUTH NEEDLES WSA

The barren areas are primarily exposed rock with limited vegetation where soil is present. Vegetation includes blackbrush, serviceberry, and skunkbrush.

No threatened or endangered plant species are known to occur in the WSA. However, one Category 2 candidate species, Erigeron kachinensis, may occur in the WSA (see Appendix 4 in Volume I).

The South Needles WSA is located in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The map identifies the PNV type of the WSA as juniper-pinyon woodland.

### Water Resources

The South Needles WSA, with its canyons and tributaries, drains into the Upper Colorado River. Therefore, it is in the Upper Colorado River Hydrologic subregion.

Water is a limited resource in this WSA as there is only one spring, and no reservoirs, water wells, or perennial streams. Runoff is retained in slickrock pools along the major drainages for short periods after rainfalls.

The WSA is within Water Right Adjudication Area 99. The water is not fully appropriated (UDNRE, DWR, 1988). There is very little water development in this area because of its remoteness. Isolated springs may be open to appropriations not to exceed 0.015 cfs. Temporary and fixed-time applications may exceed this limit.

The water quality standards for the Colorado River and tributaries, from Lake Powell to state line are as follows: Class 1C (protected for domestic purposes with prior treatment by treatment processes as required by the Utah Department of Health); Class 2B (protected for boating, water skiing, and similar uses, excluding recreational bathing [swimming]); Class 3B (protected for warm water species of game fish and other warm water aquatic life); and Class 4 (protected for agricultural uses including irrigation of crops and stockwatering).

Hydraulic interconnection is not widespread in the area, and underground water is possibly found in isolated pockets at two levels. Water in the upper level is of low salinity and suitable for use by livestock and wildlife. Discharges are by evaporation, springs, and subriver level seeps into the Colorado River and asso-

ciated drainages. Water in the lower level is high in salt, with TDS ranging from 80,000 to over 300,000 milligrams per liter.

### Mineral and Energy Resources

Table 2 provides the energy and mineral resources rating summary for the WSA. Refer to Appendix 5 in Volume I for a description of the SAI rating system.

Table 2  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f 2	c 2	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Potash	f 1	c 3	None
Copper	f 1	c 4	None
Uranium/Vanadium	f 1	c 4	None
Manganese	f 1	c 4	None

Source: SAI, 1982; USDI, BLM, 1987a.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

There are no strategic or critical minerals known to occur within the WSA (USDoD, 1988).

#### • Leasable Minerals

There are no known deposits of any leasable minerals in the WSA. Currently, there are no active drilling, mining, or exploration activities for leasable minerals.

A few exploratory wells have been drilled along the Beef Basin anticline approximately four miles southwest of the unit, but all wells were dry. All the wells drilled in this general area have been abandoned, but oil staining has been reported in Mississippian, Pennsylvanian, and Permian rocks.

Despite the favorable stratigraphy in the vicinity of the WSA, broad uplifts beginning in late Cretaceous time have significantly lowered the oil and gas potential of the Paradox Formation in this area. As a result of this uplift, erosion has stripped away overlying Mesozoic sedimentary rocks across most of the Monument Upwarp. It is, therefore, very unlikely that reservoir pressure exists in Pennsylvanian rocks throughout much of this area. If oil and gas existed in

## SOUTH NEEDLES WSA

the Paradox Formation in this area, there is a good chance that it has drained away.

On the basis of the discussion above, Pennsylvanian and Permian rocks in the WSA probably do not contain large reservoirs of oil and gas. However, small accumulations may exist associated with stratigraphic traps and small-scale folding.

On this basis, the WSA is assigned an oil and gas favorability of (f2). The size of the hydrocarbon accumulation in such an environment is anticipated to be less than ten million barrels of oil or less than sixty billion cubic feet of gas. Based on the available information, the certainty of occurrence for oil and gas is rated low (c2) (USDI, BLM, 1987a).

Under the current land use plan, the entire 160 acres of WSA are in oil and gas Category 4 (closed to leasing). There are no existing leases.

The only known potash-bearing unit in the area is the Paradox Formation of Pennsylvanian age. This formation originated in a slowly subsiding, northwest-trending basin called the Paradox Basin that existed in the Moab region about 300 million years ago. The potash deposits in the Paradox Formation are thickest nearest to the surface along a series of northwest-trending anticlines within a structural zone approximately 100 miles long and 30 miles wide in Utah and Colorado (the Paradox fold and fault belt).

The WSA has little or no potential for potash. If deposits occur, they will generally be thin and discontinuous. The tract has been rated (fl), little or no favorability for potash, with a moderate (c3) degree of certainty (USDI, BLM, 1987a).

### • Locatable Minerals

There are no known deposits of locatable minerals in the WSA, and there are presently no mining claims.

The adjacent Butler Wash WSA has limited potential for uranium and vanadium deposits (SAI, 1982; USDI, USBM 1987a). This information can be extrapolated to the South Needles WSA. Despite being surrounded by favorable strata of the Chinle Formation, it is concluded that the Chinle has been eroded away and is generally missing from the WSA. Of the formations that are still in the WSA, only the Cutler Formation has been productive for uranium elsewhere in the region (at Lisbon Valley). The Cutler, however, contains

no known uranium anomalies in this area, as well as very little organic carbon and mudstone. On this basis, the WSA is assigned a uranium/vanadium favorability of (fl) (an unfavorable environment for uranium deposits). The certainty that uranium deposits do not occur in the WSA is high (c4). This rating would also apply to any deposits of copper which might be associated with uranium (USDI, BLM, 1987a).

Manganese deposits in southeastern Utah occur in the Morrison and Summerville Formations (Jurassic). As these are eroded from the WSA, the favorability for manganese is rated fl, with a high (c4) degree of certainty (USDI, BLM, 1987a).

### • Salable Minerals

The salable minerals within the WSA have little or no commercial potential based on the poor quality and the remote nature of the material. These deposits are not unique or economically significant due to the presence of ample similar materials outside the WSA.

### Wildlife Including Special Status Species

The WSA does not support major populations of any wildlife species. Mule deer do utilize the WSA during the winter.

Bobcats and cougar are found in the rocky rims of the WSA. Coyotes, cottontail rabbits, and pinyon mice are also in this area. Red-tailed hawk, American kestrel, Cooper's hawk, common raven, pinyon jay, plain titmice, and rock wren are found in the WSA. Reptiles and amphibians, including the side-blotched lizard, northern plateau lizard, sagebrush lizard, and Great Basin gopher snake, are commonly observed in this area.

No habitat improvements have been identified within the WSA and no management facilities exist. No transplants are currently proposed.

It is possible that the peregrine falcon, an endangered species, may occasionally use the area. The golden eagle, a BLM sensitive species, is found in the WSA. Other sensitive species that could occur in the WSA are six Category 2 candidate species. These are the Great Basin Silverspot butterfly, ferruginous hawk, southern spotted owl, Western yellow-billed cuckoo, long-billed curlew, and white-faced ibis. Refer to Appendix 4 in Volume I for details.

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The WSA does not contain areas classified as crucial or Federally designated critical habitat.

### Forest Resources

The only forest resource occurring in the WSA consists of scattered pinyon pine and juniper trees. These are low quality sites (less than 20 cubic feet of usable wood per acre) and are considered nonproductive forest land. No forest products have been harvested from the WSA due to its remoteness and the lack of access. Demand for forest products in the WSA is not expected to increase in the foreseeable future.

### Livestock and Wild Horses/Burros

The WSA is within the Indian Creek grazing allotment but is never grazed by livestock. The area is essentially unsuitable and no carrying capacity has been assigned to the 160 acres in the WSA. There are no rangeland developments from the WSA and none are proposed.

Predator control was not conducted during the 1986 to 1987 period in the Indian Creek grazing allotment (USDA, APHIS, 1988).

There are no wild horses or burros within the WSA.

### Visual Resources

The 160-acre WSA is rated as VRM Class I and Class A scenery. It is located along the boundary of Canyonlands National Park where landforms are very similar to those in the park. It contains highly eroded sandstone with numerous pinnacles, and spires. The canyons have alternating bands of red and gray sandstone which create a great deal of contrast with the dark-green pinyon-juniper woodland.

### Cultural Resources

No significant archaeological work has been conducted in the South Needles WSA. Little is known about the cultural resources of the general area north of the Abajo Mountains, except that site densities are lower here than in most of San Juan County. The Anasazi culture includes both Basketmaker and Pueblo groups.

During field inventory of the WSA, two unrecorded cultural sites were located. Both sites are of Anasazi cultural affiliation and consist of habitation struc-

tures tucked among rock ledges and alcoves. There is a potential for additional sites within the WSA.

The WSA is located in a transition area between Fremont and Anasazi cultural groups. Scientifically, the cultural significance of this WSA lies in the potential for better understanding the interrelationships between these peoples. The unique rock art in this area quite possibly holds the key toward establishing the nature of this contact.

There are no existing National Register sites and/or nominations in this WSA. However, based on estimates from similar settings in the area, it is expected that ten sites may be located in the WSA, of which five could be National Register eligible.

### Recreation

The outstanding scenery in the WSA, including interesting geologic features, provides for a variety of recreational opportunities, including photography, sightseeing, hiking, and backpacking.

Recreational activity in South Needles WSA has not been monitored by BLM and no accurate information is available as to type and numbers of recreational users of the area. However, it is estimated that average annual visitor day use of the WSA is 100 or less. Most backpackers and hikers enter the WSA through Canyonlands National Park via the West Fork of Salt Creek.

Terrain, surface features and the lack of developed access has precluded ORV use of the area. It is anticipated that recreational use of the WSA will remain primitive in nature for the foreseeable future.

### Land Use Plans

The WSA is in the BLM San Juan Resource Area and is managed according to the Beef Basin MFP (USDI, BLM, 1973). The San Juan RMP will replace the MFP. Neither the MFP or RMP address wilderness designation. However, wilderness designation is part of the multiple-use concept and the BLM land use plan is linked to the wilderness EIS through analysis of the present plan as the No Action/No Wilderness Alternative.

The Canyonlands National Park forms the north and east boundaries of the WSA. The NPS has proposed the adjoining portions of the park for wilderness designation. The south and west boundaries of the WSA adjoin 480 acres of State land and is separated

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from BLM's 24,190-acre Butler Wash WSA by 0.5 mile. The current policy of the State is to maximize economic returns from State lands and to reserve its position regarding exchange of in-held lands (see Chapter 1 in Volume I). In 1986, the Utah State Legislature passed S. C.R. No. 1 opposing any additional wilderness designation in Utah.

The San Juan County Master Plan emphasizes multiple-use of public lands and zones the WSA as open range and forest land (Planning and Research Associates, 1967). However, the policy of the San Juan County Commission is to oppose any legislative or administrative designations of wilderness in the County (San Juan County Commission, 1980). The commission has also endorsed the Consolidated Local Government Response to Wilderness that opposes wilderness designation of BLM lands in Utah (Utah Counties, 1986).

There are no existing rights-of-way issued by BLM in the WSA.

## Socioeconomics

### • Demographics

The WSA is located in northwestern San Juan County. The nearest community is Monticello, which is approximately 28 air miles southeast of the WSA.

Between 1970 to 1980, the population of San Juan County was fairly static and grew by less than a 2 percent annual growth rate. The 1985 population was 12,500. Since 1983 the County's population has declined by approximately 500 (USDI, BLM, 1987b). The two largest communities in the County are Blanding (1980 population 3,118) and Monticello (1980 population 1929). Approximately 40 percent of the County's population resides in these communities. Table 3 presents baseline and projected population data for San Juan County.

Table 3  
Baseline and Projected Population and Employment Growth  
San Juan County

	1980	1990	2000	2010
Population	12,400	12,900	12,900	15,000
Employment	3,980	3,800	4,300	5,100

Source: Utah Office of Planning and Budget, 1987.

Population projections for the County indicate that the number of people living in San Juan County in the year 2010 will be about 15,000 for about a 21-

percent increase over 1980 levels (Utah Office of Planning and Budget, 1987). The major racial groups are whites (52.4 percent) and American Indians (45.7 percent). About 4 percent of the Navajo reservation's population live in San Juan County (USDI, BLM, 1987b).

San Juan County is the largest county in Utah, comprising 5,045,760 acres or about 9.6 percent of the State's acreage. Approximately 86 percent of the County is administered by the Federal government; 41 percent by BLM, 24 percent by the tribe, and 20.9 percent by other Federal agencies. About 6 percent is in State ownership and about 8.1 percent is privately owned (University of Utah, BEBR, 1982; USDI, BLM, 1987b).

### • Employment

Table 3 shows the baseline and projected total employment for the County to the year 2010. The government sector (Federal, State, and local) is the most important in terms of employment in the San Juan County economy. In 1987, mining made up about 16.5 percent of the total employment in the county. Tourism also generates a significant number of jobs (USDI, BLM, 1987b). Unemployment is presently high, approximately ten percent.

San Juan County is part of the Southeast MCD. Table 4 shows the baseline (1980) and projected employment by source for MCD to the year 2010.

Table 4  
Southeast Multi-County District  
Employment <sup>a</sup>

	1980	1990	2000	2010
Agriculture	1,203	1,100	1,100	1,100
Mining	6,368	3,500	4,500	5,700
Construction	1,360	700	900	1,100
Manufacturing	551	600	700	800
Transportation, Utilities	1,563	1,800	2,000	2,200
Trade	3,289	3,600	4,000	4,800
Finance, Insurance, Real Estate	424	400	400	500
Services	2,067	3,200	4,000	5,300
Government	3,994	4,100	3,800	4,400
Nonfarm Proprietors	<u>1,715</u>	<u>2,000</u>	<u>2,200</u>	<u>2,800</u>
<b>Totals</b>	<b>22,534</b>	<b>21,000</b>	<b>23,600</b>	<b>28,700</b>

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Carbon, Emery, Grand, and San Juan Counties.

In 1980 the leading employment sectors for the MCD were mining (28 percent), government (18 percent) and trade (15 percent). It is projected that by the

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year 2010 employment in the MCD will increase by about 27 percent. Services will increase to 18 percent, trade to 17 percent, and government to 15 percent of the total. While mining, agriculture and construction sectors will decline (Utah Office of Planning and Budget, 1987).

### • Sales and Revenues

The only economic-related activities in the WSA are related to recreation. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that the Statewide average local expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for South Needles WSA is estimated as less than 100 visitor days per year.

The WSA contains no mineral claims, has no oil and gas leases, is not grazed, and there are no commercial woodland-product sales from which sales or revenue are provided.

## ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. The analysis is based on the BLM management actions and anticipated activities presented in the Introduction to Volume V and the Description of the Alternatives section for the South Needles WSA.

### No Action/No Wilderness Alternative

#### • Impacts on Wilderness Values

Because the WSA would not be designated wilderness with this Alternative, the identified wilderness values would not receive the degree of protection afforded by application of the BLM Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would; however, be protected by limitations placed on potential surface disturbing activities (i.e., VRM Class I management on the entire area and management under oil and gas leasing Category 4 (closed to leasing) on the entire area.

No development is expected in the foreseeable future that would affect wilderness values.

Because future vehicular use would be limited by terrain, no disturbance from ORV activity is anticipated in the future.

The increased visitor use that would occur over time would not be expected to significantly reduce wilderness values because the additional use would be largely primitive in nature and would occur in conjunction with use of Canyonlands National Park.

Loss to wilderness values that would occur due to disturbance over the long term is not accurately known. Loss would occur as intrusions increase.

This alternative would not complement and enhance wilderness values, uses, and management of the contiguous portion of Canyonlands National Park.

Conclusion: Wilderness values would not be protected by wilderness designation. No disturbance is anticipated in the foreseeable future that would affect wilderness values.

### All Wilderness Alternative (Proposed Action)

#### • Impacts on Wilderness Values

Designation and management of all 160 acres as wilderness would preserve the wilderness values in the South Needles WSA. The potential for surface-disturbing activities would be eliminated through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness and outstanding opportunities for solitude and primitive, unconfined recreation would be preserved on all 160 acres. Resources that could be considered as special features in the WSA, including Class A scenery, cultural resources, geologic features, endangered and other special status species, and wildlife associated with wilderness, would also be preserved.

Increased visitor use that would occur with time would be primitive in nature and would be managed in conjunction with wilderness use of Canyonlands National Park so as not to result in loss of wilderness values.

This alternative would complement and enhance wilderness values, uses and management of the contiguous portion of Canyonland National Park.

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**Conclusion:** Wilderness designation would preserve the wilderness in the WSA.

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